

31797

# Competitiveness of Indian Manufacturing Results from a Firm-Level Survey

January 2002



**Confederation of Indian Industry**



**The World Bank**

# **Competitiveness of Indian Manufacturing Results from a Firm-Level Survey**

**Omkar Goswami, A.K. Arun, Srivastava Gantakolla, Vishal More, Arindam Mookherjee  
Confederation of Indian Industry**

**and**

**David Dollar, Taye Mengistae, Mary Hallward-Driemier, Giuseppe Iarossi  
The World Bank**

**January 2002**



**Confederation of Indian Industry**  
23 Institutional Area, Lodi Road,  
New Delhi 110003, India  
[www.ciionline.org](http://www.ciionline.org)



**The World Bank**  
1818 H Street, NW  
Washington, D.C. 20433, USA  
[www.worldbank.org](http://www.worldbank.org)

# Competitiveness of Indian Manufacturing Results from a Firm-Level Survey

Omkar Goswami, A.K. Arun, Srivastava Gantakolla, Vishal More, Arindam Mookherjee

Confederation of Indian Industry

and

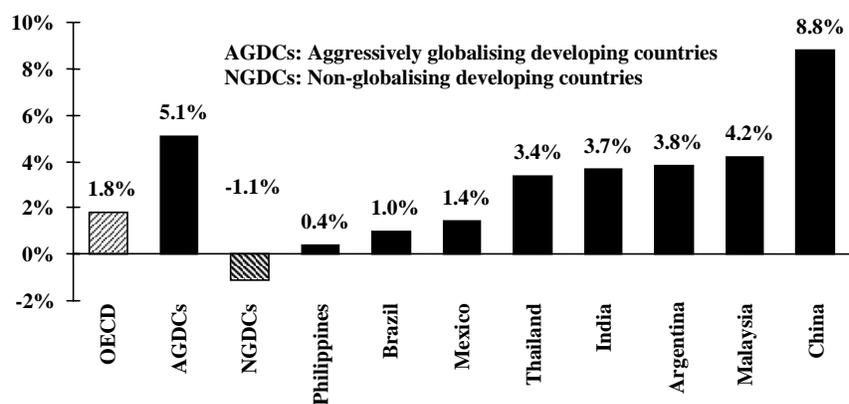
David Dollar<sup>1</sup>, Taye Mengistae, Mary Hallward-Driemier, Giuseppe Iarossi

The World Bank

During the last decade, major developing countries including India, have begun to integrate much more with the global economy. If the developing world were to be divided into countries that are aggressively integrating and those that are not, it can be shown that, on average, the former have grown significantly faster than the latter. In the 1990s, the more rapidly globalising developing countries (measured in terms of increased trade participation) grew at 5.1 per cent per capita, while the rest of the developing world posted negative growth of 1.1 per cent.<sup>2</sup> Among the more aggressive globalisers were Argentina, Brazil, China, Mexico, Philippines, Thailand, and India.

That globalising developing countries are doing well on average is good news. But these averages disguise considerable variation in performance among this group. China has done spectacularly well, and is the unchallenged leader of the pack. With trade accounting for 41 per cent of GDP in 1999, it has had a per capita GDP growth of 8.8 per cent during 1990-99. Thailand was another winner: in spite of the huge income compression due to the Asian crisis, it could still enjoy per capita GDP growth of 3.4 per cent during the 1990s. Again, despite the crisis, Malaysia's average per capita GDP growth in the 1990s was 4.2 per cent. However, the per capita GDP growth of another relatively aggressive globaliser, Brazil, has only been around 1 per cent for 1990-99; and Philippines' was 0.4 per cent. India, with per capita GDP growth of 3.7 per cent during 1990-99 is in the middle of the pack. Chart A emphasises the variations.

Chart A: Per capita GDP growth, 1990-99



<sup>1</sup> Omkar Goswami of the Confederation of Indian Industry and David Dollar of The World Bank are the principal authors of this work. They can be reached, respectively, at [omkar.goswami@ciionline.org](mailto:omkar.goswami@ciionline.org) and [ddollar@worldbank.org](mailto:ddollar@worldbank.org).

<sup>2</sup> During the same period, the rich countries grew at 1.8 per cent.

The *raison d'être* of our paper is to examine some of the reasons for such per capita GDP variations. We argue that openness to foreign trade and investment is a necessary, but not a sufficient condition for sustained GDP growth. For India and other developing countries to do well, greater investment and openness needs to be complemented with a host of other institutional factors and policies that can be classified under the broad heading 'investment climate'.

In the course of this paper, we shall analyse survey data of firms located in 10 states in India to conclusively prove that investment climate matters — firms located in states that do not foster a good investment climate perform significantly worse than those in states that do. In the process, the paper outlines a set of important policy issues that countries and/or states need to pursue if they want to leverage greater openness and higher investments for sustained and significantly higher per capita income growth.

In section 1, we will define what is meant by 'investment climate' and briefly review some of the macro evidence that shows the importance of investment climate for sustained growth and poverty reduction. Section 2 examines some of the microeconomic aspects of investment climate, and does so primarily by comparing India with other emerging market economies, using secondary sources of data. Section 3 goes into even greater microeconomic and institutional detail using the data generated through a recent, firm-level competitiveness survey for 10 Indian states that was jointly conducted by the Confederation of Indian Industry (CII) and the World Bank.<sup>3</sup> Since the World Bank has conducted similar surveys in other emerging markets, the data allows for useful cross-country comparisons. Section 4 then uses the Indian survey data to correlate differences in firm productivity with investment climate, at various levels of disaggregation. Section 5 concludes the article.

At the risk of pre-empting a major conclusion, the results clearly show that across industries, investment climate matters. Firms operating in states with good investment climate post consistently better performance than the states without. There are significant differences in the incidence of local level administrative hassles, in clearance of goods from customs, in infrastructure costs as well as in total factor productivity and growth in net fixed investments. The results are not at all surprising. But they emphasise the urgent need for rapid policy reforms in Indian states with middling to poor investment climate.

## **1 Investment climate: preliminaries and macro evidence**

The quantity and quality of investment flowing into India or any other country depends upon the returns that investors expect and the uncertainties around those returns. It is useful to think of three broad and interrelated components that shape these expectations.

- First, there are a set of macro or country-level issues concerning economic and political stability and national policy towards foreign trade and investment. By these, we generally refer to macroeconomic, fiscal, monetary, exchange rate policies as well as political stability, trade liberalisation, investment policies, judicial systems and the like. As far as these indicators go, India performs reasonably well, although much more could be done.
- Second, there is the issue of efficacy of a country's regulatory framework. As far as firms are concerned, these relate to the issues of entry or starting of a business, labour relations and flexibility in labour use, efficiency and transparency of financing and taxation, and efficiency of regulations concerning the environment, safety, health, and other legitimate public interests. The question is not whether to regulate or not, but whether such regulations are designed in incentive compatible ways, avoid adverse selection and moral hazard, serve public interest, are implemented expeditiously without harassment and corruption, and facilitate efficient outcomes. While such variables are hard to measure, our survey clearly suggests that regulatory efficacy varies widely across countries and, as far as India is concerned, across states.

---

<sup>3</sup> The states are Andhra Pradesh, Delhi, Gujarat, Karnataka, Kerala, Punjab, Maharashtra, Tamil Nadu, Uttar Pradesh and West Bengal. Of these, three states enjoy active World Bank program loan support — Andhra Pradesh, Karnataka and Uttar Pradesh.

- Third, and no less important, is the quality and quantity of available physical and financial infrastructure, such as power, transport, telecommunications and banking and finance. When one surveys entrepreneurs about their problems and bottlenecks, they will often cite infrastructure issues such as power reliability, transport time and cost, and access and efficiency of finance as key determinants of competitiveness and profitability.

It is common for many developing countries to react to a severe fiscal and/or balance of payments crisis by embarking on comprehensive macroeconomic reforms and stabilisation programs. India was no different in the first half of the 1990s, and achieved excellent results compared with the past. Despite five governments in the 1990s — and four in the last six years — India's average GDP growth was 6 per cent per annum, compared to 5.5 per cent in the 1980s. For three halcyon years (1994-95 through 1996-97) GDP growth exceeded 7 per cent and peaked at 7.8 per cent in 1996-97.

Unfortunately, growth has slackened since then — to 4.8 per cent in 1997-98, 6.6 per cent in 1998-99, 6.4 per cent in 1999-00 and 5.2 per cent in 2000-01. Although such growth is high by international standards, the deceleration has emphasised the need for what Indian policy-makers are calling 'second generation reforms'. It is recognition of the fact that growth generated by the first flush of macroeconomic reforms is likely to peter out unless one moves ahead on critical structural issues — especially institutional, regulatory and infrastructure reforms.<sup>4</sup> Today, politicians of most persuasions recognise that India has reached a point of inflexion, where the greatest challenge is to move forward on the institutional and infrastructure agenda.

Two caveats are in order at this stage. First, we are not interested in the quantity of investment *per se*. Indeed, recent work on economic growth [Easterly 1999] has shown that there is surprisingly little relationship between the *quantity* of investment and the rate of economic growth. In many instances, this is due to a distorted and dysfunctional institutional and policy milieu — where neither public nor private investments produce the benefits that they should. Our focus, therefore, is not on the quantity of investment, but on the overall institutional and policy environment — the 'investment climate' — that determines whether or not investments pay off in terms of greater competitiveness of firms and sustained growth.

Second, while we recognise that social infrastructure is no less important than its physical and financial counterparts, we have chosen to exclude the provision of education and health services as variables that determine investment climate. It is a deliberate choice. We wish to check whether a narrower definition of investment climate suffices to explain substantive variations in firm competitiveness and productivity. If the hypothesis holds for the subset, then it ought to hold even more for the whole.

### *1.1 Some evidence of the macro aspects of investment climate*

Spurred by the endogenous growth theories of Romer (1986) and Lucas (1986), there is now a vast empirical literature that investigates the determinants of growth. Some of these results are fairly robust. Fischer et. al (1993) found that high inflation is bad for growth. This common sense result is hard to dispute. To an extent, inflation reflects exogenous shocks that are beyond the government's control. But truly high inflation typically reflects serious monetary mismanagement. There is also a clear negative relationship between government consumption and growth, which was first noted by Easterly and Rebelo (1993). No doubt, some government expenditures are socially productive, but developing countries with very high government spending usually have inefficient bureaucracies and high levels of corruption.

A number of studies, most recently Frankel and Romer (1999) and Dollar and Kraay (2001b), find that openness to trade and direct foreign investment accelerates growth. These findings are in the spirit of the new growth models, and emphasise the importance of market size for creating a

---

<sup>4</sup> These are precisely elements that belong to what we call 'investment climate'.

finer division of labour and stronger incentives to innovate. In addition to macro and trade policies, financial development is also a catalyst for growth [Levine, Loayza and Beck (2000)]. All else being controlled for, countries that have more developed stock markets and/or deeper banking systems tend to grow faster.

