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INDIA:
Investment Climate and Manufacturing Industry

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PREFACE

This report is based on two investment climate surveys of India carried out by the Confederation of Indian Industry (CII) in 2000 and 2003 in collaboration with the World Bank. The report team consisted of Priya Basu (SASFP), Somik Lall (DECRG), and Taye Mengistae (DECRG). Simon C. Bell (SASFP) provided overall advice and guidance. The external peer reviewers were Sanjaya Lall, Professor of Economics, Oxford University, and Steve Redding, Professor of Economics, London School of Economics. The internal peer reviewers were Fernando Montes-Negret (ECSPF), Lili Liu (PRMEP), and Harry Broadman (ECSPE), Sanjay Kathuria (LCSPE), Magdi Amin (EASFP), and Francois Nankobogo (AFTPS). Sonia Hammam (SASEI) provided useful inputs. The team gratefully acknowledges the administrative support provided by Maria Marjorie Espiritu (SASFP).

The report draws on a review of India's investment climate recently prepared by a team from CII entitled, "Does Investment Climate Matter? A Survey of India's Manufacturing Sector, 2000 and 2003." The CII team was led by Dr. Omkar Goswami, and included A.K Arun, Arindam Mookherjee, Vishal More, and G. Srivatsava.

Technical notes on background econometric analyses are available from the report team upon request.

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Executive Summary

Differences in the "investment climate" have recently gained centre stage in explaining variations in competitiveness, growth and prosperity across countries or regions. The investment climate comprises institutional and policy variables that have a crucial bearing on business performance, but over which firms have no control individually. Key determinants of the investment climate include the functioning of product and factor markets; sources of non-pecuniary intra- and inter-industry externalities (i.e., spillovers) the quality of public goods (such as law and order, government regulation) and their effects on the cost of borrowing, on price stability, or on exchange rates via fiscal and monetary policies; and some physical and social infrastructure.

This report will assess India's investment climate from the perspective of industrial growth. Building on our earlier work on this topic (World Bank, 2002a), we focus here on investment climate variations within India, analyzing in greater detail the implications these variations have on industrial performance; subnational disparities in productivity and growth are of particular interest.

We use firm-level data from the joint World Bank CII Investment Climate survey of Indian manufacturing companies in addition to the Indian government's Annual Survey of Industry. In part, the study is longitudinal, comparing investment climate variations over the three years since our first survey. Business environment data from secondary sources help us to further analyze and compare India's regional investment climates with those found in other countries.

The need for a better investment climate

A vibrant private sector that invests, creates jobs, and improves productivity is central to promoting growth and expanding opportunities for poor people. The government of India's Tenth Five-Year Plan sets ambitious targets for GDP growth (around 8% per year over the next decade) and employment creation (100 million new jobs) required to substantially reduce the incidence of poverty. . In order to sustain a growth rate of 8 percent over the long term, while reducing poverty, India must raise its investment rate to about 30 percent from the current 23. This rise would, in turn, require steep increases in ratio of private sector investment to GDP, and (particularly in the industrial sector, which has the greatest potential to provide high-wage employment for the 70 percent of the labor force now working in agriculture. This will have much to do with the quality of India's investment climate at the national and subnational levels, and will also be influenced by how investors rate India's investment climate with other investment destinations in Asia.

Deficiencies in India's investment climate pose critical constraints on private sector investment and performance, particularly industrial competitiveness. Yet Indian manufacturers have become more competitive over the past decade: their exports have grown in real and absolute terms over the period at a pace faster than the growth of world trade itself. In the first half of the 1990s alone exports grew 30 percent faster than world trade in manufactures. Yet for the same period, China's exports of manufactures grew 57 percent faster than India's. Even more telling perhaps is China's share in world exports, which stood at 4 percent in 2000 against India's 0.7 percent. Similarly, inward FDI to India has averaged US$3 billion annually over the past few years as opposed to US$40 billion annually to China.

