THE WILLIAM DAVIDSON INSTITUTE
AT THE UNIVERSITY OF MICHIGAN

Policy, Economic Federalism & Product Market Entry: The Indian Experience

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Policy, Economic Federalism, and Product Market Entry:
The Indian Experience[*]

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Abstract:

Productivity growth has long been associated with, among others, contestability of markets which, in turn, is dependent on the ease with which potential competitors to the incumbent firms can enter the product market. There is a growing consensus that in emerging markets regulatory and institutional factors may have a greater influence on a firm's ability to enter a product market than strategic positions adopted by the incumbent firms. We examine this proposition in the context of India where the industrial policies of the eighties and the nineties are widely believed to be pro-incumbent and pro-competition, respectively, thereby providing the setting for a natural experiment with 1991 as the watershed year. In our analysis, we also take into consideration the possibility that the greater economic federalism associated with the reforms of the nineties may have affected the distribution of industrial units across states after 1991. Our paper, which uses the experiences of the textiles and electrical machinery sectors during the two decades as the basis for the analysis, finds broad support for both these hypotheses.

Keywords: Entry, Institutions, Regulations, India, Textiles, Electrical Machinery, Reforms

JEL classification: L11, L52, L64, L67, O14, O17

November 1, 2006

Last edited by: Sumon Bhaumik

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1. Introduction

The popular wisdom about India's reforms process is that it was initiated in 1991, in the aftermath of a severe balance of payments crisis. However, two recent papers (Rodrik and Subramanian, 2004; Virmani, 2004) argue that the structural change in India was more pronounced in the eighties than in the nineties. Using aggregate data for the Indian economy, they make the case that the data for the nineties do not support the hypothesis that the reform process that started in 1991, and has been carried out since then, has resulted in a sharp break from the past. Rodrik and Subramanian (2004) go on to suggest that the decade of the eighties was characterised by a pro-incumbent business policy while the nineties was a more pro-entrant policy.

Since the facilitation of contestability of markets, of which entry is an important ingredient, is considered to be an integral part of structural reforms, the Rodrik and Subramanian argument has important implications for the relative impact of reforms on productivity and efficiency of the Indian industries during the two decades. *Ceteris paribus*, pro-incumbent industrial policies of the eighties should have stymied productivity growth, while pro-competition policies of the nineties should have stimulated it. In this paper, we do not address the empirical question involving the relationship between entry and productivity. Rather, we examine India's industrial policy changes that were introduced during the eighties and the nineties, and the impact of these changes on firm entry in India's manufacturing sector.

Starting from the fifties, the Indian government had taken an approach of directing the process of industrialization to suit the path of development envisaged in the various 5-year Plans. The implementation of the industrial strategies primarily involved the use of two policy instruments. First, the government reserved a number of industrial sectors for state-owned companies alone. Second, though private firms were allowed to operate in other sectors, all industrial units had to take the central government's permission before being set up. Such licenses were given in accordance with the macro-economic plan targets and with a view to balancing out regional disparities in industrialization.

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Over the years, the government added to these basic instruments of industrial policy other initiatives like import substitution, non-tariff barriers against consumer goods imports, and reservation of some industries for the small scale sector. Many of the policy initiatives that restricted the independent decision making ability of the Indian private sector were taken in the seventies. For example, a 1973 resolution restricted the business houses, defined as those with combined assets of more than INR 200 million, to specific sectors in the economy. This was supplemented in 1977 by a list of over 800 items that were reserved for production in the small scale sector (investment in plant and machinery not exceeding INR 1 million). In addition, all new capacity expansion by existing companies had to be sanctioned by the government and such expansions were usually disallowed if the market share in any product was more than 25 per cent. All of these severely restricted the ability of the private sector to benefit from economies of scale and scope.

In 1980, the architect of much of the socialist policies of the seventies, Indira Gandhi, came back as Prime Minister after being out of power for three years. An important lesson that she had learnt from her election defeat of 1977 was that it was important to have business people on her side (Kohli, 2004). Arguably, her short and turbulent political reign during the early eighties witnessed some rethinking about the socialist industrial policies that had been unleashed in India over the previous three decades. Her son, Rajiv Gandhi, who succeeded her as Prime Minister after her assassination in 1984, had stronger belief in the role of the private sector and market economy in fostering industrialization and economic growth. He was in power until 1989, and, as argued by Rodrik and Subramanian, the first set of economic reforms was initiated under his stewardship. In 1989, he lost power to a coalition government, which was in principle opposed to most of his economic policies and wanted to directly concentrate on social justice and equity, rather than use economic growth as a means to that end. However, the coalition was inherently unstable, and by 1991 the Congress Party returned to power. However, in the interim, Rajiv Gandhi had also been assassinated.

The first major economic challenge of the new Congress government was a severe balance of payments crisis in 1991, highlighting not only the macroeconomic imbalances facing the Indian economy, but also the need for structural reforms. The government of Narasimha Rao capitalized on the macroeconomic crisis to initiate a rash of reforms that are well documented in the literature (see, e.g., Parikh, 1997). Since 1991, state monopolies in industries have been dismantled, tariff and non-tariff barriers to imports have been reduced or eliminated, financial markets have been liberalized, and foreign direct investment have been allowed in nearly all sectors. While the pace of reforms has been uneven, and has varied in accordance with political compulsions, there is no disagreement in the Indian polity (nor among policymakers) about the need for and the nature of the reforms *per se*.

In this paper, we examine two hypotheses, namely, that (*a la* Rodrik and Subramanian) reforms were pro-incumbent in the eighties and pro-competition (or pro-entrant) in the nineties, and that, as a consequence of economic decentralization, state-level factors affected performance, and, hence location decisions, of firms/plants more in the nineties than in the eighties. The rest of the paper is organized as follows: In Section 2, we outline the main characteristics of the reforms pursued during the two decades, with emphasis on reforms that influenced industrial policy. In Section 3, we examine the impact of these policies on overall net entry rates and the impact of entry, using data for 3-digit industries as well as plant level data for 1989-90 and 2000-01. The experiences of the textiles and electrical machinery industries are explored in Sections 4 and 5. In Section 6, we examine the relative importance of state-level factors in influencing plant-level performance during the eighties and the nineties. Section 6 concludes.

2. Two decades of reforms

The pro-incumbent nature of the policy regime of the eighties was evident in a number of policy initiatives. The industrial policy resolution of 1980 emphasized the need for improving productivity in existing units and in order to make them globally competitive. The role of scale economies in the private sector, both in terms of new technologies and cost-effective organizational structures, was recognized for the first time since

Independence. In keeping with the new vision of industrial development, in 1980, a business house was redefined as one whose combined assets exceeded INR 1 billion, i.e., five times the limit of INR 200 million set in 1973. This meant that all firms with assets between INR 200 million and 1 billion could operate in sectors in which they were not allowed entry prior to 1980. Second, business houses were allowed to operate outside their permitted list of sectors if they set up factories in economically backward areas. Third, existing units could set up new units, without restriction on size, provided the latter were 100 per cent export oriented. Fourth, access to foreign technology, hitherto severely restricted, was allowed if it resulted in either exports growth or significant improvement in cost structures of the firms. Fifth, the upper limit for capital stock used for defining the small scale sector was increased from INR 1 to 2 million. (The limit for ancillary units was increased to INR 2.5 million from the earlier 1.5 million.)

In addition to such industrial policies, a fiscal policy initiative was introduced in the mid-eighties to encourage firms to undertake long-term investment plans. Duties on project related imports were reduced, along with those on all other capital goods. At the same time, import duties on final goods continued to be high. While all these were favourable to existing companies, *status quo* was maintained with respect to the licensing procedure for most new entrants. In other words, incumbent firms were able to reduce cost of production and, at the same time, extract rent in markets that were protected from import competition. Further, while both incumbent and new firms required licenses, for capacity expansion and production, respectively, the former were at an advantage on account of their continuing relationship with the government bureaucracy. As a consequence, the licensing process (and the playing field, in general) was heavily loaded in favour of incumbents (Bhagwati, 1982, 1988).

In the early eighties, some sectors were delicensed, and this process was slightly modified in the mid-eighties. However, a more important initiative was that of broad-banding. Originally, a license was given for a specific product. This meant that a producer of two-wheelers, for example, who had a license for scooters, could not produce motor-cycle, without seeking a licence. However, with broad-banding, expansion of

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business into related areas became possible. This, once again, gave a boost to product development as well as economies of scope and scale. However, with the licensing requirement for new entrants still in place, broad-banding gave a clear advantage to the incumbent firms.

An important new law was enacted in the second half of the eighties: the Sick Industrial Companies (Special Provisions) Act, or SICA, of 1985. Under this Act, a bankruptcy court, named the Board for Industrial and Financial Reconstruction (BIFR), was set up in 1987. Under the SICA, any company that has been registered for more than 7 years and whose net worth has been eroded significantly must apply to BIFR for permission for closure. There are three important aspects to this law. First, small units were kept outside the purview of the law. Second, the application was mandatory and not voluntary as in the US Chapter 11 bankruptcy code. Third, since application to BIFR was mandatory, creditors could not attach and liquidate assets of the defaulting companies. According to the Act, closure of an industrial unit was considered to be a social loss and, hence, this outcome was to be avoided wherever possible. In order to facilitate operation of the sick industrial units, government owned banks and financial institutions provided credit at subsidized interest rates. Further, and not surprisingly, all capacity and licensing restrictions were suspended if a healthy company merged with a sick one under the supervision of BIFR. Since the managers did not face any cost of bankruptcy, there were strong incentives to overlook impending financial distress (Gangopadhyay and Knopf, 1998), and facilitated the creation of non-performing assets on the balance sheets of the banks (Bhaumik and Mukherjee, 2002). Once again, it skewed the playing field against potential entrants; capital was tied up in loss-making industrial units instead of being delivered to new units of production.

By contrast, the post-1991 reforms laid strong emphases on enabling markets and globalization coupled with lower degrees of direct government involvement in economic activities. The focus was mainly on five areas: foreign investment, entry procedures, technology, monopolies and restrictive trade practices (MRTP Act), and the public sector. Quite significantly, the first policy announcement of the reform process was the abolition

of licenses. For the first time in post-Independence India, licensing requirements for all projects were abolished; only those related to defence or potentially environment-damaging industries needed prior permission.[1] As of 1991, an entrepreneur only has to file an information memorandum on new projects and/or for substantial capacity expansions. Further, the MRTP Act was amended such that the need for approval from the central government for establishing a new plant, capacity expansion, merger, takeover and directors' appointments (in the private sector) was abolished.