Investment climate measures such as the strength of property rights, rule of law, and level of corruption are also well correlated with growth [Kaufmann, Kraay, and Zoido-Lobaton (1999); Knack and Keefer (1995)]. These studies typically use data generated from surveys of private businesses, and reflect the extent to which investors and/or firms perceive problems with harassment, corruption, and inefficient regulation.

To summarise, therefore, empirical macro evidence and cross-country literature provides reasonable evidence that growth and poverty reduction are promoted by good investment climate — an appropriate policy package of private property rights, sound rule of law, macroeconomic stability, government spending that is not excessive and well focused on public goods, and openness to foreign trade and investment. However, most of these macro-indicators of policy and investment climate are quite crude, and are of little help to countries in identifying what needs to be done to create a better climate.<sup>5</sup> Thus, while the macro evidence is useful as background and motivation for the rest of our work, it suggests the need to delve at a much more micro level, and to survey actual producers and firms to understand the rich differential relationship between investment climate and growth.

## **2 India versus others: some cross-country micro evidence**

It is now time to examine some of the more micro aspects of investment climate, especially the policies and regulatory framework for investment and production, and the state of physical and financial infrastructure. We will use India as the focal point, and compare different aspects of its investment climate with that of other countries. In this section, we will examine evidence based on reports of several international organisations. To be sure, most of these rankings are subjective and provide little insight to the magnitude of the problem.<sup>6</sup> However, these serve to set the stage for more insightful comparisons using detailed firm-level data that is presented in section 3.

A crude measure of the attractiveness of any business environment is to look at the extent to which foreign businesses choose to locate in a given country. Given the additional fixed costs associated with operating abroad and a multitude of potential locations to choose among, entrepreneurs should be responsive to the cost-benefit of different locations. The macroeconomic factors mentioned earlier — such as stable macro economic conditions, openness to trade particularly imported inputs, and a good rule of law — are important. So too are local market size and labour costs.

On these last two dimensions, India seems to be well positioned. It has one of the largest domestic markets in the world and it has a large labour force available at relatively low cost. It also has well educated workers, particularly in areas of engineering and science. If these were the only determinants, India should be hugely successful at attracting investment.<sup>7</sup> In practice, as Chart B shows, India does not receive the amount of FDI its market size would predict.

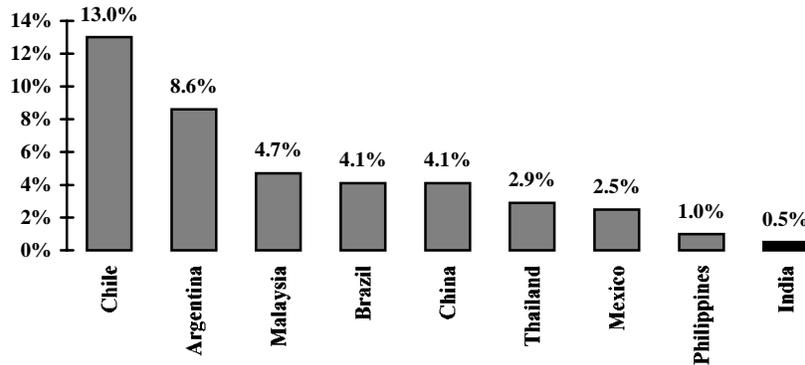
---

<sup>5</sup> As we shall see in the course of this paper, the existing cross-country macroeconomic measures are quite similar for China and India (e.g. rankings on rule of law, corruption, or overall infrastructure quality from different international sources). Both countries ‘fit’ the empirical growth studies in that both have done relatively well. India has grown at about twice the rate of the OECD countries in the 1990s. Yet, China has grown much faster and had much more poverty reduction. Most macro- indices fail to explain such differences.

<sup>6</sup> Worse, what are at best ordinal measures are unintentionally given a spurious semblance of cardinality by many of these rankings.

<sup>7</sup> A.T.Kearney publishes FDI confidence index that combines these elements, with an emphasis on market size and labour costs. India ranks near the top of the list at number 7.

**Chart B: FDI as share of GDP, 1999**



Source: UNCTAD, *World Investment Report 2001*, The World Bank, *World Development Report, 2000-01*

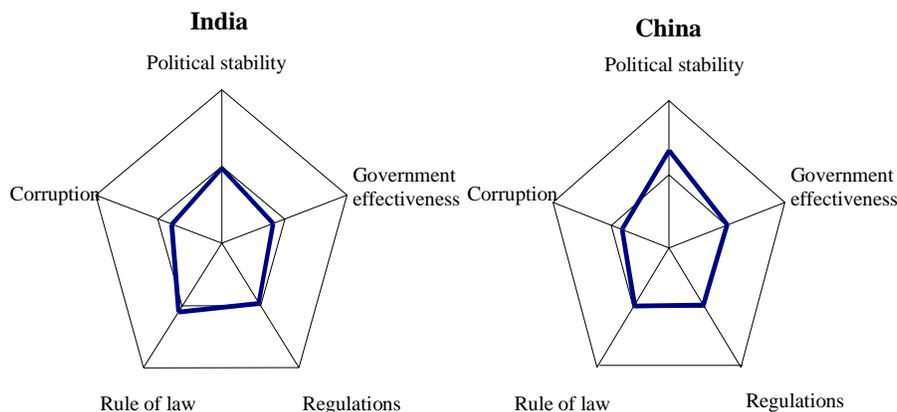
In 1999, FDI inflows were a mere 0.5 per cent of GDP. This is considerably lower than China (4.1 per cent), Brazil (4.1 per cent) or Thailand (2.9 per cent). Clearly, market size and quality of labour force matters. But there are obviously far too many differences in the micro investment climate that makes India absorb only 0.5 per cent of its GDP as foreign direct investment versus 4.1 per cent in neighbouring China.

Indeed, a look at the broad indicators of investment climate suggest very little fundamental difference between India's profile and that of, say, China's. This shows up in the work of Kaufman, Kraay and Zoido-Lobaton (1999), who combine indicators from 13 sources under five categories that measure broad dimensions of governance. The categories include:

- *Government effectiveness*, which includes measures of bureaucratic delays, competence of officials, the quality of public service delivery and independence of the civil service from political pressures. These cover the elements needed for government to design and implement good policies.
- *Regulatory burden*, which includes the number of regulations within a market, the number of markets that are regulated, competition policy measures, and price controls. This provides a sense of how fair and market-friendly the business environment is.
- *Rule of law*, which captures the extent of crime, property rights, tax evasion and the legal system's effectiveness. It indicates the enforceability of contracts and predictability of rules.
- *Graft*, which measures the frequency and size of irregular payments.
- *Political instability and violence*, which measures the incidence of coups, assassinations, riots, armed conflicts, and provides a measure of the likelihood of a violent overthrow of a governing party.<sup>8</sup>

Chart C below plots these measures on 'governance pentagons'. The outer web indicates the best performance, and the inner web the median measure for the 174 countries for which measures were available. Thus, the larger the country's web, the better is its governance measure.

**Chart C: Governance pentagons show hardly any difference**

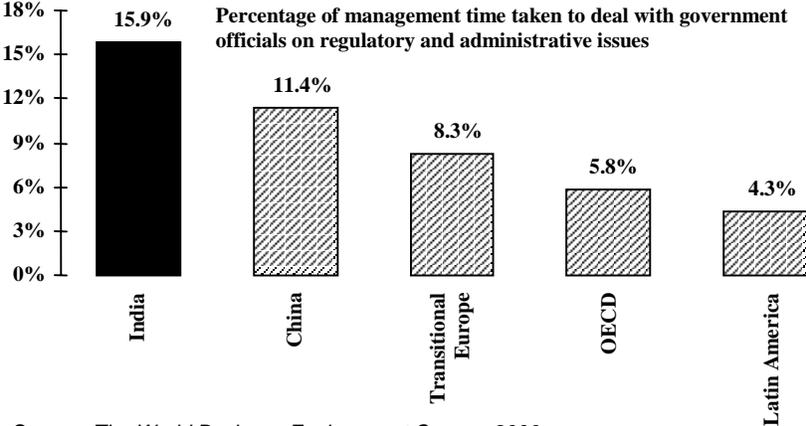


<sup>8</sup> Note that these measures, especially the first four, are highly correlated — registering correlation ranging from 0.69 to 0.93. This makes it difficult to econometrically test for their relative importance. However, each independently does provide significant explanatory power.

As we can see, India scores relatively well: near the median for political stability and regulatory framework, marginally better for rule of law, and somewhat less than the median for corruption and government effectiveness. The comparison with China does not reveal stark differences. China ranks better on political stability, somewhat better on government effectiveness and marginally worse on rule of law. Yet China received almost \$40.3 billion as foreign direct investment in 1999, while India had to make do with \$2.1 billion. Clearly, other factors are at work.

The World Bank’s *World Business Environment Survey 2000* provides some additional clues. Two particularly useful measures are the amount of management time spent dealing with government officials and the frequency of making irregular payments. The amount of time spent with officials provides a direct measure of the regulatory burden faced by entrepreneurs. It also gives an indication of the opportunities for irregular payments to be made. As Chart D shows, India does not compare favourably with other countries.

**Chart D: Regulatory hassles faced by firms**

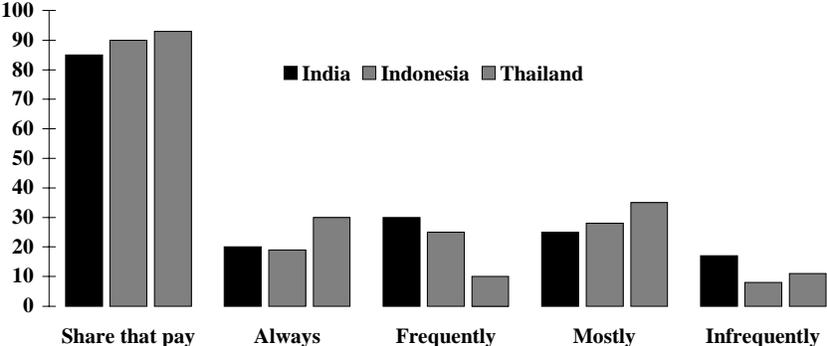


Source: *The World Business Environment Survey, 2000*

The opportunity cost of managers’ time is considerable and is brought into sharp relief vis-à-vis other countries. As Chart D shows, almost 16 per cent of management time in India is used to deal with government officials on regulatory and administrative issues. This compares poorly with Latin America, the OECD countries, transitional Europe and China. We will discuss issues relating to regulatory hassles in Indian states in section 3 of this paper.