Far more pronounced than the large and looming competitiveness gap between India and China is the gap between India's rich and poor regions. The gap in per capita incomes, for example, is a lot wider between Maharashtra and Uttar Pradesh, or Punjab and Madhya Pradesh, than it is between India and China. Per capita incomes in Maharashtra are more than three times those in Uttar Pradesh. Or consider the contrast between

the 8 percent annual growth rates in the gross state domestic product (GSDP) of Gujarat or Maharashtra with the 4 percent (and less) rates seen in Bihar or Orissa.

India's Investment Climate from an International Perspective

Comparisons of the investment-climate survey conducted for India with similar surveys for other countries show that when entrepreneurs rate regulatory quality and corruption, and these are treated as indicators of reform priorities, then India's industrial entrepreneurs are similar to those in China's private sector. The reform priorities also seem to overlap considerably with those identified in Brazil and Bangladesh.

Yet in regulation and corruption subcategories, for example, or tax and administration, one finds vast differences between India and China. The World Bank's "Doing Business" database shows, on the one hand, that in China the average time taken to secure the necessary clearances for a startup, or to complete a bankruptcy procedure, is much smaller than in India. Also, Indian labor laws allow firms far less latitude with their employees than the labor code does in China, Brazil, Mexico, or the Russian Federation.

On the positive side, India's manufacturing firms face fewer tax and regulatory inspections than firms in China and Brazil; similarly, it takes fewer days, in India, to clear customs. Also, various indicators of investment climate show substantial improvement in India between 2000 and 2003. A comparison of key investment climate indicators (ICS 2000 with the ICS 2003) shows the reported overstaffing rate in Indian firms decreased from 16.8 percent to 10.9 percent over the period, indicating more flexible labor markets. The number of inspections per year declined from 11.7 in 2000 to 7.4 in 2003; over the same period senior management time spent on business regulations and inspectors fell from 16 to 14.2, reflecting fewer day-to-day bureaucratic hassles. The average number of days to clear customs fell from 10.3 in 2000 to 7.3 in 2003. Critical infrastructure indicators have also shown notable improvements. For example, 69 percent of the firms surveyed in 2000 reported using their own generators, because they could not rely on power supplied by the public grid. By 2003 this number had fallen to 61 percent.

The situation is most alarming for power supply in India, beset with power shortages, high costs, and unreliability. The 2003 ICS found that, on average, manufacturers in India face nearly 17 significant power outages per month, versus one per month in Malaysia and fewer than five in China. Approximately 9 percent of the total value of firm output is lost due to power breakdowns—compared to 2.6 percent in Malaysia and 2.0 percent in China. The frequency and average duration of outages are such that generators are standard industrial equipment in India, accounting for as much as 30 percent of a business's power consumption in many cases. Almost 61 percent of Indian manufacturing firms own generator sets (in 2000, this figure was 69 percent for India); the figure for Malaysia is 20 percent, 27 percent in China, and 17 percent in Brazil. Moreover, India's combined real cost of power is 74 percent higher than Malaysia's and 39 percent higher than China's.

Significant evidence suggests that Indian industry might be losing productivity owing to capital constraints and inefficient urban land markets. Inefficient land markets have driven up business costs in India—more than they do anywhere in East Asia. Finance also appears to be a significant growth bottleneck for Indian industry. Although the situation in India in this respect seems to be significantly better than in China, small businesses in India lack the access to formal sector finance in comparison with their counterparts in Brazil; only 54 percent of small businesses in India have active bank credit lines against Brazil's 75 per cent.

Differences in investment climate within India

Significant investment climate variations exist among India's many states. The ICS of India 2003 asked respondents, as in the previous ICS, to rate the general investment climate in all states other than their own. The resulting rating pattern showed six states—those that attracted almost all the FDI—were also identified as having better investment climates by the majority of respondents. These states are Maharasthra, Delhi, Gujarat, Andhra Pradesh, Karnataka, Punjab, Tamil Nadu, and Haryana. The first three states

are also the only ones to have registered growth in per capita incomes greater than 6.5 percent. Although these rankings are broadly consistent with the earlier rankings, there are some important changes. Although the scores for Gujarat and Tamil Nadu declined, Delhi has moved up in the rankings. Throughout this report, the term "better climate states" is used in reference to these eight states.