The nineties' reforms also encouraged technology adoption and greater participation of foreign companies in the Indian industrial sector. Until 1991, foreign ownership of equity was restricted to less than 40 per cent in all sectors, and FDI was completely disallowed in many of these sectors. In 1991, foreign direct investment up to 51 per cent equity was allowed in some of the sectors, and, over the next fourteen years, there has been a significant relaxation of the rules governing FDI across the board (see Beena et al., 2004). By the end of the nineties, most manufacturing units in the SEZs[2] were allowed 100 per cent FDI under automatic approval. Further, the "dividend balancing" requirement on 22 consumer goods industry was removed.[3] Procedures for the procurement of technology from abroad were also simplified, largely by way of facilitation of ways for payment of patent-related royalties. The high priority industries were given automatic permission for technology transfer.

The nineties also witnessed the operationalisation of the long-debated policy initiatives on the role of the public sector within the country's industrial structure. Until the end of the eighties, prices of most infrastructure and basic intermediates were controlled by the government on a cost-plus basis, under the aegis of the administered price regime (APR).

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[1] By the end of 1997-98, all but 9 industries had been delicensed.

[2] The following items were excluded: arms and ammunition, explosives and allied items of defence equipment, defence aircraft and warships; atomic substances; narcotics and psychotropic substances and hazardous chemicals; distillation and brewing of alcoholic drinks; and cigarettes/cigars and manufactured tobacco substitutes.

[3] Dividend balancing required that a foreign investor plough back its dividends and/or royalty from an Indian operation into the same operation for a stipulated number of years.

This led to allocative inefficiencies and, at the same time, created conditions of supply shortages, as administered prices typically failed to clear the market. In the context of these supply shortages, it was easier for incumbent companies with existing supply chains and government contacts to procure the rationed supply of intermediate products. In the nineties, the APR was abandoned, and the list of industries reserved for the public sector was reduced from 17 to 8. In 1993-94, the list of sectors reserved for the public sector was further reduced to 6. State monopolies in insurance, civil aviation, telecommunication and petroleum were abandoned, and the private sector was allowed participation in these sectors. In effect, entry barriers for the Indian industrial sector had been further removed.

It is evident that while changes to industrial policies were afoot since the eighties, the reforms of the nineties were more favourable to entrepreneurship development, and hence entry, compared to the eighties. While both sets of reforms were more pro-industry compared to what has been happening since Independence, the eighties' reforms were directed more at increasing the profitability of existing companies without reducing the barriers to entry faced by potential entrants. The obvious question to ask, therefore, is how the two different policy regimes impacted the actual entry and investment decisions of companies during the two decades.

Before taking a closer look at the data, and the experience of specific Indian industries during the two decades, we have to take cognizance of the key difference between industrial policymaking between these decades. Since the purpose of licensing was to achieve macro-balance and targets set by the 5-year Plans, these permissions were handed out by the central government and not by the state governments. Indeed, the Centre exercised complete control over industries prior to the nineties in a number of other ways. For example, foreign exchange and its control was a prerogative of the central government and all foreign currency transactions were closely monitored and severely restricted through the Foreign Exchange Regulation Act (FERA). One major implication of the reforms carried out in the nineties was that the control of the central government over the process and pattern of industrialization waned and, at the same time,

states started playing a much larger role in their own industrialization. While the central government continued to have control over environmental policies, labour policies, and bankruptcy procedures, the implementation of the associated laws and regulations was passed on to the states, thereby according the states significant discretionary powers over the industrial sector. Hence, in addition to the characterization of the eighties as pro-incumbent and the nineties as pro-entrant, we will also have to take into account the impact of the greater federalism in industrial decisions in the nineties.

An important aspect of this federalism in economic policy is the competition among different policy approaches. In a centralized economic system, there is very little scope for competitive experiments in policy. The only competition faced by a centrally controlled policy regime is from the approaches followed by other nations. In the case of India, this would have come from Japan and the Gang of Four in the early stages and from the Asian tigers in more recent years. However, if a country follows an explicit import substitution strategy, and is not keen to entice FDI, much of the discussion about inter-country competition within the policy space is moot. But if the policy regime *within* a country is federal in nature, states acting within the same macro-spectrum could experiment with different sets of industrial policies. The more progressive states could, in principle, become role models for the other states. Thus, the greater freedom to states to decide on their respective economic package of reforms and their implementation (i.e., quality of governance), can be viewed as an opportunity to the states that seek reforms. This possibility for states to embark on different, and potentially competing, reform paths was a significant difference between the pre- and post-nineties policy regimes.[4] There is *prima facie* evidence to suggest that, in post-1991 India, there was inter-state variation in the degree of accountability of the state governments (Besley and Burgess, 2004), such accountability being the basis for the quality of governance and the associated economic

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[4] This is similar to the postulates of Djankov, La Porta, Silanes and Shleifer (2002), Klapper, Laeven and Rajan (2004) and Perotti and Volpin (2004) which suggest that institutional factors like political structure (e.g., democracy) and legal origin (e.g., common law), as well as governance (e.g., protection of property rights) have significant impact on cross-country variations in net entry rates.

policies that benefit the process of industrialization and, thereby, the wider economic stakeholders (e.g., labor) living in the state.

3. Net growth of factories

In this section, we use the data from the Annual Survey of Industries (ASI) to investigate the pattern of entry of new factories into industries, and the pattern of location of the new industrial units across the Indian states. We use two types of ASI data for our analyses: the 3-digit industry level data, and the more disaggregated factory level data. We cannot identify new entrants and exiting firms at the industry level, and hence we cannot analyse the impact of policy changes and federalization of economic policy on gross entry and gross exit rates. However, we are able to estimate net entry rates for 3-digit industries across the years. While the industry level data are available from 1973-74, the factory level data are available for 1989-90 and for 2000-01, the end-points of the two decades. Since the classification of industries was changed post 1997-98, and given that it is difficult to get a direct correspondence between pre- and post-1997-98 industries at the 3-digit level, our analysis involving the 3-digit industry level data ends in 1997-98.

To begin with, we use the plant-level data for 1989-90 and 2000-01 to confirm the hypothesis that the reforms were pro-incumbent during the eighties and pro-competition (or pro-entrant) in the nineties. Economic theory suggests that a pro-incumbent regime that facilitates rent-seeking by the incumbent firms, and also facilitate the continuation of operation of weaker firms, will necessarily lead to a more dispersed distribution of profits. Some of the firms/plants in a pro-incumbent regime will earn super-normal profits, while others will continue to be in business despite being unprofitable. A pro-entrant (or pro-competition) regime, on the other hand, will result in profits being clustered around zero; fewer firms will earn super-normal profits, and fewer unprofitable firms will continue to operate. These expected patterns of profit distribution are reflected in the two frames of Figure 2; profits during 1989-90 were much more dispersed than during 2000-01.

Figure 1
Inferring Extent of Competition from Distribution of Firm-Level Profits

Distribution of Mean Profit

All 1989-90

Distribution of Mean Profit

All 2000-01
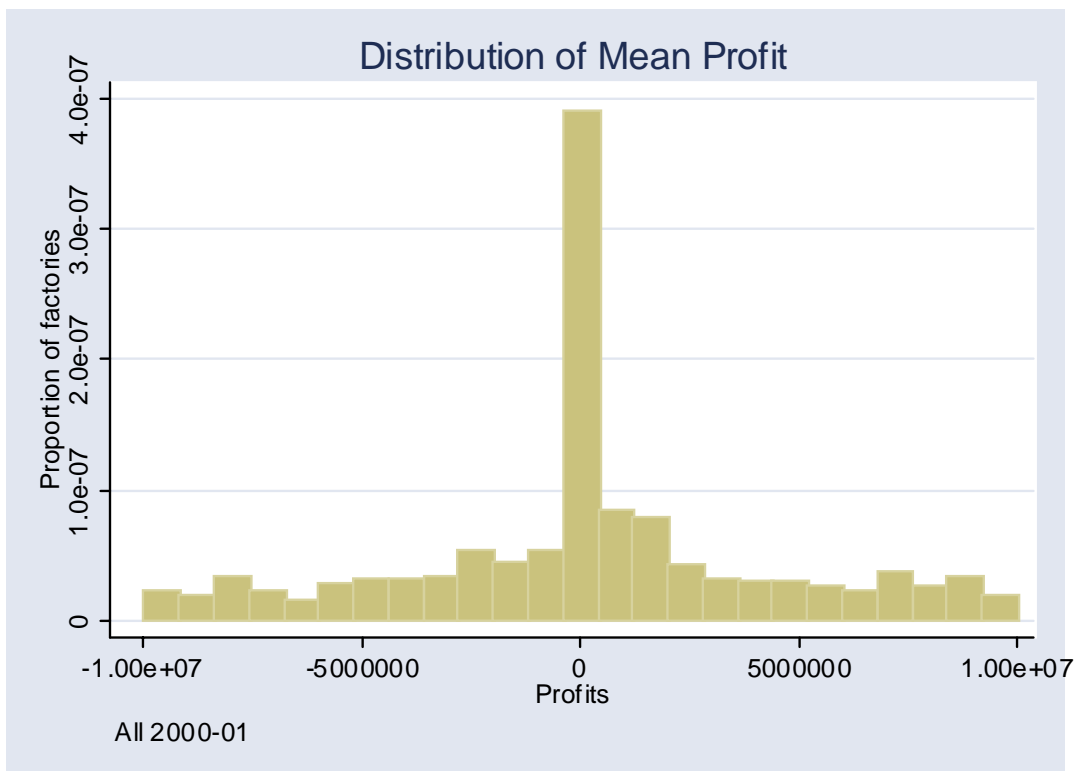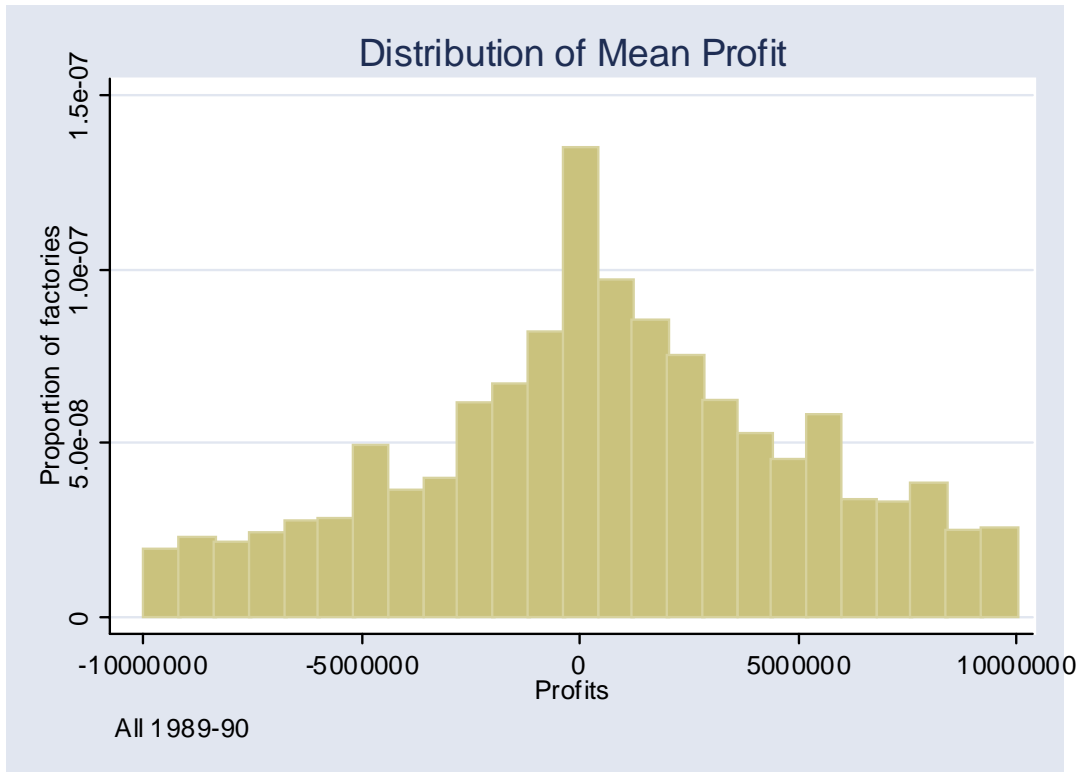
Let us now return to the issue of entry itself. Ideally, for a comparison of the eighties and the nineties, one should look at the birth and death of companies in the two decades. While the persistence of SICA through 1997-98 implies that exit rates may not differ significantly between the eighties and the nineties, entry can be expected to be higher during the pro-entrant nineties than during the pro-incumbent eighties. While it is entirely possible that an increase in the number of factories reflects capacity expansion by incumbent firms, as opposed to entry by new firms, it could, nevertheless, be instructive to study industrial churning in the two decades by looking at the growth of new factories.[5] Further, given the plausible assumption that new industrial units reflect use of new innovations and technologies, irrespective of whether the new plant is owned by an incumbent or a new entrant, it might be worthwhile examining both forms of entry. Finally, it is instructive to recall that until 1991 licenses were required for both capacity expansion and setting up of new factories.