Usually, greater is the interface with government officials, the higher is the probability of corruption, although the relationship need not be monotonic. This, too, shows up in the secondary evidence, as depicted in Chart E. Between 85 per cent and 95 per cent of the respondents in India, Indonesia, the Philippines and Thailand claimed that they made irregular payments to officials. The rate was half of that in Malaysia. The share that reported doing so ‘always’ or ‘mostly’ is highest in Thailand and comparable in India and Indonesia.

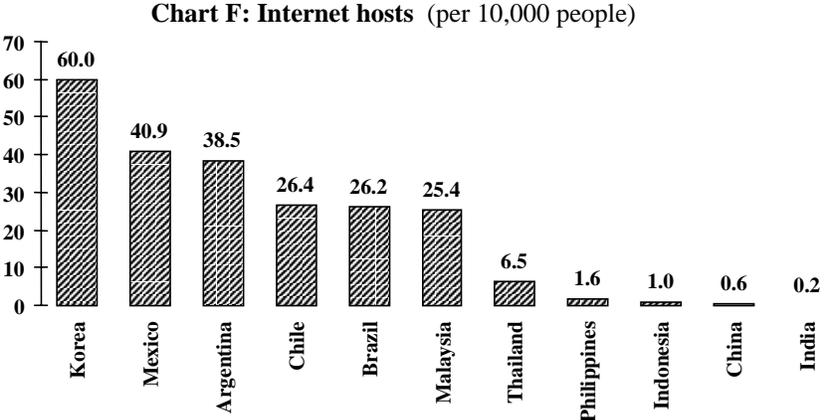
**Chart E: Frequency of irregular payments to officials to get things done**



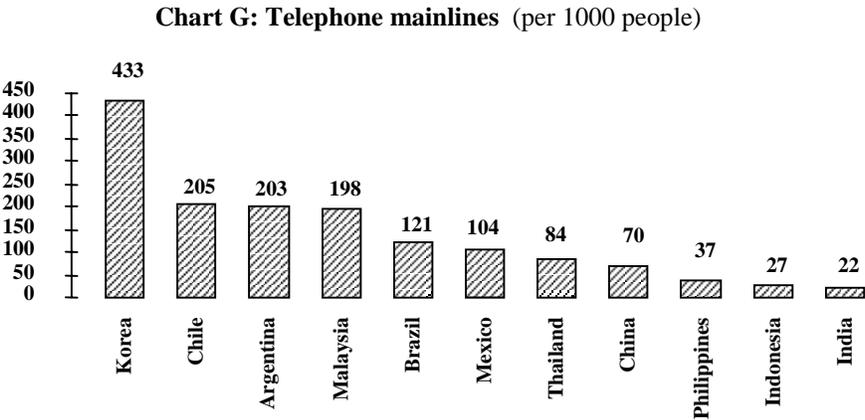
China did not allow this question to be included. Source: The World Bank, *World Business Environment Survey*

It is now time to move into more quantitative data, especially in the area of infrastructure. Examples include the number of internet hosts, number of telephone lines per 1000 people, and transportation costs. On these measures, India's performance is clearly behind many East Asian and Latin American countries, and the gap between China and India is rapidly widening in favour of the former.

Consider the number of internet hosts per 10,000 people. Chart F shows that as on January 2000, India was at the bottom of the pack, having a fraction of the number in Thailand, Malaysia, or even the Philippines. As far as the number of main telephone lines per 1000 people, India was also at the bottom in 1998, with 22 lines per 1000 people, compared to 37 for the Philippines, 70 for China, 84 for Thailand, and 198 for Malaysia (see Chart G).<sup>9</sup>



Source: The World Bank, *World Development Report, 2000/01*, as on January 2000



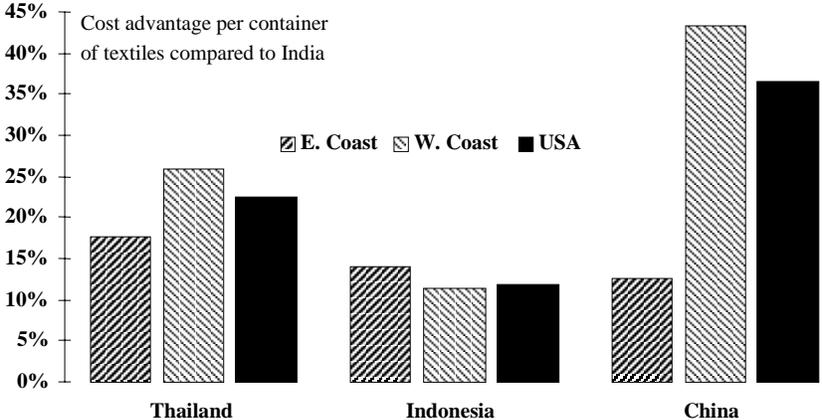
Source: The World Bank, *World Development Report, 2000/01*, as on 1998

Transportation is another area where India's infrastructure compares very unfavourably with that of its regional neighbours. We focus on international transportation costs — specifically that of shipping a container of textiles or garments from India to the USA vis-à-vis other Asian competitors. Chart H gives the data. It shows that, despite a longer route, shipping to the US eastern seaboard out of Bangkok is almost 18 per cent cheaper compared to Mumbai or Chennai. Weighting for trade volumes, the overall transport cost advantage in shipping from Bangkok to the US is almost 23 per

<sup>9</sup> For internet hosts as well as mainline telephones, the situation in India has certainly improved in 2001. Nevertheless, its ranking probably remains the same — other countries have improved as much, if not more, than India.

cent. China enjoys a 13 per cent cost advantage in shipping garments from Shanghai to the US east coast, and a staggering overall advantage of 37 per cent. The major reasons for India suffering from such huge transport cost disadvantages are delays and inefficiencies in Indian ports compared to their Asian counterparts.

**Chart H: India's shipping cost disadvantages**



To summarise, India does relatively well in some of the macro measures of investment climate, such as rule of law and political voice. It’s scores on corruption are comparable to some Asian neighbours. However, India scores pretty poorly on government/regulatory effectiveness and the quality and quantity of physical infrastructure. As we can see, even a bit of insight into some of the micro aspects of investment climate suggests that macro measures explain relatively little of the significant cross-country variations; and that we need to delve deeper into detailed microeconomic indicators. That sets the stage for analysing the World Bank-CII Firm Analysis and Competitiveness Survey (FACS) data.

**3 FACS: Sample and the evidence**

Our sample is constructed from a survey of 1099 manufacturing companies operating in four major sectors across 10 Indian states. The survey was conducted in 2000-01. The questionnaire consists of over 100 detailed quantitative queries, and mostly deals with firm-level data for 1999-00.<sup>10</sup> The usefulness of FACS lies in the fact that the World Bank has conducted (and is conducting) similar surveys in other Asian and Latin American countries. Thus, we can not only benchmark the competitiveness of Indian companies with their potential competitors, but also compare the costs of policy distortion across countries. Table 1 gives the details of the sample.

As may be inferred, the sample has two intended biases. First, it is heavily loaded in favour of four sectors — textiles, garments, pharmaceuticals and consumer electronics — which account for 94.9 per cent of the sample. The reason is straightforward. These sectors have considerable export potential, and issues dealing with competitiveness become even more germane for export oriented industries. Moreover, other country surveys conducted by The World Bank in Asia concentrate on these sectors. Thus, we have the data to carry out important cross-country comparisons on a sector-by-sector basis.

Second, the sample is biased in favour of SMEs, defined as firms employing up to 150 workers. This follows from the export bias: the bulk of India’s manufacturing exports originate from SMEs. It also reflects a key fact across Asia — that SMEs are often more flexible, have greater dynamism, and can generate more employment than their larger industrial brethren.

<sup>10</sup> In addition, the survey covered 100 software companies. Since our focus in this paper is on manufacturing, we ignore this sample.

Table 1: Sample of manufacturing companies in FACS–India

State	Textiles	Garments	Pharma	Electronics	Others	Total	State %
Andhra Pradesh	16	6	35	32	12	101	9.2%
Delhi	41	67	19	45	4	176	16.0%
Gujarat	35	16	13	6	0	70	6.4%
Karnataka	36	18	22	28	28	132	12.0%
Kerala	3	4	10	0	0	17	1.5%
Maharashtra	60	59	83	46	2	250	22.7%
Punjab	7	6	9	3	0	25	2.3%
Tamil Nadu	41	49	35	29	3	157	14.3%
West Bengal	23	16	19	4	0	62	5.6%
Uttar Pradesh	19	38	28	17	7	109	9.9%
<b>Total</b>	<b>281</b>	<b>279</b>	<b>273</b>	<b>210</b>	<b>56</b>	<b>1099</b>	<b>100.0%</b>
<b>Sector %</b>	<b>25.6%</b>	<b>25.4%</b>	<b>24.8%</b>	<b>19.1%</b>	<b>5.1%</b>	<b>100.0%</b>	
<b>Size-wise</b>							
SMEs*	68.0%	82.4%	67.5%	79.4%	69.4%	73.8%	
Large	32.0%	17.6%	32.5%	20.6%	30.6%	26.2%	
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	

Note: \*SMEs are defined as establishments with up to 150 workers.

In this section, we use the detailed firm-level data to understand the determinants of competitiveness in Indian industry and the role of investment climate. In the process, we examine the quantitative effects of some aspects of the regulatory regime, delays at customs, shipping cost disadvantages, labour market rigidities, and energy and interest cost differentials. In the next section, we shall evaluate to what extent productivity differs according to variations in investment climate across states. Simply put, do companies operating in states with an excellent or good investment climate show significant differences in productivity compared to those situated in poor investment climate states?

### 3.1 Investment climate: What do firm managers think?

The survey solicited views of managers and/or entrepreneurs on the ‘investment climate’ of the 10 states. This is useful on two counts. First, it gives a subjective view of each manager on how different states compare with the one in which s(he) operates. Second, it allows us to check the correlation between such subjective views and the more quantitative determinants of competitiveness. For instance, we can examine whether firms located in the best investment climate states are less dependent on power from private generator sets compared to the worst states — and, therefore, have significantly lower energy cost per rupee of sales. As we shall see, most quantitative variables correlate well with the subjective views on investment climate.

Specifically, the survey asked each respondent to say which state s(he) considered to be the best in terms of investment climate, and which the worst. To eliminate any loyalty (or disloyalty) driven bias, we removed all responses that reported their own state to be the best (or the worst). Thereafter, we netted out the percentage of the sample that considered a specific state — say Gujarat — to be the worst from the percentage that believed it to be the best. Clearly, higher this number, the better perceived is the state.

The results are not at all surprising. The western Indian states of Gujarat and Maharashtra dominate as a cluster. Then comes a second group, consisting of three southern states: Tamil Nadu, Karnataka, and Andhra Pradesh. The third cluster consists of two northern states: Delhi and Punjab. The three worst states are Kerala (in the south), West Bengal (in the east) and Uttar Pradesh (in the north). Table 2 gives the results, and shows four very distinct clusters.