The reform priorities of India's private sector are broadly similar to those of the private sector in other countries, and are also consistent across the 12 states covered by the ICS. The latter is in spite of the fact that respondents rate the states' investment climates as a whole quite differently. Thus, regulatory and corruption issues are top priorities for the business community in the "better climate" states, just as they are in the other states; infrastructure, customs administration, and the rest have more or less the same order of priority across states.

While the cost of business regulation varies widely across India's regions, the pattern of these regional variations, or gaps, is not what might expect. The cost of regulation is, in fact, higher in states typically identified as having a better climate. Labor regulations appear to be a key complaint in almost all better climate states—the exceptions being Andhra Pradesh and Gujarat. This is broadly consistent with the pattern of reported overstaffing rates. Similarly, corruption is reported to be a major obstacle up to two-thirds of respondents in the better climate states—mirrored in most of our objective proxies for the burden of regulation; these include the frequency of inspection visits, management time spent on regulatory matters, and customs-clearance times.

Variations in the quality, availability, and cost of infrastructure are critical in explaining different investor perception of investment climate across states. The main reason better-climate states are rated thus (and more important, why these states attract almost all FDI to India) is rooted in their superior physical infrastructures. Barring Tamil Nadu and Karnataka, the percentage of respondents who describe infrastructure as a moderate or severe obstacle is significantly lower than the other surveyed states. Power supply, which is the main infrastructure bottleneck that respondents have in mind, is a lower priority for businesses in better climate states.

With regard to objective indicators of infrastructure, "better climate" states also score significantly better than other states. The number of power outages (and production losses caused by those outages) is significantly lower in better climate states. Barring Delhi and Tamil Nadu, better climate states have fewer generator owners, a lower percentage of self-generated power, and the less time spent waiting for connection to the public grid. Interestingly, more than a tenth of the respondents rated transport as a major obstacle in the three southern states of Kerala, Tamil Nadu, and Karnataka—the very states where businesses report higher average inventories.

So far, we have summarized investment climate differences between India and other countries on the one hand, and among India's states on the other. We will now measure more formally the cost of investment climate deficiencies within India, looking in particular at lost productivity and forgone growth. Investment climate affects the performance of the national economy, first, by affecting decisions firms make on plant location, and, second, through the effect investment climate has on plant performance in a specific location.

Investment climate and location choice

When firms decide on plant location, the decision rests partly on "agglomeration economies," that is to say, the benefits of localization and urbanization. Firms also consider specific aspects of the local investment climate. An econometric model used to understand the profit-maximizing location decision shows that agglomeration economies tend to push new investment to established locations. This is to say that an element of path dependency exists in regional industrial development. However, firms also consider specific aspects of the local investment climate in choosing locations. These include the relative cost of business regulation, the cost of corruption, the cost and reliability of power supply, how intrusively industrial regulations are enforced, and the ease with which land rights can be secured for business premises. Any adverse economic geography inhibiting industrial growth in certain regions can thus be mitigated through

investment climate reforms. This is discussed in greater detail in chapter IV.

Specific findings show that Indian firms have identified electricity prices as the single most important factor in decisions on plant location. The frequency of power outages and disruptions in phone services also matters. Energy prices for industry are considerably higher in India than in many industrial and developing countries. Even across Indian cities, the electricity costs borne by firms vary greatly. Energy costs increase consistently and significantly (in the food processing, textiles, metals, and machinery sectors) with superior market access, own-industry clustering, and industrial diversity, thereby lowering the benefits of locating in these areas.