Before examining the data, it is important to identify two specific political events that occurred during the eighties and the nineties. In January of 1982, India witnessed the initiation of a massive industrial action in the textile industry. This industrial action continued for 18 months, and spilled over into other industries. It came to an end after the central government took over the management of 13 textile units in October 1983. The long strike in India's (then) largest industry created a severe disruption in investment and the 1982-83 net entry rate was a staggering negative 11 per cent (Table 1), the lowest for any year since 1975-76. During the eighties, 1986-87 was the only other year where the net entry rate was negative (minus 3 per cent). The second important political phenomenon occurred in the second half of the nineties. In 1996, the reforming government that came to power in 1991 was succeeded, within a span of three years, by three coalition governments, the first two of which were supported by the Left parties and were of the general view that the reform process was hurting the poor. The consequent slowdown of the reforms process, together with the macroeconomic impact of the South East Asian currency crisis and the post-Pokhran sanctions imposed by a number of

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[5] Use of plant-level data to analyze the dynamics of (cross-border) entry can be found in Roberts and Tybout (1997).

countries, led to a significant slowdown of the manufacturing sector during the second half of the nineties.

Table 1
Variation in Net Entry Rates Over Time

Seventies			Eighties			Nineties		
Year	Number of Plants	Net Entry Rate	Year	Number of Plants	Net Entry Rate	Year	Number of Plants	Net Entry Rate
			1980-81	93555	1.67	1991-92	108709	1.84
			1981-82	101639	8.64	1992-93	115641	6.38
			1982-83	90159	-11.29	1993-94	118141	2.16
			1983-84	93369	3.56	1994-95	119188	0.89
			1984-85	93547	0.19	1995-96	130215	9.25
			1985-86	97531	4.26	1996-97	129631	-0.45
1975-76	69174		1986-87	94628	-2.98	1997-98	130139	0.39
1976-77	78744	13.83	1987-88	99345	4.98	1998-99	122810	-5.63
1977-78	82228	4.42	1988-89	100701	1.36	1999-00	121900	-0.74
1978-79	85454	3.92	1989-90	104526	3.80	2000-01	121453	-0.37
1979-80	92022	7.69	1990-91	106750	2.13	2001-02	118691	-2.27

Note: The number of plants refers to the total for the 15 most industrialized states.

In the first 5 years of the eighties, the average net entry rate was 0.55, and in the next 5 years it was 2.29, giving us an average rate of 1.42 for the decade. In the nineties, the first half witnessed a higher net entry rate (2.68) than in the second half (0.56), and the average net entry rate for all the 10 years was 1.62. From the summary statistics, therefore, there is not much that distinguishes the two decades. The statistics merely reflect the fact that the business/policy environment was more conducive for entry in the second half of the eighties than in the first half, and during the first half of the nineties than during the second half.

However, this aggregate data does not reveal the role of state governments and institutions (i.e., economic federalism) in influencing the variation of net entry rates across the states. To recapitulate, prior to the nineties, the focus of the centrally controlled industrial policy was on reducing regional disparities. The liberalization policies of the nineties resulted in greater economic federalism and states had the opportunity to influence both the geographical location and the subsequent performance

of industrial units by way of differences in the nature of implementation of regulations and the quality of governance, in general, across states. Earlier, location of industrial units was not based on optimal decisions on the part of the firms. But, in the nineties, industrial units were increasingly located in states that were industry friendly and had a better investment climate (Table 2).[6] It is immediately evident that in most states the net entry rate in the nineties has been considerably higher than in the eighties, and that a drop in average entry rates are concentrated among four states: Uttar Pradesh (UPR), Madhya Pradesh (APR), Andhra Pradesh (APR) and Bihar (BIH). With the exception of Andhra Pradesh, all these states are known for their poor governance levels, and low levels of economic prosperity.

Table 2
Variation of Net Entry Rates Across States

States	1980-89	1990-99
Rajasthan	2.30	5.18
Tamil Nadu	3.54	4.01
Kerala	1.17	3.67
Haryana	3.39	3.28
Gujarat	0.40	3.25
Maharashtra	0.56	2.31
Karnataka	0.72	2.09
West Bengal	-1.13	1.99
Delhi	0.12	1.64
Orissa	1.02	1.39
Punjab	1.81	1.35
Uttar Pradesh	3.80	0.49
Madhya Pradesh	0.12	-0.09
Andhra Pradesh	3.80	-1.20
Bihar	-1.89	-5.83
All India	1.42	1.62

This increase in the relative importance of state-level factors in determining the location of industrial units during the nineties is highlighted in Figure 1. Here we plot the coefficient of variation (standard deviation divided by the *absolute* value of the mean entry rate) in the state-level net entry rates between 1975-76 and 2000-01. Until 1993,

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[6] The states considered here are listed in the Appendix 1 and account for more than 95 per cent of all industrial units and the total population.

with the singular exception of 1984-85, this variation is negligible, but becomes more pronounced after 1993. The spike in 1984-85 can be explained by a major political event that had a differential impact in the northern and southern Indian states, namely, the assassination of the then Indian Prime Minister Indira Gandhi in October 1984. The assassination of the Prime Minister was followed by a series of riots in northern India that had disrupted all forms of economic activities, while the southern states remained relatively calm.

Figure 2
Convergence of Net Entry Rates Across States

FIGURE 1: Convergence across States: Rate of Entry
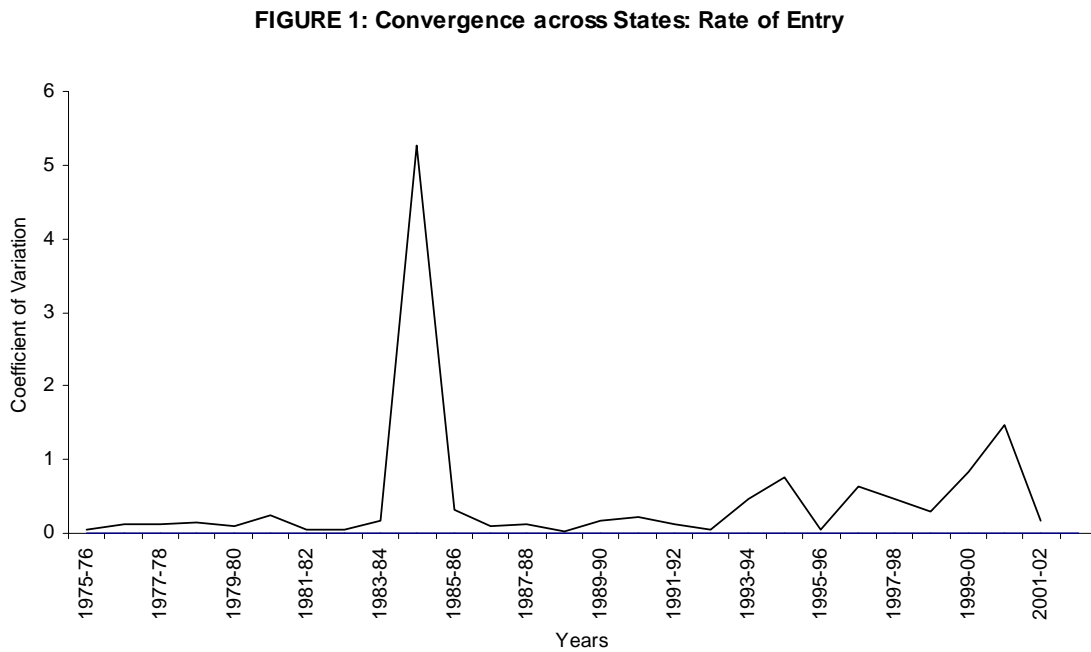
Finally, the difference in the net entry patterns between the eighties and the nineties are evident from the state-level changes in industrial density, measured as number of industrial units per million people, over these two decades (Table 3).[7] During the eighties, industrial density declined or remained the same in most of the states, Tamil Nadu (TND) and Andhra Pradesh (APR) being the two exceptions. The decline was most noticeable in

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[7] Note that the industrial density declined, by and large, during the eighties, and increased to recover lost ground during the nineties. Once again, this is consistent with the hypothesis that reforms in eighties were pro-incumbent while those in nineties were pro-entrant.