Table 2: Subjective ranking of best to worst investment climate

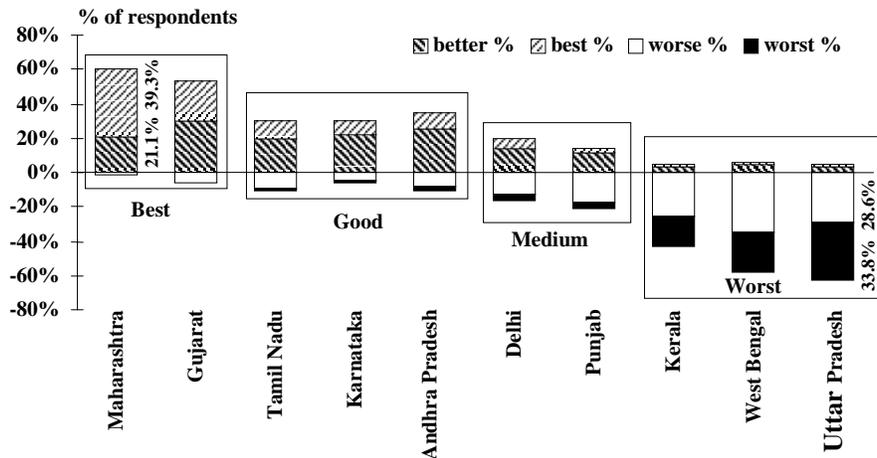
States	% saying best minus % saying worst
<b>Best Investment Climate</b>	
Maharashtra	38.6%
Gujarat	23.1%
<b>Good Investment Climate</b>	
Tamil Nadu	8.6%
Karnataka	7.8%
Andhra Pradesh	6.6%

States	% saying best minus % saying worst
<b>Medium Investment Climate</b>	
Delhi	1.6%
Punjab	-0.7%
<b>Poor Investment Climate</b>	
Kerala	-16.1%
West Bengal	-21.9%
Uttar Pradesh	-32.6%

Note: Based on a sample of 1029 respondents stating 'best state' and 917 giving their opinion on the 'worst state'.

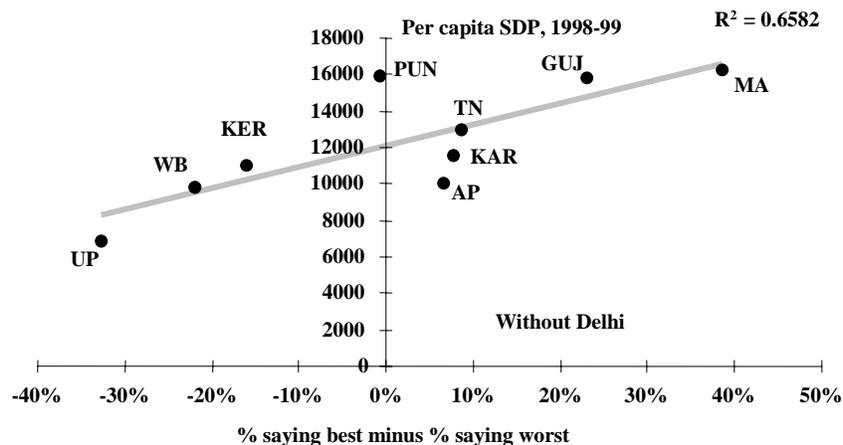
Another way of depicting the result is shown in Chart I. For instance, consider the state of Maharashtra. Over 60 per cent of the firms located outside Maharashtra considered the state to be better than the one in which they operated, and 39 per cent considered it to be the state with the best investment climate. Conversely, over 62 per cent of the non-UP respondents considered Uttar Pradesh to be worse than the state where their firm was located, and almost 34 per cent felt that it had the worst investment climate.

Chart I: How companies ranked Indian states



Having got a first approximation on investment climate, we checked how this ranking correlated with the per capita state domestic product (SDP) for the year 1998-99. The result is depicted in Chart J. There is a strong relation between the subjective judgement of the managers and the per capita SDP. This relation gets stronger with a R-squared value of 0.66 if we eliminate Delhi, which clearly is an outlier<sup>11</sup>.

Chart J: Relation between subjective rankings and per capita SDP

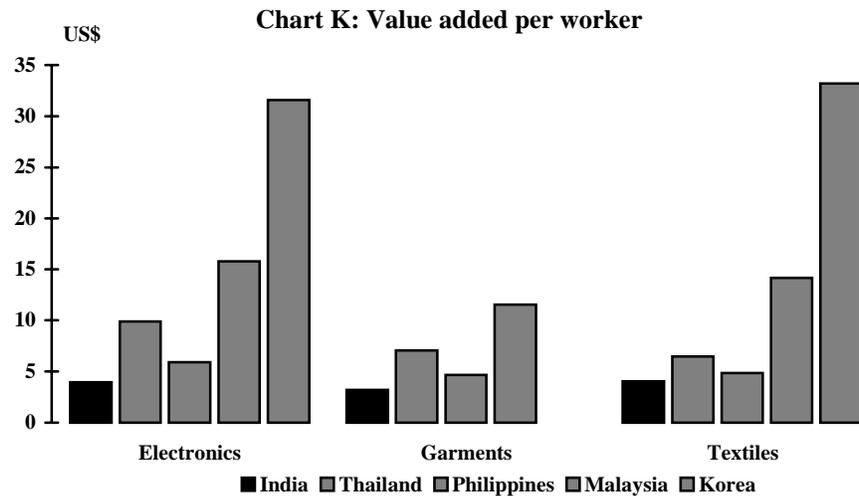


<sup>11</sup> The R-squared value for the entire sample is 0.28.

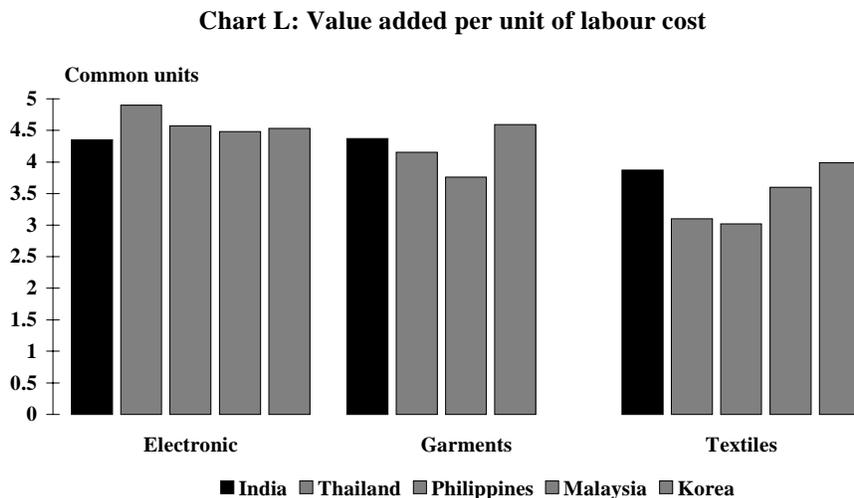
The rest of the sections evaluate whether the subjective judgement of managers and entrepreneurs are borne out by facts.

### 3.2 Investment climate and labour costs

It is said that many Indian industries suffer from lower labour productivity compared to their East Asian and South-east Asian counterparts. FACS data from India and other Asian countries bears this out. Chart K plots the ratio of value added per worker in three industries — consumer electronics, garments and textiles — and compares these across India, Thailand, Philippines, Malaysia, and Korea. India is clearly worse off.



Even so, it is not all bad news on the productivity front. To be sure, value added per worker is low in India compared to South-east and East Asia. However, what matters is cost. And, in most industries, India’s wage costs are still sufficiently low to counter fairly serious disadvantages in labour productivity. Using the data from various FACS surveys, Chart L compares value added per unit of labour cost across the same three industries. The data shows that while India is still worse off in consumer electronics, it is better than Thailand and Philippines in garments as well as textiles, and better than Malaysia in textiles. Even in electronics, India does not compare too unfavourably.<sup>12</sup>



<sup>12</sup> However, since FACS surveys don’t account for quality differences, we are not too sure about the policy relevance of the comparison for consumer electronics.

How do the states stack up in terms of labour productivity? Maharashtra — one of the two states which are considered to have the best investment climate — has the highest value added per worker.<sup>13</sup> Not surprisingly, the best investment climate states enjoy the highest labour productivity: their median value added per worker was Rs.225.20. Indeed, as Table 3 shows, value added per worker drops monotonically as one proceeds from the best to the poor investment climate states. In fact, value added per worker in the two best investment climate states is, on average, almost 64 per cent higher compared to the three poor investment climate states.

The story is somewhat different when we focus on value added per unit of labour cost. Wage differentials between the states not only dampen these productivity differences, but also alter the rankings. Workers in Maharashtra and, to a lesser extent, Gujarat, enjoy far higher wages than their counterparts in southern and eastern India. Thus, while the two best investment climate states unambiguously dominate in terms of value added per worker, they are bettered by the three good investment climate states once it comes to value added per unit of labour cost. By the same token, while Maharashtra ranks as number one in terms of value added per worker (we ignore Kerala), its rank drops to fourth place in value added per unit of labour cost — Andhra Pradesh comes first. However, the basic conclusion remains the same: the best and good investment climate states enjoy higher value added per unit of labour cost vis-à-vis the medium and poor states.

**Table 3: Labour productivity across investment climates**

Climate	Sample	Val. Add/ Worker (in Rs.)	Val. Add/ Labour cost (in wage units)	Climate	Sample	Val. Add/ Worker (in Rs.)	Val. Add/ Labour cost (in wage units)
<b>Best IC</b>	<b>320</b>	<b>225.2</b>	<b>4.49</b>	<b>Medium IC</b>	<b>201</b>	<b>163.5</b>	<b>4.18</b>
Maharashtra	250	244.6	4.52	Delhi	176	152.9	3.62
Gujarat	70	172.4	4.37	Punjab	25	243.6	5.89
<b>Good IC</b>	<b>390</b>	<b>174.2</b>	<b>4.67</b>	<b>Poor IC</b>	<b>188</b>	<b>137.7</b>	<b>4.18</b>
Andhra Pradesh	101	193.1	5.93	Kerala	17	281.6	6.64
Karnataka	132	178.0	4.10	Uttar Pradesh	109	124.3	4.00
Tamil Nadu	157	161.1	4.75	West Bengal	62	163.6	3.90

**Note:** The data for Kerala should be ignored, not only because of the small sample size, but because of a relatively large number of outlier responses.