Regulatory burdens also play an important role in determining location. Our analysis shows that cities where firms in general face a lower burden of regulation are likely to receive more investment and have greater shares of manufacturing activity. It also shows that the probability of a business locating in a city is lower depending on how much time business managers must spend dealing with regulations, or on the average frequency of absenteeism (the more absenteeism reported for a city, the less likely firms will locate there); the latter is used as a proxy for the quality of labor regulation.

As for labor costs, we find that after accounting for the skill mix and labor market problems, firms are in fact willing to pay higher wages for better workers. We also used worker absenteeism as an indicator of labor market problems; on average, higher levels of absenteeism are negatively associated with business location decisions.

As for access to land, results suggest that the local state's land policies have considerable impact on industry location across and within metropolitan areas. The larger the proportion of survey respondents reported to complain about land shortages in a city, the less likely new businesses will be to locate there.

Large potential gains can therefore be had by using these indicators to create a better investment climate. Improvements in these several key indicators will translate into greater profitability as better climate locations produce more investment and economic activity in those regions.

Investment climate and firm performance

The investment climate also affects industrial growth and development through its influence on firm performance—or plant productivity and growth—at given locations.

Labor productivity and total factor productivity are much higher in the better climate, higher FDI states. Labor productivity (defined as value added per worker) is more than 20 percent higher in the six states that have attracted practically the whole of FDI to India—the so-called high-FDI states. This is also true for the better climate states. Better climate, high FDI states have attracted more investment in plant and equipment than other parts of India. The rate of net fixed-capital formation in better climate states is 5.2 percent, against less than 0.4 percent in other states; it is 6.3 percent in high-FDI states, compared with 1.6 percent in low-FDI states. The cumulative outcome of these differences in capital formation? The average employee is better equipped with machines and tools in high-FDI states or in low-cost cities than in other states and cities. Yes, workers in better climate or high-FDI states are more skilled or better equipped. Those advantages aside, labor productivity is *still* higher in these states than elsewhere in India because total factor productivity (TFP) is also higher for the better climate states and high-FDI states—higher by 50 percent.

Analysis of firm-level data also shows that key investment climate indicators are closely correlated with productivity and business growth rates. Investment climate indicators such as unreliable and costly power supply, burdensome tax and customs administration, excessive labor regulation, inadequate land access, lack of access to formal external finance, and, finally, corruption all are negatively correlated with productivity and business growth rates. Problems of tax and customs administration and access to land seem to affect labor productivity to more or less the same degree across all sectors of technological sophistication. Similarly, unreliable and costly power has in each case lowered productivity. The impact of unreliable and expensive energy is,

however, far greater on medium- to high-tech industries such as electronics and pharmaceuticals than on resource-based industries such as food processing, mineral processing, furniture making, and the leather industry.

The key implication of these findings is that a better investment climate can generate significant benefits in terms of labor productivity, business growth, and investment rates. Some counterfactual simulations are used to give an idea of the economic cost to India of investment climate deficiencies. Labor productivity for the manufacturing sector, in high-cost cities, could increase by 80 percent if India could resolve its power supply problem, at least to a point where the typical business would not have to rely on its own generators for routine energy needs. Reforms of tax and customs administration would raise productivity by more than 60 percent. These reforms, together with improvements in access to land and external formal finance, would increase labor productivity by more than 160 percent. Such potential gains in labor productivity translate into large potential increments in business growth and business investment rates. For example, a 10 percent improvement in all indicators we cover in this report (deficient energy supply, tax and customs administration, access to land, access to finance, onerous labor regulation) would raise the average establishment-level sales growth rate from the current 11.3 per cent to 15.9 per cent a year.