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states like Gujarat (GUJ) and Maharashtra (MAH) that enjoyed much higher per capita GDP relative to the national average, and in states like West Bengal (WBL) where politics was dominated by Left parties that were hostile to both the private sector and the Congress government at the centre. In other words, there is *prima facie* evidence about the use of licensing policies to redistribute resources across states. During the nineties, on the other hand, there was a noticeable rise in the industrial density of states like Maharashtra, Rajasthan (RAJ) and Kerala, and further consolidation of "high industrial density" status of states like Tamil Nadu, relative to other states. These are states that are known either for relatively high levels of infrastructure, or business-friendly governments, or high skilled labour within the Indian context, thereby providing some support for the hypothesis that local business environment was a key determinant of state-level net entry rates during the nineties.[8]

Table 3
Number of Factories for Every Million People

State	1980-81	1989-90	1997-98
Delhi	0.53	0.36	0.29
Punjab	0.34	0.31	0.29
Gujarat	0.33	0.27	0.29
Maharashtra	0.25	0.20	0.23
Tamil Nadu	0.21	0.25	0.33
Andhra Pradesh	0.21	0.25	0.26
Haryana	0.19	0.20	0.21
Karnataka	0.15	0.13	0.14
Kerala	0.12	0.12	0.16
West Bengal	0.12	0.08	0.09
Rajasthan	0.08	0.07	0.10
Madhya Pradesh	0.07	0.05	0.08
Uttar Pradesh	0.07	0.07	0.07
Bihar	0.06	0.04	0.03
Orissa	0.06	0.05	0.05
All India	0.15	0.13	0.15

The above analysis substantiates, in part, the two hypotheses that we have examined thus far: the Rodrik and Subramaniun hypothesis that reforms in the eighties were pro-

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[8] The industrial density in Delhi declined during both the eighties and the nineties. However, Delhi is a special case: a number of court cases led to the relocation of factories outside the state for environmental concerns.

incumbent while those in the nineties were pro-entrant (or pro-competition), and our own hypothesis that greater economic federalism in the nineties implied that location/entry of industrial units would be influenced by local or state-level conditions more in nineties than in the eighties. In the following two sections, we closely examine the experiences of two major manufacturing industries in India, namely, textiles and electrical machinery, to seek further corroboration for these hypotheses.

4. Textiles

4.1 Background

Since the early nineties, the government has been reforming the economy in two major ways: (1) institutional harmonization with the rest of the world in terms of policy, legal codes, tax systems and other regulatory arrangements, and (2) systematic moves towards market-based trade and financial flows (D'Souza, 2005). This has been especially true for the textile industry, which is India's largest employer (at 30 million workers it is the second largest employer after agriculture), largest contributor to exports (35 per cent of export earnings), and a significant part of India's GDP (more than 4 per cent) and total excise revenue (8 per cent). India's 3 per cent (USD 10 billion) share in world textile exports is, however, very small, especially in relation to China's export share of 14 per cent. The popular wisdom about this sector is that in the aftermath of the enforcement of the Multi Fibre Agreement, India will capture more than 15 per cent of the global export market, still much less than the projected 50 per cent market share of China but significant in itself. However, the WTO Agreement on Textiles and Clothing (ATC) will ensure that while India will no longer face quotas in importing countries, its producers will also face tougher import competition in the domestic market. In this section, we outline the structure of the textiles sector in India, and then proceed to compare the net entry patterns in the industry during the eighties and nineties.

India is the third largest producer of cotton with a world share of 14 per cent. The cotton and ginning sector is highly fragmented, and is marked by a poor technological level. Its historical cost advantage in the global market is being slowly eroded by low quality seeds and poor productivity. Despite of the reforms started in 1985, cotton continued to be a

highly controlled item until the end of the nineties. Such controls were exercised in its pricing, exports and use (in the handloom sector). Prior to the Textile Policy of 1985, the licensing requirements prevented this sector from exploiting the scale and scope economies that define the technology in this sector in the rest of the world. Even now, the Man-Made Fibre (MMF) and Synthetic Fibre Filament industry is a capital-intensive sector dominated by 11 firms. The total production of fabrics is about 41 billion square meters, with around 60 per cent attributable to powerlooms, 19 per cent to handlooms, 17 per cent to hosieries (yarn), and the rest to large mills.

The weaving sector, an important component of the process of fabric production, is highly fragmented with handloom units producing around 5 metres per day along, and looms in mills producing 250-300 metres per eight-hour shift. The non-mill sector in India is often termed the "decentralized" sector and, in addition to handlooms, includes powerlooms and hosiery. This decentralized sector is by far the more important part of this industry segment, accounting for more than 90 per cent of all cloth production. As is evident from Table 4, there has been a general decline in the importance of the mill sector in the nineties, and much of the ground lost by the mills has been captured by hosiery.

Table 4
Sector Wise Production of Cloth (percentages of million square metres)

Year	Mill	Handloom	Powerloom	Hosiery	Khadi, wool and silk	Total
1990-91	11.1	18.41	57.21	11.56	1.72	23330
1991-92	10.34	17.94	57.72	12.3	1.7	22978
1992-93	7.85	20.49	57.48	12.49	1.69	25475
1993-94	7.13	20.97	57.33	13.04	1.53	27898
1994-95	7.94	21.6	55.85	13.1	1.51	28606
1995-96	6.32	22.54	53.82	15.76	1.56	31958
1996-97	5.62	21.4	55.55	15.88	1.55	34838
1997-98	5.2	20.31	55.96	17.08	1.46	37441
1998-99	4.94	18.8	57.27	17.37	1.62	36127
1999-00	4.37	18.75	59.14	16.26	1.48	39208
2000-01	4.15	18.65	59.13	16.63	1.44	40256

Source: Compendium of Textile Statistics, Government of India.

The decline in the mill sector is an example of how industry has been affected by the policies of the pre-reform era. For instance, till 1985, additional looms were not allowed in the mill sector and the number of automatic looms was restricted to ensure greater employment. Further, decentralized powerlooms enjoyed fiscal concessions unavailable to the mill sector. As a consequence, India has the highest number of looms in the world but has the lowest share of shuttle-less looms. The export share of the decentralized sector is 66 per cent of all fabric exports in value terms (D'Souza, 2005). Mill sector export is concentrated mostly on grey and dried fabrics, which are high-value items.

The organizational set-up of the textile industry is also worth noting. Prior to the reforms of the nineties, the mills were simply the producers of fabric, and the marketing of the product was done through a series of intermediaries. As exports grew in volume, mostly in small tranches, these intermediaries increasingly started dealing with small powerloom production units that possessed greater flexibility since they were outside the scope of the restrictive government (industrial) regulations and labour laws. In the current policy regime, the Textile Upgradation Fund Scheme offers special incentives (interest subsidy on technology-related loans and more generous depreciation allowances) to enable modernization in the sector, and the fiscal system also has been reformed to reduce/eliminate the differential treatment of the mill and non-mill sectors. Consequently, the mills have become technologically improved, and, while the aggregate data do not reveal any change in fortune of the mills as yet, anecdotal evidence suggests that an increasing number of integrated mills are making significant comebacks in the textile sector.

The processing sector has faced policy hurdles in much the same way as the weaving sector. For example, excise polices supported the growth of hand-processors as opposed to more productive power-processors. Further, duties on imported equipment (and components) were kept high, once again having a negative impact on the productivity of this sector. Indeed, this sector continues to be the weakest link in the textile industry.

Finally, in the garment segment, exporting firms usually sub-contract production out to fabricators (sewing outfits) instead of producing the garments themselves (Khanna, 1991).[9] India sub-contracts 74 per cent of its garment exports, compared to 11 per cent in Hong Kong, 18 per cent in China, 20 per cent in Thailand and 36 per cent in Taiwan. The flexibility that subcontracting offers the exporters also results in an exclusion from the mass market for apparel exports that requires consistent quality across large volumes. The inability of the garment "manufacturers" to exploit economies of scale is also reflected in the low productivity of the Indian garment sector relative to those in the neighboring countries. While a typical Indian worker makes 6-7 shirts a day, workers in neighboring Sri Lanka and Nepal make 22-32 shirts a day (D'Souza, 2005). According to the Confederation of Indian Industry's Textile Committee, labor laws are currently the only major obstacle to establishment of large scale factory production facilities; all the other hurdles like reservations for the small scale industry, cap on foreign direct investment, etc., have been eliminated.

4.2 Entry in the Eighties and Nineties

The experience of the textile industry in India is a good example of how industries respond to policy regimes. The Textile Policy of 1985 specifically addressed the issue of efficiency as, by then, it had become eminently clear that policies that restricted plant size, the use of technology and the purchase of capital equipment were increasingly stifling this very important manufacturing sector. Table 5 reports the net growth rate of the number of textile units in the two decades.[10]

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[9] At the turn of the millennium, about half of the garment market in India was for local and traditional tailor-made dresses. The size of the non-traditional market was USD 9 billion, 60 per cent of which was for exports. The remaining 30 per cent was sold mostly in urban India and this segment of the domestic textile market has been growing at more than 5 per cent per year in the nineties. the size of the ready-made apparel market continues to be small, and close to 70 per cent of this market is comprised of branded products.

[10] Recall that we had said in the beginning that the changed classification after 1997-98 in the 3-digit industries restricts us to 1997-98 as the end year for our analysis.

Table 5
Net Entry Rate in the Textiles Sector

Year	All States	Net Entry Rate	Year	All States	Net Entry Rate
1980-81	5073		1991-92	5779	0.17
1981-82	5283	4.14	1992-93	6546	13.27
1982-83	4398	-16.75	1993-94	7937	21.25
1983-84	4561	3.71	1994-95	8349	5.19
1984-85	4971	8.99	1995-96	9216	10.38
1985-86	4858	-2.27	1996-97	9250	0.37
1986-87	4742	-2.39	1997-98	8673	-6.24
1987-88	4984	5.10			
1988-89	5179	3.91			
1989-90	5515	6.49			
1990-91	5769	4.61			

The first thing noticeable in Table 5 is the huge drop in the number of factories in 1982-83, a consequence of the major industrial action in this sector mentioned earlier in the paper. Overall, the net entry rate for the textiles industry was 1.2 per cent during the eighties, and more than 6 per cent during the nineties. If 1982-83 is treated as an outlier, and left out of the sample, then the average rate of net entry in the eighties increases sharply to 3.5 per cent, but this is still well below the average net entry rate observed in the nineties. Once again, this is consistent with the hypothesis that the reforms of the nineties were relatively more pro-entrant (or pro-competition).

The Textiles Policy of 1985 had the following major thrust areas (Jain, 1988): incentive for modernization, flexibility of fibre-use (i.e., economies of scope), removal of unnecessary controls and regulations on existing units and, and closure of unviable mills. Further, the government announced that while licenses were still required to start a new plant or expand capacity in most cases, more licenses would be sanctioned. Interestingly, the government felt that capacities of existing synthetic fibres plants should be permitted to increase to certain "efficient" levels without recourse to the usual government licensing procedures, and these government-determined efficient levels were to be the minimum capacity at which new entrants were allowed entry. As in the case of broad-banding, this permission to expand capacity to prescribed minimum efficient levels was potentially more beneficial to existing units; the requirement of a minimum capacity for

new entrants could impose capital-related entry barriers. Indeed, while the state-owned development financial institutions were instructed to disburse soft loans to existing industrial units to facilitate increase in their capacity to "optimal" levels, no such directives existed for new entrants.