Therefore, cross-country data on value added per unit of labour cost shows that, at least in textiles and garments, India is better off than some of the competing countries in South-east and East Asia. The question arises: How, then, is India uncompetitive in these two key exporting sectors? The answer is complex, and getting a fix on all the determinants requires an elaborate study of these two sectors — which falls outside the pale of the FACS survey. However, FACS does suggest some pointers, which involve:

- Regulatory burden on firms
- Delays at customs houses
- Energy cost disadvantages
- Relatively high interest costs.

The rest of this section of the paper explores these four areas of disadvantage.

### **3.3 Investment climate and the regulatory regime**

A frequent complaint by enterprises in India — especially SMEs — is the number of times the firm is visited by various government inspectors. The questions to ask are: First, how does this number compare with other countries? And, second, do the numbers vary across industries, states and investment climates?

The first question has been dealt with in section 2. Chart D shows that, in terms of management time spent with government officials of regulatory and administrative issues, India compares poorly

<sup>13</sup> The data for Kerala should be treated with caution. For one, the sample size is small. For another, some of the respondents came up with numbers that are clear outliers.

with other nations. The second question was posed by FACS questionnaire, which asked: “How many times did inspectors visit your plant in 1999?” Responses show that the frequency of visits varies according to the investment climate of states — as a rule, the best states tend to impose lesser hassles on management than the worst ones. Table 4 gives the results.

**Table 4: Visits by government officials**

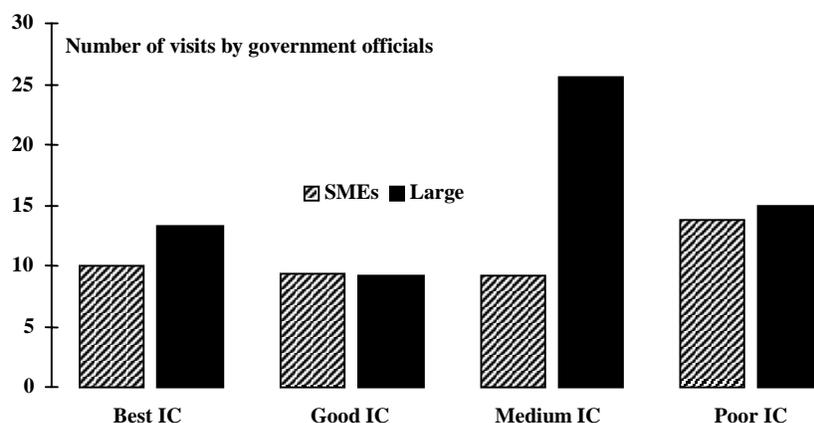
States	No. of visits
Best IC	11.3
Good IC	9.8
Medium IC	12.7
Poor IC	13.7
<b>Overall</b>	<b>11.5</b>
Tamil Nadu	5.5
Delhi	5.9
Gujarat	8.3
West Bengal	10.2
Karnataka	11.0
Maharashtra	11.9
Kerala	12.3
Andhra Pradesh	13.4
Uttar Pradesh	14.9
Punjab	43.1

**Note:** Henceforth, in tables and charts, IC stands for ‘investment climate’

While there is no strictly monotonic negative relationship between investment climate and number of visits by government officials, the table indicates that there is a difference in the number of visits between the best and the good investment climate states on the one hand, and the medium and poor on the other. In fact, the separation is even more stark if we net out Punjab, which seems to have the most pervasive inspector *raj* among the 10 states.<sup>14</sup>

It has been argued in India that SMEs face greater aggravation from government officials than do their larger counterparts. *Prima facie*, the FACS data evidence suggests otherwise. As Chart M shows, irrespective of investment climate, SMEs are subjected to lesser number of visits by inspectors than the larger companies.

**Chart M: Regulatory burdens - SMEs versus large firms**



<sup>14</sup> Delhi and Punjab account for the medium investment climate states. If we net out Punjab, then the average number of visits by government officials for the 10 states taken together drops to 10.3 per year. This heightens the contrast between the best, good and medium investment climate states on the one side, versus the poor states on the other.

However, this conclusion needs to be treated with caution. The median SMEs employment in 1999 was 24 (mean 39), while that of large firms was 450 (mean 1271). Thus, while SMEs face lesser visits by officials than large firms, the regulatory hassles per employee for the former is over 14 times more than the latter. Moreover, this cost is the highest in the poor investment climate states. This shows up in Table 5.

**Table 5: Relative incidence of regulatory visits, SMEs versus large firms**

	SME		Large		Relative incidence
	Visits	Employment	Visits	Employment	
Best IC	10.0	30	13.3	625	15.7
Good IC	9.3	25	9.1	336	13.8
Medium IC	9.1	20	25.5	371	6.6
Poor IC	13.7	20.5	14.9	535	24.1
<b>Total</b>	<b>10.5</b>	<b>24</b>	<b>13.7</b>	<b>450</b>	<b>14.4</b>

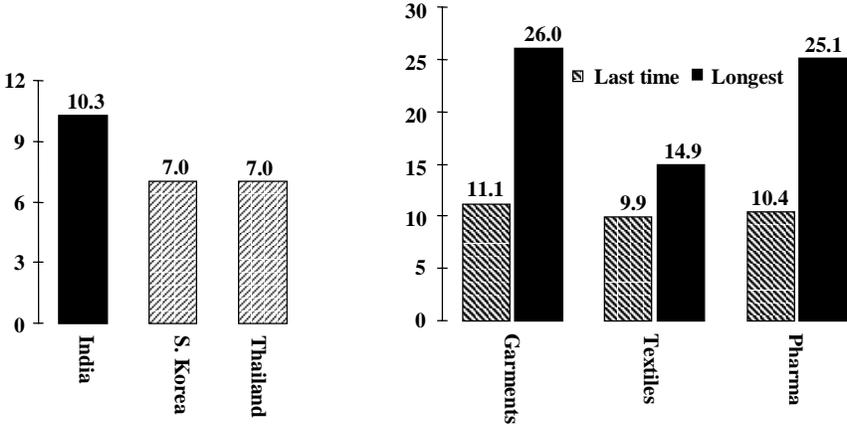
**Note:** Employment is the median value in each category. Relative incidence is the ratio of incidence of visits per employee of SMEs compared to that of the larger firms.

FACS, therefore, suggests two trends regarding investment climate and the extent of regulatory burden faced by firms in India. First, the average firm located in states that are considered to have best, good and medium investment climates tends to have lesser number of visits from government officials than the counterpart situated in the poor investment climate states. Second, the relative burden of such government visits weighs heaviest on SMEs — and is distinctly the highest in the poor investment climate states.

**3.4 Investment climate and delays at customs houses**

Any Indian exporter or importer will vouch that India’s customs houses perform poorly compared to other Asian countries. FACS highlights this in no uncertain terms. The mean delay at customs while importing is 10.3 days in India, versus 7 each in Thailand and South Korea. And, as far as four key industries are concerned — garments, textiles, pharmaceuticals, and electronics — the mean and longest delays are both quite substantial. Chart N depicts the data, while Table 6 shows the delays across industry and firm-size.

**Chart N: Delays at Indian customs houses while importing (number of days)**



The impact of such delays shows up in the case of garments — a key Indian export, which imports raw materials and exports finished apparel. The average customs delay while importing is 11 days; while exporting, there is a further delay of 4.5 days. Thus, the total average delay is 15.5 days. This accounts for almost a third of an average production cycle. In other words, the entire cycle becomes 60-days instead of 45, with its attendant problems of working capital.

Table 6: Customs delays while importing, industry-wise and size-wise

	Textiles	Garments	Pharma	Electronics		Textiles	Garments	Pharma	Electronics
<b>IMPORTS</b>					<b>EXPORTS</b>				
<b>SMEs</b>					<b>SMEs</b>				
Av. delay	8.9	9.9	10.5	9.0	Av. delay	5.2	4.0	4.4	5.2
Max. delay	13.5	20.1	17.5	15.8	Max. delay	6.8	9.1	8.7	9.0
<b>Large</b>					<b>Large</b>				
Av. delay	10.8	13.5	10.2	8.9	Av. delay	4.2	5.5	4.3	3.7
Max. delay	16.2	37.1	32.8	11.6	Max. delay	9.0	9.9	9.8	4.8
<b>Total</b>					<b>Total</b>				
Av. delay	<b>9.9</b>	<b>11.1</b>	<b>10.4</b>	<b>9.0</b>	Av. delay	<b>4.8</b>	<b>4.5</b>	<b>4.4</b>	<b>4.6</b>
Max. delay	<b>14.9</b>	<b>26.0</b>	<b>25.1</b>	<b>14.1</b>	Max. delay	<b>7.8</b>	<b>9.3</b>	<b>9.3</b>	<b>7.4</b>

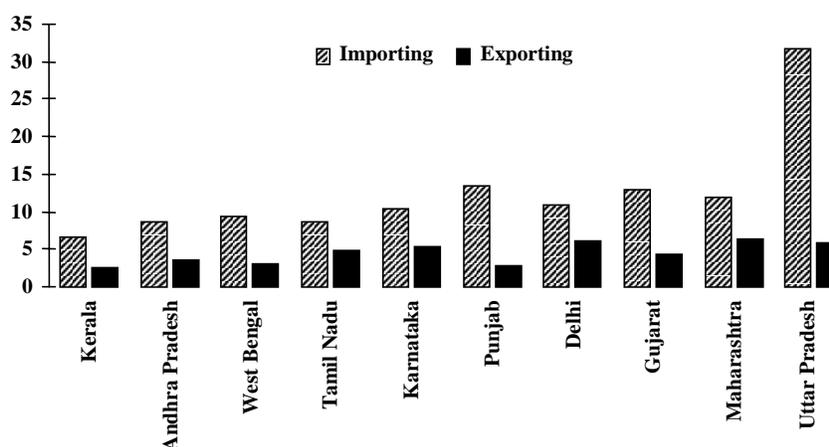
To what extent do these delays relate to investment climate? Are customs houses in India equally inefficient everywhere, or is there a correlation between investment climate and length of delays? The data is given in Table 7. While the average delay is high by any yardstick, there seems to be a significant difference between the best, good and medium investment climate states on the one hand, and the poor states on the other.

Table 7: Delays at customs houses across investment climates  
(average number of days)

Climate	Average delay		
	Importing	Exporting	Total
Best IC	12.2	6.0	18.1
Good IC	9.3	4.6	13.9
Medium IC	11.1	5.7	16.8
Poor IC	22.0	4.7	26.7
<b>Overall</b>	<b>10.3</b>	<b>4.9</b>	<b>15.2</b>

However, this conclusion has to be tempered by the state-level data. As Chart O suggests, the reason for the huge additional delay in the weak investment climate states has much to do with the inefficiency of just one state — Uttar Pradesh. According to 109 respondents from that state, the average delay while importing was almost 32 days!<sup>15</sup> Net of Uttar Pradesh, there is little to choose between the states ranked according to investment climate. In other words, customs houses seem to be fairly uniformly inefficient across states. If anything, excellent states like Gujarat and Maharashtra report higher delays than poor states like Kerala and West Bengal.

Chart O: Customs delays across states (number of days)



<sup>15</sup> The median delay for Uttar Pradesh was also significantly higher than the rest of the states.

### 3.5 Investment climate and energy costs

India has had the unenviable reputation of suffering from very high industrial energy costs. Indeed, a common refrain of entrepreneurs is that high energy costs take away a significant chunk of competitiveness. Much of this is due to cross-subsidisation of power tariffs by the state governments and widespread power theft that is euphemistically called ‘transmission and distribution losses’. In most states, political factors have dictated that agricultural consumers pay little or nothing for the power that they consume. Households, too, pay relatively little and, in many states, connive with the electricity departments to draw much more power than what is billed.

The ultimate impact of cross-subsidies and theft falls on the industrial sector, especially the large and medium-scale units — who end up not only paying much more per unit of public power, but also have to invest in private generating capacities to tide over frequent power outages. Table 8 gives comparative data on industrial power costs for the last quarter of 1998. It shows that Indian industry pays a very high price for public power. The situation has worsened since then.

**Table 8: Retail price of industrial power, Q4 1998**

Country	\$ per Kwh	Rs per Kwh
Canada	0.04	1.70
USA	0.04	1.70
Poland	0.04	1.70
Mexico	0.05	2.12
Taiwan	0.06	2.54
Korea	0.06	2.54
<b>India</b>	<b>0.07</b>	<b>2.97</b>

**Note:** Price in rupees based on the prevailing exchange rate of Rs.42.40 = US\$1.

**Source:** International Energy Agency (Paris), *World Energy Outlook 2000*.

The FACS questionnaire had a large section on power costs, and the data is quite revealing. Table 9 gives the median blended electricity cost per kilo-watt hour (kwh), taking into account the percentage of power drawn from the public grid and from private generator sets. It shows that the mean power cost across the 10 states is Rs.4.43 per kwh, and the median cost is Rs.4.15 per kwh. Delhi and Uttar Pradesh have the highest power costs. Incidentally, both these states not only have very poor public power systems, but also suffer from huge power thefts.

**Table 9: Blended median cost of power in the ten states**

State	Freq	Mean cost Rs./kwh	Median cost Rs./kwh
Punjab	24	3.27	3.11
Tamil Nadu	129	3.91	4.00
West Bengal	37	3.93	4.03
Karnataka	114	3.98	4.00
Maharashtra	218	4.09	4.05
Andhra Pradesh	92	4.28	4.09
Gujarat	55	4.35	4.22
Kerala	14	4.71	2.71
Delhi	159	4.82	4.60
Uttar Pradesh	107	6.14	4.80
<b>Total</b>	<b>949</b>	<b>4.43</b>	<b>4.15</b>

There is a clear correlation between investment climate and cost of power. Firms operating in the best and good investment climate states incur significantly lower mean as well as median power costs compared to those in medium and poor investment climate states. The power cost difference between the best and the good on the one hand and the medium and poor on the other has much to do with the inefficiencies and power thefts in Delhi and Uttar Pradesh. Table 10 gives the data.

**Table 10: Blended power cost across investment climates**

IC	Freq	Mean cost Rs./kwh	Median cost Rs./kwh
Best IC	273	4.14	4.10
Good IC	335	4.04	4.00
Medium IC	183	4.61	4.50
Poor IC	158	5.51	4.45
<b>Total</b>	<b>949</b>	<b>4.43</b>	<b>4.15</b>

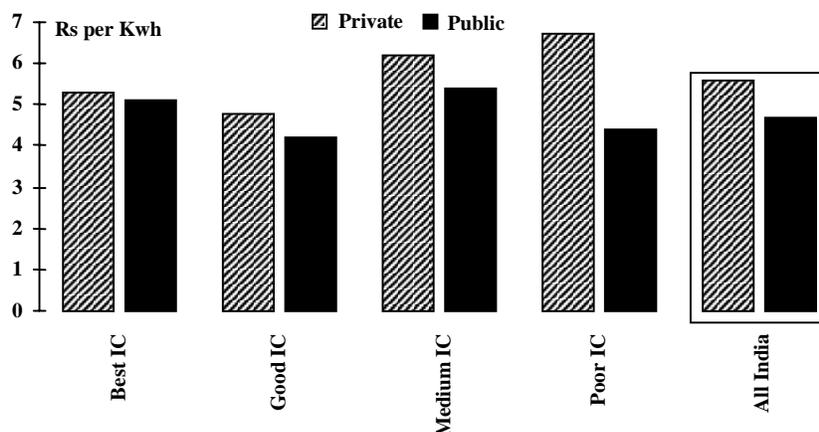
An upshot of operating in a country with poor, uncertain and unstable power supply from the public grid is that most manufacturers have to invest in private generators. The average is shockingly high. According to the data, 70 per cent of the respondents had to invest in their own generator sets — a percentage that speaks volumes of the awful state of power supply from the public grid. Here, too, there are significant differences across investment climates. A lesser percentage of firms in Maharashtra and Gujarat need to have their own generators. Even so, 45 per cent of the firms had to invest in their own generator sets. The gap between these two best investment climate states and the rest is huge, and reflects the overall paucity of power from the public grid. Almost 76 per cent of the companies located in the three good investment climate states needed to purchase their own generators — with the share being as high as 82 per cent for Tamil Nadu. Over 85 per cent of firms located in Delhi and Punjab (the medium investment climate states) have generators. There is not much to choose between the medium and the poor investment climate states — 84 per cent of firms located in the latter have their own generator sets. Table 11 gives the data.

**Table 11: Percentage of firms having their own generator sets**

State	Average % of firms with own generators
<b>Best IC</b>	<b>45.0%</b>
Maharashtra	44.4%
Gujarat	47.1%
<b>Good IC</b>	<b>75.8%</b>
AP	70.0%
Karnataka	76.4%
Tamil Nadu	82.2%
<b>Medium IC</b>	<b>85.5%</b>
Delhi	85.1%
Punjab	88.0%
<b>Poor IC</b>	<b>84.0%</b>
Kerala	62.9%
UP	76.5%
W. Bengal	97.2%
<b>Total</b>	<b>70.0%</b>

What do generator sets do to the blended power cost? Simply put, they raise the weighted average cost of power — and the difference in cost between running a generator and drawing from the public grid increases across investment climates. This shows up very clearly in Chart P.

**Chart P: Power cost - public and private**



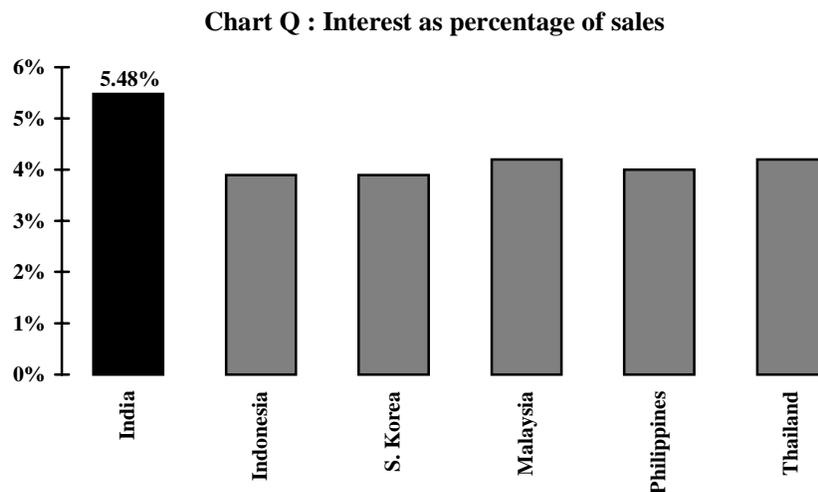
### 3.6 Investment climate and interest costs

It is well known that Indian industry has been suffering from high real interest rates. In recent times, inflation based on the Wholesale Price Index (WPI) has been consistently under the 3 per cent mark, and steadily trending down. Inflation based on the Consumer Price Index (CPI) for industrial workers has been more or less in line with WPI inflation. Given this low inflation rate, India's real interest rates are high and, if anything, creeping upwards over time. Today, India's real prime lending rate is as high as 8.5 per cent. None of India's international competitors have such high real interest rates.

High real interest rates have much to do with high nominal rates on return on small savings, the impact of non-performing loans, and inefficiencies in the state owned banking system. These require some elaboration. Even today, small savings schemes (such as post office accounts and other national savings schemes) fetch a nominal interest varying from 9.5 per cent to 10 per cent. There is strong political opposition to reducing these government administered rates, for it is believed that in the absence of old age pensions and insurance, the elderly middle class should not be deprived of a decent return on their lifetime savings.

Such high small savings rates tend to keep bank deposit rates high. Bankers fear that a large gap between the time deposit and small savings rates can lead to disintermediation. Thus, the average deposit rate is 7.5 per cent. To this one must add the cost of a growing burden of bad debts and non-performing loans, estimated at another 2 percentage points. Inefficiency among state owned banks — over-manning, poor skill sets, inadequate computerisation, unproductive branches, and so on — contributes to an intermediation cost of over 2.5 percentage points. Therefore, it is almost impossible to obtain a loan at less than 12-12.5 per cent, despite inflation running at under 3 per cent.

The consequence is high interest cost. Data from a sample of 381 large private sector manufacturing companies for 1999-00 shows that interest cost accounts for 5.5 per cent of sales.<sup>16</sup> This result — based on quite a different sample of manufacturing companies — tallies extremely well with the data culled out of FACS. Our survey shows that the average interest cost per rupee of sales is 5.48 per cent. And, as FACS data from other countries show, this cost is very high. Chart Q gives the comparisons.



As expected, interest cost does not vary across investment climate. Banks do not alter their interest rates depending on states where firms are located. Indeed, as Table 12 shows, interest cost per rupee of sales varies within a fairly narrow band. However, the alarming aspect is the very high component of interest as a percentage of value added. On average, interest cost as a share of value added is 10.27 per cent, with a high of 10.54 per cent for firms located in the best investment climate states.

<sup>16</sup> The data is from Prowess®, a database maintained by the Centre for Monitoring the Indian Economy. We have defined large as companies with sales in excess of Rs.1 billion per year.