The pro-incumbent leaning of the so-called "efficient industry" policy is also evident in the withdrawal of de-licensing in the spinning sector. In 1975, cotton spinning up to a capacity of 50,000 spindles had been de-licensed and firms could freely enter this size segment of the sector. In 1985, the government decided that this sector had grown more than was "desirable" and, therefore, licences were reintroduced such that new plants could come up only in government designated geographical and economic areas.

The post-1991 reforms opened up the textile sector to potential entrants in much the same way as it did for all other sectors. For the textile sector, this meant more than simply the abolition of licensing. In this sector, a number of activities were reserved for the small scale segment of the industry, and mills were not allowed to increase their capacity. These size-related restrictions were mostly eliminated in the nineties. For example, the mills were allowed to make new investments aimed at capacity expansion, and new mills were allowed to be set up. Also, the same fiscal incentives and disincentives were made applicable to all size segments of the textile sector, thereby evening the playing field for the large mills for the first time in decades. In addition, restrictions on foreign investment, foreign technology and foreign equipment were removed. It is easy to see why net entry in the nineties in the textile sector was much higher that that in the eighties.

Table 6 reports the ownership of textile factories in 1989-90 and 2000-01. In 1989-90, all industrial units whose historical value of plant and machinery was below INR 10 million were officially defined to be small. By 2000-01, the definition of small had been changed such that small units were those whose historical plant and machinery value was less than INR 30 million. Given that labor laws, among others, still favor small production units, it is not surprising that even in 2000-01 about 90 per cent of the industrial units in the textiles sector were small. However, it is also instructive that between 1989-90 and 2000-

01 the proportion of large units had nearly doubled, despite the reclassification of "small" units that should have deemed a greater proportion of the production units to be small. As discussed earlier, this was a consequence of the dismantling of small and inefficient powerlooms and integration of production processes to increase the scale of production. This is also consistent with the sharp reduction in the number of both small and large production units owned by "rest," this residual ownership category comprising primarily of loss-making units that were taken over by the central government to avoid closure.

Table 6
Distribution of Textile Factories by Ownership and Size Class

	Small			
	1989-90		**2000-01**	
Ownership	**Units**	**Percentage**	**Units**	**Percentage**
Local/State government	169	1.35	117	1.09
Fully private	11863	94.77	10417	97.14
Rest	486	3.88	189	1.77
All	12518	100.00	10723	100.00
	Large			
	1989-90		**2000-01**	
Ownership	**Units**	**Percentage**	**Units**	**Percentage**
Local/State government	66	4.97	51	2.17
Fully private	1018	76.66	2143	90.97
Rest	244	18.37	162	6.86
All	1328	100.00	2356	100.00

The fact that the nineties encouraged competition through entry becomes is even more evident from the data reported in Table 7. The data indicate that between 1989-90 and 2000-01 there was a increase in the entry of both small and large production units, but that the increase was much more significant for large units than for small units. It is equally instructive that during the nineties there was a sharp decrease in the number of small units that were in existence since the fifties. This decline in the number of small units can be on account of either vertical or horizontal integration across production units to reap economies of scale, or exit of small and unviable production units in a competitive environment.

Table 7
Distribution of Textile Factories by Age and Size Class

	Small			
	1989-90		**2000-01**	
Age in Years	**Units**	**Percentage**	**Units**	**Percentage**
0-10	5556	44.47	4903	46.02
10-20	3817	30.55	3163	29.68
20-30	1533	12.27	1425	13.38
30-40	785	6.28	722	6.78
40+	804	6.43	441	4.14
	Large			
	1989-90		**2000-01**	
Age in Years	**Units**	**Percentage**	**Units**	**Percentage**
0-10	468	35.30	1041	44.31
10-20	242	18.22	667	28.38
20-30	196	14.79	224	9.54
30-40	121	9.13	128	5.46
40+	299	22.56	290	12.32

In Tables 8 and 9 we report the average book value of loans outstanding of textile plants, by size and ownership, and by size and age, respectively. In 1989-90, an *average private* factory had a loan exposure that was only 80.52 per cent of that of the *average* textile unit, and the small private sector units' loan proportion actually fell between 1989-90 and 2000-01. Indeed, in both years, the non-private sector had larger outstanding book values of loans compared to the private sector. However, the large private sector units were relatively better off than the small private sector units. The average loan exposure of large private units increased significantly between 1989-90 and 2000-01, such that by the latter year the book value of loans of the average large private unit was a respectable 89.47 per cent of the book value of loans of the average unit.

Table 8
Loans per Textile Factory by Ownership and Size Class (INR million)

	Small					
	1989-90			**2000-01**		
Ownership	**Loan**	**Percentage**	**SE**	**Loan**	**Percentage**	**SE**
Local/State government	10.20	1025.31	6.89	40.37	573.66	16.90
Fully private	0.80	80.52	0.03	5.39	76.61	0.40
Rest	2.48	249.30	0.85	96.86	1376.31	24.80
All	1.00	100.00	0.10	7.04	100.00	0.53

	Large					
	1989-90			**2000-01**		
Ownership	**Loan**	**Percentage**	**SE**	**Loan**	**Percentage**	**SE**
Local/State government	79.26	160.55	12.90	201.40	130.02	49.80
Fully private	36.10	73.12	4.84	138.60	89.48	14.90
Rest	95.99	194.44	15.90	313.20	202.19	74.50
All	49.37	100.00	4.83	154.90	100.00	14.90

From Table 9, it is evident that between the two points in time there had been a significant increase in the book value of outstanding loans of both small and large new units. The increase was 524 per cent for small units and 456 per cent for large units. It is evident that the reforms of the nineties had included policy initiatives that facilitated the access of new production units in the textile industry to credit.[11] Once again, this evidence is consistent with the prior/hypothesis that the reforms of the nineties were pro-entrant.

Table 9
Loans per Textile Factory by Age and Size Class (INR million)

	Small					
	1989-90			**2000-01**		
Age in Years	**Loan**	**Percentage**	**SE**	**Loan**	**Percentage**	**SE**
0-10	0.90	90.36	0.04	5.62	79.91	0.45
10-20	0.82	82.30	0.07	5.30	75.38	0.59
20-30	0.67	67.37	0.07	6.07	86.32	1.05
30-40	0.91	91.81	0.17	5.30	75.32	1.11
40+	3.20	321.22	1.56	40.29	572.50	11.20
All	1.00	100.00	0.10	7.04	100.00	0.53

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[11] Banerjee and Duflo (2002) provide some evidence that even in the nineties public sector banks in India, that together occupy about 80 per cent of the credit space, may have actually followed credit disbursal policy that were pro-incumbent, but their evidence is limited in nature, and very difficult to generalize.

		Large				
		1989-90			**2000-01**	
Age in Years	**Loan**	**Percentage**	**SE**	**Loan**	**Percentage**	**SE**
0-10	28.46	57.65	2.95	158.40	102.26	24.80
10-20	39.36	79.73	15.40	83.32	53.79	15.90
20-30	49.32	99.91	17.40	114.80	74.11	20.10
30-40	31.58	63.96	6.45	188.40	121.63	83.70
40+	102.10	206.81	12.20	307.00	198.19	54.90
All	49.37	100.00	4.83	154.90	100.00	14.90

4.3 Regional Variations

At first sight, the distributions of textile factories across the states during the eighties and the nineties runs counter to our hypothesis that during the nineties economic federalism and the consequent competition among states to attract industrial units led to changes in the pattern of location of these units relative to that in the eighties. As evident from Table 10, the four states that accounted for more than 75 per cent of textile factories in the beginning of the eighties, continued to account for about 70 per cent of these factories towards the end of the nineties. However, of these four states, Tamil Nadu (TND) gained significantly, at the expense of Maharashtra (MAH), Gujarat (GUJ) and Punjab (PUN). Indeed, the density of textile units in Tamil Nadu, which remained roughly unchanged during the eighties, more than doubled between 1989-90 and 1997-98. This is consistent with Tamil Nadu's success in attracting new firms/plants in industries like machine tools, auto ancillaries, software and financial services. This is in sharp contrast with the steep decline in the share of (and density in) states like West Bengal (WBL) and Bihar (BIH) that are known for labor militancy and misgovernance, respectively.

Table 10
Distribution and Density of Textile Factories across States

	Distribution (Percentage)			**Density (Per Million People)**		
States	**1980-81**	**1989-90**	**1997-98**	**1980-81**	**1989-90**	**1997-98**
Tamil Nadu	20.64	27.33	36.64	0.0217	0.0275	0.0528
Maharashtra	27.08	23.43	17.03	0.0588	0.0423	0.0449
Gujarat	13.33	10.84	8.69	0.0469	0.0330	0.0300
Punjab	15.38	11.80	7.94	0.0221	0.0169	0.0163
Karnataka	4.38	3.72	6.71	0.0200	0.0148	0.0162
Delhi	7.06	6.82	6.30	0.0060	0.0047	0.0115
Rajasthan	1.95	3.99	5.41	0.0065	0.0048	0.0092

Uttar Pradesh	1.85	3.64	3.94	0.0029	0.0052	0.0091
Andhra Pradesh	1.28	2.30	2.13	0.0012	0.0020	0.0025
Haryana	1.64	1.38	2.03	0.0009	0.0015	0.0022
Madhya Pradesh	1.56	1.98	1.20	0.0012	0.0015	0.0021
West Bengal	2.54	1.52	0.92	0.0015	0.0017	0.0019
Kerala	0.59	0.76	0.76	0.0024	0.0013	0.0010
Orissa	0.26	0.36	0.23	0.0005	0.0006	0.0006
Bihar	0.47	0.13	0.06	0.0003	0.0001	0.0001
All India	100	100	100	0.0079	0.0071	0.0099

In Table 11 we report the average number of workers per unit in the different states. This data not only reflects the size of the average factory in a state, but also, to an extent, the technology employed, the organization of the units, and perhaps the local business environment. In particular, it also gives us an idea about the extent to which textile factories in different states were able to respond to the increased competition that called for lower labor cost and use of cutting edge technology to increase productivity. It is interesting to note that the four states that accounted for 70-75 per cent of the textile factories during the eighties and the nineties were much smaller than their counterparts in other states, when size is measured in terms of employment. Given the nature of labor laws in India, the most plausible implication of this observation is that these four states were more liberal about allowing textile firms to set up capital and technology intensive plants, thereby emphasizing production and cost efficiency over employment and social justice. This interpretation of the data is consistent with the observation that the employment per factory was the highest (and percentage decline in employment over time the lowest) in states like West Bengal (WBL), Orissa (ORI) and Kerala (KER) where successive governments have pursued policies that were labor-friendly and emphasized social justice over industrial efficiency.