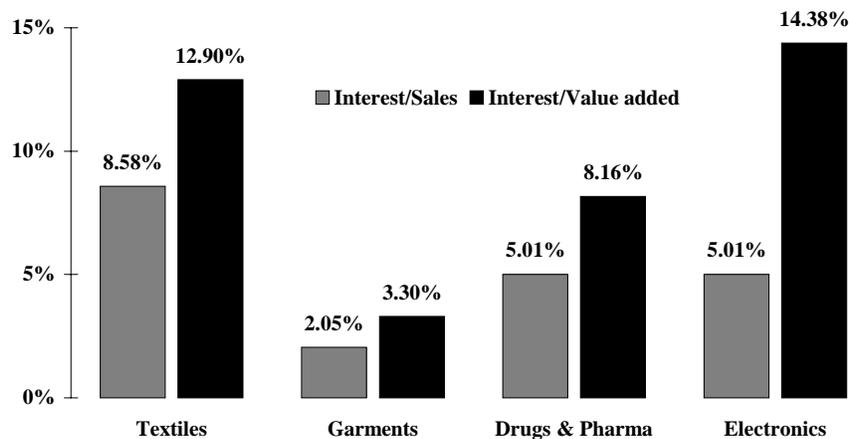
**Table 12: Interest cost and investment climate**

Climate	Interest/Sale	Interest/Value added
Best IC	5.46%	10.54%
Good IC	5.97%	9.68%
Medium IC	5.40%	10.32%
Poor IC	4.16%	8.60%
<b>Total</b>	<b>5.48%</b>	<b>10.27%</b>

A major factor contributing to the lack of competitiveness of Indian industry is the crippling interest burden. Textiles — which could be a very significant export earner for India — suffers from an interest cost which is almost 8.6 per cent of sales. Part of this reflects the financial crisis in the textile industry. Many of the firms were highly geared to begin with; and when the industry began to face cyclical trends from the mid-1980s, each downturn contributed to financial distress and debt defaults which, in turn, raised the interest burden. But, it could equally be said that high interest costs have exacerbated the liability. And, instead of being a healthy, internationally competitive industry, textiles is crippled by high interest costs.

While the situation is very severe for textiles, it isn't particularly encouraging for the pharmaceutical and consumer electronics industry. Both face interest costs that exceed 5 per cent of sales. Only garments seem to be in reasonable shape. Chart R gives the data.

**Chart R: Interest cost across industries**



A particularly serious problem with such high interest costs is that, at the time of exporting, these cannot be claimed as drawback. The World Trade Organisation (WTO) rules allow exporters to net out excise and customs duties on all inputs, and governments are permitted to offer drawback on these elements of cost. Not so for interest, or the burden of high energy costs, or poor infrastructure. Under WTO rules, Indian exporters cannot claim that they suffer from an excessive burden on account of interest — and that a drawback of the ‘excess’ interest burden should be treated as an allowable subsidy. Any attempt to do so will immediately be treated as an ‘actionable’ subsidy and attract penal countervailing duties from importing countries. Thus, the high interest cost has to be carried without recompense — and it is this cost which often prices out Indian manufacture in the world market.

There are differences in interest burden according to scale. As Table 13 shows, large firms carry significantly higher interest cost compared to SMEs. Part of this is because Indian banks and term lending financial institutions are much more willing to lend to larger manufacturing companies than SMEs.<sup>17</sup> Part of it may well be that SMEs are more efficient with their working capital deployment and asset turnover than the bigger firms. The FACS survey does not address such issues in specific detail. It promises to be an area worthy of careful micro-level research.

<sup>17</sup> Banks and financial institutions typically lend against physical assets (fixed assets and inventories). Larger firms have more physical assets, which has traditionally allowed them to go in for higher gearing.

Table 13: Interest burden according to scale

Scale	% of sale	% of value added
SMEs	2.65%	4.14%
Large	5.85%	11.30%
<b>Total</b>	<b>5.41%</b>	<b>10.11%</b>

### 3.7 A recap

It is now time for a quick recapitulation of the key findings of this section.

- Entrepreneurs and managers were asked to rank the investment climate of 10 states. Their subjective ranking created four distinct clusters: (i) the best investment climate states, consisting of Maharashtra and Gujarat, (ii) the good investment climate states, namely Andhra Pradesh, Karnataka and Tamil Nadu, (iii) medium investment climate states, or Delhi and Punjab, and (iv) poor investment climate states, consisting of Kerala, Uttar Pradesh and West Bengal.
- The next step was to examine whether this subjective ranking was borne out by objective facts. That involved looking at labour productivity, regulatory burden, delays at customs houses, and energy and interest costs.
- As far as **labour productivity** was concerned, it is clear that for the selected industries, India as a whole generates lower value added per worker compared to Thailand, Malaysia, Philippines and Korea. This disadvantage is somewhat mitigated by India's low wage costs. In other words, the differentials in value added per unit of labour cost are lower than those measured per worker. Indeed, in garments and textiles, India enjoys a limited advantage vis-à-vis some South-east Asian countries. However, labour productivity (value added per worker) clearly varies across investment climate — the best investment climate states have the highest productivity, followed by the good, the medium and the poor. And these differences are significant. The best investment climate states produce over 60 per cent more value added per worker compared to the poor investment climate states. Moreover, when productivity is measured in terms of value added per unit of labour cost, the best and good investment climate states rank higher than the medium and poor — although the differences are more muted.
- **Regulatory hassles**, too, differ across investment climates. While the separation is not as stark as it is with labour productivity, there is a difference in the number of visits between the best and the good investment climate states on the one hand, and the medium and poor on the other. The former have fewer visits than the latter. More seriously, the *relative* burden of such government visits weighs heaviest on SMEs — and is distinctly the highest in the poor investment climate states.
- A major source of uncompetitiveness in Indian industry is the **delays in customs houses**. The mean delay at customs while importing is 10.3 days in India, versus 7 each in Thailand and South Korea. As far as four key industries are concerned — garments, textiles, pharmaceuticals, and electronics — the mean and longest delays are both quite substantial. Although the data suggests that there is a significant difference in delays between the best and good investment climate states on the one hand, and the medium and poor on the other, this seems to be largely due to the exceptional inefficiencies of customs houses located in Uttar Pradesh. Net of this state, it is fair to say that customs houses are uniformly inefficient across states.
- **Poor supply of power** is crippling competitiveness in Indian manufacturing. India's energy costs are much higher than other countries, and this becomes especially onerous vis-à-vis competing products. Because of poor power supply from the public grids, firms are forced to purchase generator sets. Even in the best investment climate states, 45 per cent of the respondents said that they had their own generators — a share that is very high by any international standard. For the good, medium and poor investment climate states, the percentages were 76 per cent, 86 per cent and 84 per cent respectively. Not surprisingly, the mean blended cost of power (public grid and private generator) was 33 per cent higher in the poor investment climate states compared to the best states.
- Finally, the data shows that Indian manufacturing suffers from very **high interest costs**. Although this does not vary across investment climate, an average interest cost of almost 5.5 per cent of sales makes Indian manufacture very uncompetitive. Interest cost per rupee of sales for textiles is a crippling 8.6 per cent; for pharmaceuticals and consumer electronics it is over 5 per cent. Such

high costs are largely due to structural dysfunctionalities in the financial sector, which require urgent reforms.

Having established, in most cases, fairly strong correlation between objective quantitative evidence on the one hand and subjective notions of investment climate on the other, it is time to determine causality. For this, we turn to an econometric analysis of total factor productivity (TFP).

#### 4 Total Factor Productivity (TFP) and Investment

We ask the following question: “To what extent can the variations in productivity be ascribed (exclusively) to investment climate?” Answering this question requires econometric estimation of factor productivity, and we conduct this exercise in a manner outlined in the next few paragraphs.

The basic premise is the usual double-logarithmic Cobb-Douglas production function of the form:

$$\ln (Y/L) = \alpha + \beta \ln (K/L) + (1-\beta) \ln (w) + u \dots\dots\dots (1)$$

where ‘ln’ is natural logarithm, *Y* is value added, *L* is the number of workers, *K* is the estimate of correctly indexed capital stock, *w* is the wage rate,  $\alpha$  is the constant term,  $\beta$  the coefficient for the capital to labour ratio,  $(1-\beta)$  the coefficient of the wage rate, and *u* is the error term.

In this base formulation, the constant term reflects a number of heterogeneity effects. Simply put, it means that firms differ in terms of (i) size, (ii) industry, (iii) year of observation, and (iv) investment climate. Without explicitly taking these heterogeneous factors into consideration as explanatory variables, the coefficients and the constant will be contaminated with their effects. To find out the effect of investment climate, we need to control for all other effects.

To do so, the estimating model is set up as:

$$\ln (Y/L) = \alpha + \beta \ln (K/L) + (1-\beta) \ln (w) + \gamma_0\text{Size01} + \gamma_1\text{Year98} + \gamma_2\text{Year97} + \gamma_3\text{Drugs} + \gamma_4\text{Electro} + \gamma_5\text{Garments} + \gamma_6\text{BestIC} + \gamma_7\text{GoodIC} + \gamma_8\text{PoorIC} + u \dots\dots\dots (2)$$

where:

- $\gamma_i$  are coefficients for intercept dummies,
- Size01 is the dummy variable for SMEs ( $\leq 150$  workers),
- Year98 and Year97 are year dummies, since the data are for three years, 1997, 1998 and 1999,
- Drugs, Electro and Garments are industry dummies for drugs and pharmaceuticals, consumer electronics, and garments respectively, and
- BestIC, GoodIC and PoorIC are dummies for investment climate.

The regression, therefore, is being run where the base year is 1999, the base industry is textiles, the base size is large, and the base investment climate is medium. Table 14 gives the results of the constrained linear regression.

**Table 14: The TFP regression results**

	Coeff.	Std. Error	t	P >  t
<i>K/L</i>	<b>0.3451</b>	<b>0.0248</b>	<b>13.90</b>	<b>0.00</b>
<i>w</i>	<b>0.6549</b>	<b>0.0248</b>	<b>26.37</b>	<b>0.00</b>
Size01	<b>-0.1158</b>	<b>0.0516</b>	<b>-2.24</b>	<b>0.03</b>
Year98	0.0018	0.0465	0.04	0.97
Year97	0.0002	0.0637	0.00	0.99
Drugs	<b>0.1771</b>	<b>0.0582</b>	<b>3.04</b>	<b>0.00</b>
Electro	<b>-0.1400</b>	<b>0.0609</b>	<b>-2.30</b>	<b>0.02</b>
Garments	<b>-0.0959</b>	<b>0.0594</b>	<b>-1.61</b>	<b>0.10</b>
BestIC	0.0324	0.0636	0.51	0.61
GoodIC	0.0042	0.0602	0.07	0.94
PoorIC	<b>-0.1296</b>	<b>0.0743</b>	<b>-1.74</b>	<b>0.08</b>
Constant	<b>1.1286</b>	<b>0.0809</b>	<b>13.95</b>	<b>0.00</b>

**Note:** Figures in bold are significantly different from zero up to 10 per cent significance of the t-distribution.

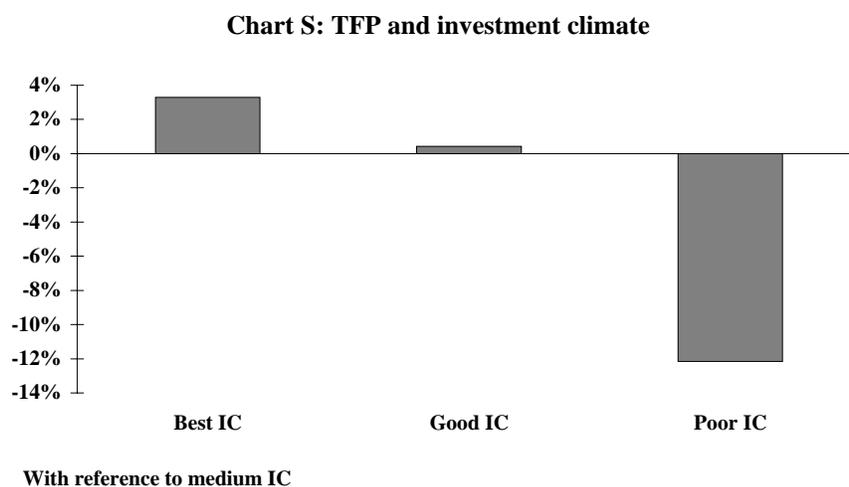
How should one interpret these results?

- First, the basic Cobb-Douglas production function works well — the coefficients are statistically significant and have the right signs.
- Second, size matters. The coefficient for the intercept dummy for SMEs (Size01) is significant, and has the right (negative) sign. It means that, all else being equal, the intercept term for SMEs is less than for large firms. Hence, *ceteris paribus*, SMEs have lower total factor productivity than larger firms.
- Third, industry differences matter. Given that the base is textiles, there are statistically significant differences in the intercept for drugs and pharmaceuticals (higher TFP), consumer electronics (lower TFP), and garments (lower TFP).
- Finally, while there is no statistically significant difference in TFP between the medium investment climate states and the best and the good (these have the right signs), there is a significant difference between the medium on the one hand and the poor investment climate states on the other. Simply put, after controlling for size, years and industry, the TFP of the poor investment climate states is significantly worse than that of best, good and medium.

Regarding the last point, the ideal result would have been if the coefficient for the BestIC dummy was significant and greater than the rest; of the GoodIC being significant — but worse than the BestIC and better than the rest; and the PoorIC being significant and the worst. Of these, the last is certainly the case. Does this seemingly limited result deny the role of investment climate?

We would argue otherwise, and emphatically so. True, there seems to be no statistically significant difference between the medium investment climate states on the one hand and the best and the good on the other. Equally true, there is a huge, and statistically significant, TFP gap between the medium investment climate states and the poor. In other words, investment climate matters. After controlling for size, years and industry, firms operating in poor investment climate states have lower TFP than those in best, good and medium investment climate states. We would argue that in the world of pooled time-series and cross-section regressions — where the cross-section hugely dominates the time series — this is a powerful enough result.

Chart S depicts the TFP results calculated on the basis of the coefficients and the sample means. The chart is normalised with reference to the medium investment climate, or the horizontal axis. While the best and good investment climates do not have improvements in TFP that are significantly different from the medium, firms belonging to the poor investment climate states certainly suffer — by over 12 per cent.



This brings us to final part of the econometric exercise: “Does investment climate play a role in determining the flow of physical investment in states?” Here, too, the answer is unambiguously positive.

To deal with this question, we carried out the following regression:

$$\ln(K) = \alpha + \beta_0 \ln(K^*_{-1}) + \beta_1 \ln(\text{Profr}_{-1}) + \gamma_0 \text{Drugs} + \gamma_1 \text{Electro} + \gamma_2 \text{Garments} + \gamma_3 \text{BestIC} + \gamma_4 \text{GoodIC} + \gamma_5 \text{PoorIC} + u \dots\dots\dots (3)$$

where:

- K is capital stock for the current year and  $K^*_{-1}$  is the inflation adjusted capital stock for the previous year, and
- $\text{Profr}_{-1}$  is the inflation adjusted profit rate of the previous year.

The results are given in Table 15.

**Table 15: Investment climate determines investment flows**

	Coeff.	Std. Err.	t	P >  t
<b>LnK*-1</b>	<b>0.9930</b>	<b>0.0028</b>	<b>358.08</b>	<b>0.00</b>
<b>Profr_1</b>	<b>0.0312</b>	<b>0.0111</b>	<b>2.80</b>	<b>0.01</b>
<b>Drugs</b>	<b>0.0337</b>	<b>0.0130</b>	<b>2.60</b>	<b>0.01</b>
Electro	-0.0115	0.0138	-0.83	0.41
Garments	0.0095	0.0136	0.70	0.49
<b>BestIC</b>	<b>0.0855</b>	<b>0.0142</b>	<b>6.00</b>	<b>0.00</b>
<b>GoodIC</b>	<b>0.0577</b>	<b>0.0139</b>	<b>4.14</b>	<b>0.00</b>
PoorIC	-0.0049	0.0169	-0.29	0.77
<b>Constant</b>	<b>-0.0588</b>	<b>0.0303</b>	<b>-1.94</b>	<b>0.05</b>

The table shows that, all other things being controlled for, the states with best investment climate have a significantly higher intercept than those with medium climate (coefficient of 0.0855 compared to -0.0588). Moreover, states with good investment climate also do better than the medium climate states (coefficient of 0.0577 versus -0.0588). The medium and poor states fare significantly worse. The result is hardly surprising. States that are recognised to have good governance attract more investment, and over time that shows up in higher investment growth.

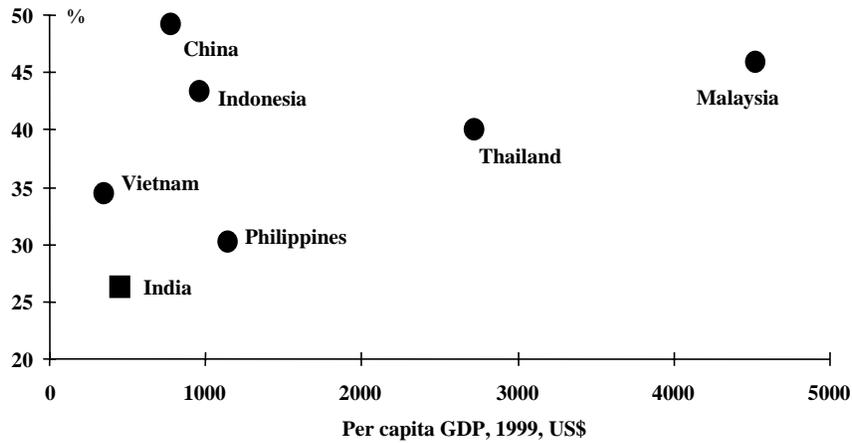
Thus, good investment climate matters in a static and dynamic sense. The former shows up in higher TFP — for a given quantum of investment, firms operating in the better states show higher factor productivity. The latter shows up in the investment function — better governed states attract greater investment. The static and the dynamic constitute the cycle: a virtuous one for the best and good investment climate states, and a vicious one for the poor.

## 5 Lessons and policy conclusions

It is necessary to explain why we have focussed on manufacturing companies, and not on the services sector. The less important reason has to do with cross-country comparability. Manufacturing is the export driver throughout East and South-east Asia, and we want to use the common FACS framework to compare manufacturing firms in India with their counterparts in Asia. But the more important reason relates to India's low share of manufacturing in GDP. As Chart T shows, with a per capita GDP of \$450 in 1999, India's share of manufacturing is lower than any of the so called Asian tigers — lower than even tiny Philippines.

This is not to claim that the service sector is unimportant. Far from it, and India can be proud of its global achievements in software. However, it would be foolhardy to believe that India can clock 7.5 - 8 per cent annual GDP growth over the next decade and a half only on the rump of the services sector. It needs strong manufacturing. And the reason why the share of manufacturing in India is so low compared to the rest of Asia has to do with decades of dysfunctional policies and regulations and poor physical and financial infrastructure — things that constitute an undesirable investment climate. Unless these radically improve, India cannot expect 7 per cent plus growth. And without such growth, and a greater role of manufacturing, India will not succeed in eradicating mass poverty.

**Chart T: India's share of industry is abysmally low**



Our first lesson is that investment climate matters. Without doubt, that is the most important conclusion that can be safely drawn from this study covering 1099 manufacturing companies in four major industries across 10 states in India. Entrepreneurs and firm managers have a very good idea of which states have a positive investment and working climate, and which do not. And their notions are well buttressed by quantitative and econometric evidence. To be sure, the grid is not terribly fine. Nevertheless, for most quantitative variables, there are significant differences between the best and good investment climate states on the one hand, and the medium and poor on the other.

The second set of policy conclusions arise from the cross-country comparisons. While India may be marginally competitive in value added per unit of labour cost, the advantage in terms of profit margin is even smaller. This wafer thin lead gets eroded by massive disadvantages in power costs, interest rates, delays at customs houses, infrastructural bottlenecks and, to a lesser extent, regulatory hassles. Some of these constraints vary across states, with the better investment climate states being a bit more fortunate. However, the fact is that the best investment climate states are still way behind the curve compared to India's South-east Asian and East Asian competitors. And unless the best states adopt international role models, they will remain behind the rest of competing world — despite being better than other Indian states. This is particularly relevant for Maharashtra, Gujarat, Andhra Pradesh, Karnataka and Tamil Nadu. Governments of these five states have to reform double quick if they wish to have internationally competitive firms flourishing under their governance.

The third point is that investment climate is all about governance, with an eye on the micro, the structural issues, implementation and day-to-day details. It is not about fiscal concessions. Moreover, it does not take long for a state with a good investment climate to deteriorate. Indeed, we believe that Maharashtra and Gujarat are being seriously challenged by Andhra Pradesh and Karnataka — and if the two western states wish to maintain their supremacy, they had better embark on state level second generation reforms as quickly as possible.

Finally, the study clearly suggests serious need for rapidly embarking on the second generation of structural reforms both at the level of the Central government and the states. At the end of the day, with an inevitably more open trade regime, India's salvation lies in being internationally competitive. That requires sustained structural reform. Or else, the gap between India on the one hand, and China, South-east Asia and East Asia will steadily widen. To the detriment of India and its states.

Price: Rs.500 (or US \$15). This price only covers the cost of production.

*To purchase, contact:*

Pramila Bhargava  
Confederation of Indian Industry (CII)  
23 Institutional Area, Lodi Road, New Delhi 110 003  
Tel: 91-11-4629994-7 • Fax: 91-11-4626149  
Email: [pramila.bhargava@ciionline.org](mailto:pramila.bhargava@ciionline.org)