Table 11
Workers per Textile Factory

State	1980-81	1989-90	1997-98
Orissa	522	607	494
Bihar	140	360	366
Madhya Pradesh	629	354	351
West Bengal	446	417	311
Kerala	407	272	198
Karnataka	158	198	172
Andhra Pradesh	302	199	167
Uttar Pradesh	666	315	154
Haryana	188	146	119
Rajasthan	257	134	118
Gujarat	289	212	102
Maharashtra	147	122	91
Tamil Nadu	128	111	90
Punjab	23	61	58
Delhi	69	49	32
All India	170	141	104

5. Electrical Machinery

5.1 Background

The electrical machinery sector is a part of the overall machinery, or capital goods sector. Successive industrial policies since the fifties, which emphasized the rise of heavy industries and import substitution as policy objectives, envisaged the growth of a strong electrical machinery sector, along with many others. Hence, the experience of the electrical machinery sector long reflected the experience of the broader manufacturing sector in India. In 1982, for example, the massive industrial action affected it in much the same way as the rest of the manufacturing sector. Similarly, in 1985, like most other sectors, electrical machinery too was covered by the broad banding scheme. This sector also benefited from the eighties' policy focus on the capital and technology of incumbent industrial units. A notable initiative in this respect was the launching of the Technology Up gradation Fund for five groups of capital goods industries in August of 1987.

The nineties were marked primarily for the dismantling of the high tariff walls that were used to protect this industry from import competition since the fifties. The period from

1991-92 to 1995-96 witnessed a sharp 70 per cent decline in the tariffs on capital goods.[12] After incurring a steep adjustment cost in the initial years, this sector in fact responded very positively and successfully retooled, restructured and reengineered and clocked very healthy growth rates in the years 1995-96 and 1996-97. After dismal growth during the first three years of reforms, the capital goods sector staged a smart recovery and recorded a 24.8 percent growth in 1995-96, and followed it up with 17.9 percent growth during the following year. Indeed, as noted by the Confederation of the Indian Industry, the highest rates of growth of this sector coincided with the deepest cuts in import tariff, suggesting that the forces of competition and the access to foreign technology benefited the sector significantly.

A major tariff irritant for this sector has been the high rates of import tariff on raw materials, e.g., duties on imported steel. While custom duty on capital goods was brought to the WTO-bound rate of 25 per cent, there was no corresponding reduction on the duties on raw materials required for manufacturing of capital goods. During much of the nineties, this created an anomalous situation where the custom duty on inputs was higher than that on the final product. For the capital goods sector, in general, this anomaly was finally rectified in 1999-00, and the capital goods manufacturers were allowed to import steel at 25 per cent duty. However, electrical machinery manufacturers continue to pay 35 per cent duty on copper imports, the cost of copper accounting for approximately 35-40 per cent of the cost of electrical machinery.

In other words, the electrical machinery sector experienced something akin to shock therapy during the nineties, and this makes the experience of this sector important in the context of capacity expansion by existing units and entry of new production units. In the following section, we take a closer look at the net entry rate and related issues for this sector during the eighties and the nineties.

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[12] Between 1996-97 and 2001-02, the tariffs on capital goods remained roughly the same. It dropped to 20 per cent in 1997-98, but was back at the earlier level of 25 per cent in 1999-2000. The tariff rate continues to be the same.

5.2 Entry Rates in Electrical Machinery

We do the same analysis of the electrical machinery sector as we did for the textile sector. It is evident from Table 12 that in the early eighties this industry experienced the same industrial action induced negative entry rate as the textile industry. . The net entry rates during the rest of the years reflect the experience of the capital goods industry in India: growth and hence significant (positive) net entry in much of the eighties and the nineties, and a slow down in growth and consequently negative net entry during the late nineties. The average entry rate in the eighties, in spite of the events of 1982-83, was 4.3 per cent, compared to a 2.4 per cent in the nineties. This is clearly different from in the experience of the textiles industry, for which these rates were roughly the same for the two decades. This raises the question as to whether the decline in the net entry rate in the nineties reflects greater import competition or a preference for larger (and, consequently, fewer) production units.

Table 12
Net Entry Rate in the Electrical Machinery Sector

Year	All States	Net Entry Rate	Year	All States	Net Entry Rate
1980-81	3406		1991-92	4968	-0.54
1981-82	4229	24.16	1992-93	5262	5.92
1982-83	3641	-13.90	1993-94	5260	-0.04
1983-84	3661	0.55	1994-95	5501	4.58
1984-85	3831	4.64	1995-96	5659	2.87
1985-86	4066	6.13	1996-97	6088	7.58
1986-87	3888	-4.38	1997-98	5740	-5.72
1987-88	4241	9.08			
1988-89	4496	6.01			
1989-90	4790	6.54			
1990-91	4995	4.28			

Table 13 reports the size and ownership distributions of production units for the electrical machinery industry, and these distributions changed over the two decades. The first thing to note is the sharp decline in the total number of small and large units, though the decline in small is much more than that among the large units. This is also consistent with the decline in the share of the young (i.e., 0-10 years) units in the age distribution of both small and large firms between 1989-90 and 2000-01 (Table 14). This suggests that the

post- 1996-97 decline in the number of industrial units in the electrical machinery sector was reinforced (even further accelerated) in the following years, and confirms our earlier point that the capital goods sector, as a whole, faced a serious challenge in the last few years of the last millennium. However, the silver lining is that in terms of percentage change the sharpest decline was experienced in the number of state-owned units (72 per cent for small and 88 per cent for large); the decline in the number of privately owned units was not as significant for the small scale units (24 per cent), and marginal for the large scale units. A possible interpretation of these trends is that the incentives to entry were already high in the eighties, when policy initiatives encouraged production of capital goods, such that most of the entry had taken place in the eighties itself. In the nineties, on the other hand, the pro-competition stance of the policies encouraged the closure of unprofitable units, and, to that extent, it can hardly be surprising that the closures were most evident among the state-owned units.

Table 13
Distribution of Electrical Machinery Factories by Ownership and Size Class

	Small			
	1989-90		2000-01	
Ownership	**Units**	**Percentage**	**Units**	**Percentage**
Local/State government	43	1.01	12	0.38
Fully private	4121	96.54	3117	98.94
Rest	104	2.45	21	0.68
All	4269	100.00	3150	100.00

	Large			
	1989-90		2000-01	
Ownership	**Units**	**Percentage**	**Units**	**Percentage**
Local/State government	25	5.13	3	0.75
Fully private	377.3	77.43	374	93.18
Rest	85	17.44	24	6.07
All	487	100.00	402	100.00

Table 14
Distribution of Electrical Machinery Factories by Age and Size Class

| | Small | | | |
| | 1989-90 | | 2000-01 | |
Age in Years	Units	Percentage	Units	Percentage
0-10	1967	46.14	975	30.96
10-20	1421	33.33	1230	39.06
20-30	592	13.90	606	19.25
30-40	176	4.12	216	6.85
40+	106	2.50	122	3.89

| | Large | | | |
| | 1989-90 | | 2000-01 | |
Age in Years	Units	Percentage	Units	Percentage
0-10	233	48.09	111	28.26
10-20	97	20.11	118	29.95
20-30	82	16.93	80	20.32
30-40	34	7.02	34	8.65
40+	38	7.85	50	12.82

The vision of creative destruction created by Tables 13 and 14, however, has to be tempered in light of the information we have on the availability of loans. The size-ownership and size-age distributions of loans are reported in Tables 15 and 16. It is evident that state-owned units are likely to have much greater access to loans than their private sector counterparts. While an average private sector unit receives between 83 and 97 per cent of the loan available to the average production unit, the corresponding figure for a state-owned unit is between 162 per cent and 667 per cent, the smaller units being the main beneficiaries. Given the overwhelming dominance of the state-owned banks in the credit market, this leads to the question as to whether, despite extensive banking sector reforms in the nineties, moral suasion was used to sustain production in state-owned units in the electrical machinery sector as long as possible.

The data also highlight that availability of credit might be a binding constraint facing relatively young large units. While very new small units (i.e., 0-10 years) have access to loans at par with the average small production unit, a very new large unit receives only 66 per cent of the loans available to the average large unit. This is consistent with recent research that indicates that, despite the greater ability of the Indian banks to decide their

portfolio choice in the nineties and beyond, an average domestic bank remains risk averse (Bhaumik and Piesse, 2005), thereby limiting its willingness to make large loans to relatively new production units.[13]

Table 15
Loans per Electrical Machinery Factory by Ownership and Size Class (INR million)

	Small					
	1989-90			**2000-01**		
Ownership	**Loan**	**Percentage**	**SE**	**Loan**	**Percentage**	**SE**
Local/State government	10.03	642.03	2.48	35.01	667.19	8.12
Fully private	1.44	92.28	0.08	5.09	97.02	0.55
Rest	2.86	182.99	0.73	13.03	248.30	7.53
All	1.56	100.00	0.08	5.25	100.00	0.55

	Large					
	1989-90			**2000-01**		
Ownership	**Loan**	**Percentage**	**SE**	**Loan**	**Percentage**	**SE**
Local/State government	63.63	81.40	22.50	291.10	162.44	151.00
Fully private	55.13	70.53	17.50	149.30	83.31	25.40
Rest	174.40	223.11	59.30	670.00	373.88	215.00
All	78.17	100.00	17.50	179.20	100.00	28.90

Table 16
Loans per Electrical Machinery Factory by Age and Size Class (INR million)

	Small					
	1989-90			**2000-01**		
Age in Years	**Loan**	**Percentage**	**SE**	**Loan**	**Percentage**	**SE**
0-10	1.85	118.22	0.14	6.28	119.76	1.24
10-20	1.16	73.95	0.10	4.18	79.62	0.71
20-30	1.23	78.77	0.18	4.48	85.42	1.08
30-40	2.43	155.27	0.85	7.46	142.19	1.87
40+	1.60	102.29	0.44	9.12	173.79	3.95
All	1.56	100.00	0.08	5.25	100.00	0.55

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[13] Note that the production units in the 10-30 year age category were clearly at a disadvantage over much older firms. This is consistent with recent research that has shown that bank loans are skewed in favor of firms that have long-term relationship with the banks, irrespective of their growth potential (Banerjee and Duflo, 2002).

| Age in Years | Large | | | | | |
| | 1989-90 | | | 2000-01 | | |
	Loan	Percentage	SE	Loan	Percentage	SE
0-10	55.24	70.67	20.40	119.30	66.57	29.60
10-20	47.54	60.82	15.60	180.90	100.95	49.50
20-30	108.10	138.29	32.50	106.30	59.32	33.40
30-40	65.90	84.31	27.50	290.60	162.17	95.80
40+	276.40	353.60	183.00	402.90	224.83	165.00
All	78.17	100.00	17.50	179.20	100.00	28.90

5.3 Regional Variations

Tables 17 and 18 report the state-wise variations in the location and size of the electrical machinery production units. Note that Maharashtra (MAH), Gujarat (GUJ) and Tamil Nadu (TND), states that (aside from the greater-Delhi area) constitute the industrial hub of India, have accounted for over 50 per cent of the units since the early eighties. At the very least, this is consistent with the economic geography argument that new industries or firms prefer to be located in areas that are already industrialized, in order to benefit from the existence of appropriate infrastructure, concentration of (semi) skilled labor, and supply chains. The only aberration to this view is Uttar Pradesh (UPR), a state with chronic economic problems and low levels of governance, increasing its share by about 66 per cent between 1980-81 and 1989-90, and eventually accounting for over 10 per cent of the production units in this sector. Part of this can be explained by the fact that some of the industrialization in the greater Delhi region has spilled over into Haryana and Uttar Pradesh. Further, as indicated in Table 17, the *density* of industrial units in Uttar Pradesh, one of the largest (and certainly the most populous) states in India, is less than half the national average (ALL), while the density in Maharashtra, Gujarat and Tamil Nadu are nearly double the national average or higher.

Table 17
Distribution and Density of Textile Factories across States

States	Distribution (Percentage)			Density (Per Million People)		
	1980-81	1989-90	1997-98	1980-81	1989-90	1997-98
Maharashtra	24.88	23.19	26.69	0.0042	0.0047	0.0062
Tamil Nadu	14.51	12.38	12.87	0.0031	0.0035	0.0045
Gujarat	14.89	12.90	12.06	0.0046	0.0049	0.0054
Uttar Pradesh	6.44	10.03	10.01	0.0006	0.0011	0.0014
Karnataka	8.17	9.97	9.06	0.0023	0.0035	0.0038
West Bengal	9.41	5.28	5.62	0.0018	0.0012	0.0015
Andhra Pradesh	3.55	7.36	5.10	0.0007	0.0018	0.0015
Madhya Pradesh	2.21	3.26	4.67	0.0004	0.0008	0.0017
Delhi	5.19	5.73	4.58	0.0089	0.0099	0.0079
Kerala	1.83	1.69	2.29	0.0007	0.0009	0.0015
Rajasthan	1.83	1.56	2.05	0.0006	0.0006	0.0008
Punjab	4.03	3.00	1.91	0.0025	0.0023	0.0017
Haryana	1.63	1.95	1.67	0.0013	0.0019	0.0018
Orissa	0.29	0.72	1.00	0.0001	0.0004	0.0006
Bihar	1.15	0.98	0.43	0.0002	0.0002	0.0001
All India	100	100	100	0.0016	0.0020	0.0024

Table 18 indicates that the larger production units, as measured by employment, were located largely in states like Madhya Pradesh (MPR), Andhra Pradesh (APR) and Uttar Pradesh. Coincidentally, these are historically some of the poorest states in India, and hence a plausible explanation is that the larger than average employment in the units located in these states manifest an effort by governments to generate employment. The lower than average employment in the units located in states like Maharashtra, Gujarat and Tamil Nadu, on the other hand, raises the possibility of higher labor productivity in these states necessitating fewer employees per unit. However, the data reported in Table 18 do not offer any clear pattern that can support either of these two explanations. It is obvious though that in all states there was a decline in the average size of an electrical machinery production unit, and this decline was much more significant during the nineties than during the eighties. This is further attestation of the view that this sector was facing mounting challenges during the nineties.

Table 18
Workers per Electrical Machinery Factory

State	1980-81	1989-90	1997-98
Madhya Pradesh	389	200	118
Andhra Pradesh	142	64	85
Uttar Pradesh	140	48	82
Karnataka	109	84	76
Punjab	26	37	67
Haryana	103	84	67
Kerala	110	97	42
Maharashtra	76	51	41
Bihar	65	62	40
Tamil Nadu	53	44	39
Gujarat	48	39	31
West Bengal	64	46	29
Delhi	25	22	28
Orissa	45	20	23
Rajasthan	26	20	16
All India	79	56	52

6. The Big Picture

In this section, we aim to substantiate using some rigor a key hypothesis of this paper, namely, that the variation in the net entry rates across states was greater in the nineties than in the eighties, on account of the greater economic federalism of the latter decade. Since we do not have information about the *ex ante* decision-making process of the firms' management, we can, at best, infer state-level differences in business environment, that presumably drives the choice of location in a liberalized era, from the *ex post* differences in the performance of production units across states. Our broad empirical strategy, therefore, is to check whether location had greater influence on our measures of firm performance in the nineties than in the eighties, after controlling for appropriate plant-level factors, and whether there is a significant variation in the impact of location on performance.

Thus far we have discussed net entry patterns across 15 major states in India. In this section, however, we shall look at only 14 of these states. We shall leave Delhi out of our sample, partly because there has been a concerted movement by the citizens and the

courts to relocate factories outside of city limits, on environmental grounds, and partly because, on account of overlaps of interests between Delhi's state government and the national government that is seated in Delhi, the former does not enjoy the same powers as other state governments.

Our measure of performance is the value of output per worker. In Columns 1, 3 and 5 of Table 19, we report the regression estimates for the model explaining cross-sectional variation in labor productivity in 1989-90, for textile units, electrical machinery units, and all other units. Stylized literature suggests that it depends on factors like the size of operations, type of technology (i.e., capital intensiveness), and age of the plant and machinery. In addition to these, we also include in the specification a dummy variable that takes the value 1 if a plant is *de novo*, i.e., post-1984 for the 1989-90 sample. The adjusted R-square values of 0.45 for textile units and 0.59 for electrical machinery units suggest that our empirical specification fits the data reasonably well.

For all the three sub-samples, we carried out the following procedure: First, we estimated a regression model that included all the plant-level variables, as well as dummy variables for 13 states. Andhra Pradesh (APR) was the omitted category/state. The first set of estimates told us whether or not an included state is no different from Andhra Pradesh, or whether it is better than or worse than Andhra in terms of its impact of plant-level labor productivity. Next, we re-estimated the model using samples from groups of states that are not statistically different from each other, to ensure that these states are indeed similar such that within these samples of similar states the state dummy variables did not have any significant impact on plant-level labor productivity. In the final analysis, the groups were as follows: (1) Andhra Pradesh (APR), Kerala (KER), Madhya Pradesh (MPR), Orissa (ORI) and Uttar Pradesh (UPR); (2) Bihar (BIH), Karnataka (KAR) and (surprisingly!) Tamil Nadu (TND); and (3) Gujarat (GUJ) and Maharashtra (MAH) Haryana (HAR), Punjab (PUN), Rajasthan (RAJ) and West Bengal (WBL) could not be clubbed together with other states.

Table 19
Impact of Location on Plant Performance

Dependent variable: Labor productivity

	Textiles		Electrical Machinery		Others					
					All Size		Small		Large	
	1989-90	2000-01	1989-90	2000-01	1989-90	2000-01	1989-90	2000-01	1989-90	2000-01
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
AGE	- 0.17 ***	- 0.14 **	- 0.16 ***	- 0.11 *	- 0.08 ***	- 0.01	- 0.01	0.07 ***	- 0.15 ***	- 0.22 ***
	(0.03)	(0.05)	(0.03)	(0.07)	(0.01)	(0.01)	((0.01)	(0.01)	(0.03)	(0.03)
KLRATIO	0.09 ***	0.14 ***	0.11 ***	0.14 ***	0.16 ***	0.23 ***	0.21 ***	0.30 ***	0.29 ***	0.11 ***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
SALES	0.42 ***	0.42 ***	0.44 ***	0.39 ***	0.46 ***	0.39 ***	0.57 ***	0.47 ***	0.46 ***	0.49 ***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
DENOVO	- 0.16 **	0.06	- 0.12 *	- 0.03	- 0.07 ***	0.01	- 0.03 *	0.03	- 0.15 **	- 0.06
	(0.06)	(0.08)	(0.06)	(0.11)	(0.02)	(0.02)	(0.02)	(0.02)	(0.06)	(0.05)
State Group 1	4.31 ***	4.39 ***	4.27 ***	5.53 ***	3.06 ***	4.19 ***	0.94 ***	2.09 ***	1.08 ***	4.05 ***
	(0.21)	(0.32)	(0.21)	(0.38)	(0.06)	(0.08)	(0.07)	(0.11)	(0.34)	(0.25)
State Group 2	0.02	0.16 **	0.04	0.08	- 0.07 ***	- 0.23 ***	- 0.06 ***	- 0.27 ***	0.08 *	- 0.08 *
	(0.04)	(0.06)	(0.05)	(0.09)	(0.01)	(0.02)	(0.01)	(0.02)	(0.04)	(0.04)
State Group 3	0.38 ***	0.03	0.25 ***	0.25 ***	0.28 ***	0.04 **	0.27 ***	0.05 ***	0.29 ***	- 0.06 *
	(0.06)	(0.08)	(0.04)	(0.08)	(0.01)	(0.02)	(0.01)	(0.02)	(0.03)	(0.03)
State Group 4	0.33 ***	0.42 ***	0.13	0.18	0.22 ***	0.20 ***	0.21 ***	0.18 ***	0.04	0.01
	(0.09)	(0.11)	(0.11)	(0.12)	(0.02)	(0.03)	(0.02)	(0.03)	(0.06)	(0.06)
State Group 5	0.73 ***	0.69 ***	0.06	0.15	0.44 ***	0.27 ***	0.39 ***	0.24 ***	0.10	- 0.05
	(0.06)	(0.09)	(0.08)	(0.17)	(0.02)	(0.02)	(0.02)	(0.02)	(0.07)	(0.07)
State Group 6	0.44 ***	0.42 ***	0.32 ***	0.29 *	0.25 ***	0.23 ***	0.23 ***	0.17 ***	- 0.10	0.05
	(0.07)	(0.12)	(0.10)	(0.17)	(0.03)	(0.03)	(0.03)	(0.03)	(0.11)	(0.09)
State Group 7	0.08	- 0.21	0.14 *	0.17	0.25 ***	0.08 **	0.28 ***	0.13 ***	- 0.10	- 0.07
	(0.12)	(0.18)	(0.07)	(0.12)	(0.02)	(0.03)	(0.02)	(0.03)	(0.08)	(0.09)
Industry	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-statistics	185.16	108.36	211.62	64.10	2601.03	1793.63	2751.94	1339.39	180.11	234.87
(Prob > F-stat)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Adjusted R-sq	0.45	0.49	0.59	0.60	0.61	0.59	0.64	0.62	0.55	0.58
No. of obs.	3482	1989	1977	709	26097	16564	23221	13228	2876	3336

Variable descriptions: AGE   Log of age in years
                        KLRATIO   Log of capital-labor ratio
                        SALES   Log of sales
                        DENOVO   Dummy=1 for 1989-90 regression if plant was
established after 1984
                                               Dummy=1 for 2000-01 regression if plant was
established after 1991
                        State Group 1   Kerala, Madhya Pradesh, Orissa, Uttar Pradesh
                        State Group 2   Bihar, Karnataka, Tamil Nadu
                        State Group 3   Gujarat, Maharashtra
                        State Group 4   Haryana
                        State Group 5   Punjab
                        State Group 6   Rajasthan
                        State Group 7   West Bengal
                        Industry   Controls for 2-digit industries

Note: The values within parentheses are standard errors.
                        ***, ** and * imply statistical significance at 1%, 5% and 10 levels,
respectively.

These groupings along with the standalone states are not surprising. For example, the first group
comprises of states (APR, KER, MPR, ORI and UPR) that are not very developed industrially.
Similarly, Group 3 comprises of Gujarat and Maharashtra, two of the most industrially
developed states. Among states that cannot be clubbed together with others, Rajasthan is unique
because it has been able to rise above its traditional place alongside economic weaklings like
Bihar and Uttar Pradesh, and has experienced remarkable growth during the nineties. At the
other end of the spectrum, we have West Bengal that has had the same (communist) government
since 1977, leading to a significant alteration in the balance between rural and urban
development, and, hence between the agricultural and industrial sectors. Indeed the only
challenge is reconciling the regression-induced "similarity" of among the states belonging to the
second group: Bihar is an economic basket case, while Tamil Nadu is an economic powerhouse
where a large number of traditional as well as sophisticated industries are located.

The control variables in the regressions, by and large, have the expected signs: Labor
productivity increases with capital-intensiveness of the plant and size as measured by sales.

Older plants that presumably have machinery of older vintage, on average, have lower productivity. The only anomaly is the relatively *lower* labor productivity of the *de novo* plants, raising questions as to whether the *de novo* dummy variable is effectively capturing the learning cost of new firms. This is likely to be especially true if the supply of (semi) skilled labor appropriate for the electrical machinery sector is relatively inelastic in the short run, and is organizationally embedded on account of factors like limited mobility across regions, such that learning-by-doing is the only way in which laborers at most *de novo* units can enhance their productivity. A literature that has developed largely in the context of multinational enterprises operating in emerging markets suggests that such learning cost can be fairly significant.

In Columns 2, 4 and 6 of the table, we report the coefficient estimates for the same econometric models and sub-samples, but for 2000-01. To begin with, note that there was no change in the grouping of the states between 1989-90 and 2000-01, indicating that there is path dependence in the evolution of governance and business environment at the state level. It should also be noted that, in keeping with our prior, at least for electrical machinery, impact of location on labor productivity is significantly reduced in 2000-01 as compared with 1989-90. The most noticeable difference between the coefficient estimates for the aforementioned two years is that in 1989-90 *de novo* units had lower labor productivity than the average unit, for all three sub-sample, while in 2000-01 the *de novo* production units in the textile and "other" sectors were *more* productive, and there was no significant difference in the labor productivity of the *de novo* and average units in the electrical machinery sector. This is consistent with both the literature on the performance of *de novo* firms (e.g., Bilsen and Konings, 1998) and the hypothesis that the reforms of the eighties were pro-incumbent while those of the nineties were pro-competition (i.e., pro-entrant).

In Columns 7-8 and 9-10 we report the regression for small and large factories, respectively, in 1989-90 and 2000-01. To begin with, the choice of an individual sector would reduce the degrees of freedom substantially. Further, while there was a significant increase in the extent of vertical integration among textile units during the eighties and nineties, the electrical machinery sector was experiencing rapid restructuring. In other words, choice of either of these individual sectors

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may have yielded unusual results. We, therefore, report the coefficient estimates for the entire sample of production units. We argue that labor productivity in small units is likely to vary across states, but this is not likely to be the case for large unit. Small units usually cater to local (i.e., segmented) markets and, therefore, face little or no competition from units in other states. Hence, while productivity of units within a state may be similar on account of localized competition, there is no particular reason for the productivity of small units in different states to be similar to each other. This is true regardless of a regime that is more pro-entrant. Large units, on the other hand, sell in markets that go well beyond the state boundaries, and hence they face competition from units in other states. It can, therefore, be expected that in a pro-competition regime there will be convergence in the productivity of large units across states. The coefficient estimates reported in Tables 23 and 24 are in harmony with this conjecture; the productivity of small units in both years was state (or group of states) specific, but, for large units, location had a significant impact in 1989-90 but not in 2000-01.

7. Conclusion

India has witnessed major changes in economic policy since the mid eighties, and has experience a significant surge in economic growth since the early nineties. Upon reviewing the policy changes implemented during the eighties and the nineties, Rodrik and Subramaium have argued that the reforms of the eighties were pro-incumbent while those of the nineties were pro-competition (i.e., pro-entrant). In this paper, we have examined the experiences of the textiles and the electrical machinery sectors in India to be able to take a view about the Rodrik and Subramaium hypothesis. We have also examined the hypothesis that, as a consequence of economic decentralization during the nineties, the quality of business environment and institutions at the state level affected firms' performance and, hence, location decisions more during the nineties than during the eighties. Our analysis has involved the use of 3-digit industry level data on the number of production units located in the 15 most industrialized states in India, as well as plant-level ASI data for 1989-90 and 2000-01. The analysis finds evidence to support the hypotheses.

The policy implications for our findings are significant. The experiences of the textiles and the electrical machinery industries during the eighties and the nineties indicate that while profit maximizing firms respond to changes in policy environment in reasonably predictable ways, the industry-level outcome might be determined to a large extent by other factors such as the comparative advantage(s) of the economy that undertakes the policy changes. The textile industry, in which India indubitably has comparative advantage, witnessed significant restructuring in the form of vertical and horizontal integration to enable the firms to benefit from economies of scale and scope, once policies restricting such reorganization were abandoned. At the same time, the electrical machinery sector, for which the comparative advantage of India is not as obvious, experienced high levels of net entry, on average, between the mid eighties and the mid nineties, but has since experienced rapid net exit of plants. While some of the net exit may well be explained by so-called creative destruction, it is likely that import competition in the aftermath of reduced tariffs have precipitated or aggravated the process.

A more important policy lesson, however, is that institutional factors that impact the strategic decision-making process of profit maximizing firms go well beyond factors like democracy and legal origin. The nature of the Parliamentary democracy and legal origin are common across Indian states. Further, during the eighties and the nineties, the ability of the states to differentiate themselves using fiscal incentives was limited. Each state had limited control over fiscal instruments in the form of sales tax and octroi levies on inter-state movements of goods, and their ability to use these taxes to any significant extent was restricted by fiscal compulsions. In other words, the state-level factors that influenced the decisions of firms to locate their plants in some states (e.g., Gujarat, Tamil Nadu) as opposed to others (e.g., Bihar) were possibly intangible factors like the quality of enforcement of law, policy continuity at the state level in the face of changes in state-level governments at regular intervals, and quality of governance in general.

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APPENDIX 1
Indian States at the end of the 1990s

States in our sample: Andhra Pradesh (APR), Bihar (BIH), Delhi (DEL), Gujarat (GUJ),
Haryana (HAR), Karnataka (KAR), Kerala (KER), Madhya Pradesh
(MPR), Maharashtra (MAH), Orissa (ORI), Punjab (PUN), Rajasthan
(RAJ), Tamil Nadu (TND), Uttar Pradesh (UPR), West Bengal (WBL)

APPENDIX 2
Comparative Table of Indian States

States	POPN		PCSGDP		PMANUF		DAYSLOST		PCDEVEXP		PCINFREXP		PRIMARY		UPRIMARY		HOSPITALS	
	1980s	1990s	1980s	1990s	1980s	1990s	1980s	1990s	1980s	1990s	1980s	1990s	1982	1992	1982	1992	1982	1993
Andhra Pradesh	59	70	5407	7588	13	17	3337	1483	333	923	10	27	6630	6990	1310	1550	10.972	33.620
Bihar	76	92	2320	2386	6	6	1132	219	180	473	6	14	5680	4880	2300	2240	3.122	4.532
Delhi	7	11	13491	18996	18	18	386	91	N/A	611	N/A	50	2470	1740	780	800	9.470	12.326
Gujarat	37	44	7515	10783	27	33	891	635	413	1205	32	80	2760	3140	6180	6510	23.453	67.129
Haryana	14	18	8669	11594	19	22	490	366	445	1265	78	179	2970	2380	1060	1160	6.327	5.806
Karnataka	40	48	5698	8014	18	21	1318	335	329	1001	14	37	5080	4440	4830	5400	6.057	7.617
Kerala	27	30	5675	8022	13	13	1739	528	337	988	16	38	2140	2190	1470	1620	29.102	78.323
Madhya Pradesh	58	61	3908	5755	12	16	823	159	269	911	15	49	8060	8740	2550	3400	5.102	6.710
Maharashtra	69	84	7938	12065	28	29	6115	1582	419	1176	10	65	5170	5220	3450	3980	15.422	47.943
Orissa	28	33	4359	4782	12	14	284	98	258	730	9	28	9860	11490	3880	5640	11.207	10.470
Punjab	18	22	9991	12778	13	17	308	285	425	1249	52	118	6660	6040	1270	1120	14.716	12.572
Rajasthan	38	47	4999	7117	15	15	755	507	283	836	16	29	4950	5290	2220	2650	6.393	6.086
Tamil Nadu	52	58	6181	9392	34	30	3175	2354	354	1188	15	45	5360	5180	1670	1650	7.574	8.219
Uttar Pradesh	122	145	4193	5140	13	17	839	499	209	573	8	18	5190	4440	1780	1580	6.317	6.387
West Bengal	60	72	5345	7065	21	19	14191	3639	263	641	13	27	5880	6740	760	970	7.265	6.946

POPN	Average population (in millions)
PCSGDP	Average per capita state GDP
PMANUF	Average share of manufacturing sector in state GDP (percentage)
DAYSLOST	Average man-days lost because of industrial action (per year)
PCDEVEXP	Average per capita development expenditure
PCINFREXP	Average per capita expenditure on transport and communication
PRIMARY	Average number of primary schools per million people
UPRIMARY	Average number of upper primary school per million people
HOSPITALS	Average number of hospitals per million people

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