Conclusion

The case for investment climate reforms: The most important conclusion offered herein is that the performance gap between Indian industry and its international rivals—particularly Chinese industry—has a great deal to do with investment climate. So does that between high-FDI or high-growth states in India and less successful regions. Adverse geography (and history) partly explains why the manufacturing sector suffers in some regions and cities. That is, remote regions are hampered by poor market access and limited localization economies. The policy message is nonetheless that these disadvantages can be offset by more aggressive improvements in the investment climate. Put another way, geographically disadvantaged states and regions can less afford numerous and severe deficiencies in their business environment, especially when they are compared with regions that possess natural or historical advantages that are attractive to domestic and foreign investors. The case for improving the investment climate of low-growth or low-FDI states does not proceed from evidence that their investment climate is bad (there is no evidence for this), but rather that improvements are the only way to offset inherent disadvantages over which they have no control.

Dimensions of the reforms: Specific policy measures cannot be inferred, at least directly, from a diagnostic analysis such as this. But the report is clear in concluding that at least two interrelated sets of regulatory and institutional reforms are needed in order to improve India's investment climate. The first comprises a set of regulatory reforms, including reducing entry and exit barriers to manufacturing industries, addressing impediments to the smooth functioning of labor, land, and product markets, and streamlining the regulation of business startups, bankruptcy procedures, and industrial and trade routines. The second reform set would address institutional and regulatory impediments, physical infrastructure and financial and other business services. The report discusses some of India's primary initiatives along these two lines.

Chapter One

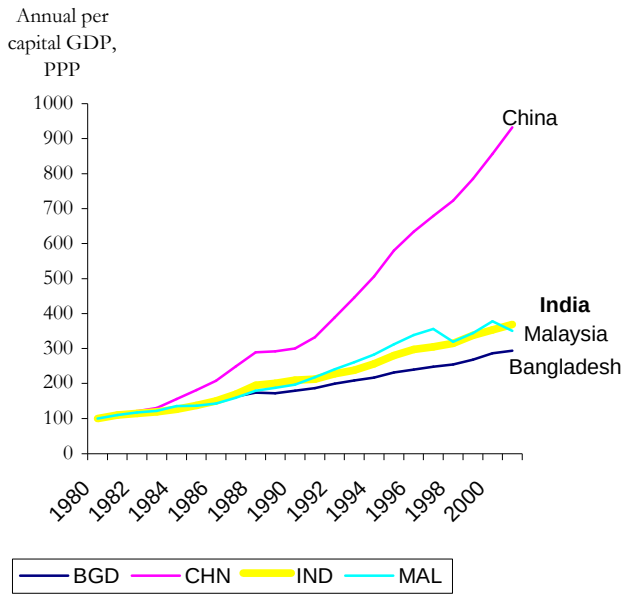
THE PERFORMANCE OF INDIAN INDUSTRY: THE INVESTMENT CLIMATE PERSPECTIVE

This report on India's investment climate considers primarily industrial growth. How important is the business environment for manufacturing industry—and the subnational disparities therein?[1] How serious a growth bottleneck does infrastructure impose in the less industrially advanced states? Do businesses find the cost of complying with regulations higher in some cities or states than in others? And what are the implications of these regional gaps in the investment climate to the international competitiveness of Indian industry compared, inevitably, to that of China?

The report seeks to provide some answers to these questions, using business survey data as well as some secondary sources. It argues that intra-regional gaps in manufacturing growth rates and export performance, and gaps between India and its international comparators, proceed from seemingly trivial factors. The factors include, for example, delays in securing new landline phone connections, or long waits when shipments of raw materials must clear customs. The report shows how all these can easily accumulate to influence business location decisions. It also estimates the costs of specific deficiencies in business environments—e.g., in terms of forgone productivity and unrealized growth potential.

India's GDP has grown at an average rate of 6 percent a year since the 1991 reforms. Impressive as this is by any standard, there is nonetheless a broad consensus that India can do even better. For example, the average annual GDP growth rate envisioned in India's Tenth Five-Year Plan is 8 percent. At the same time there is the widely shared concern that the rate of private sector business investment in India has been too low for too long. The shortfall is partly attributed to problems of investment climate (Box 1.1).[2] The view that India's economy has greater potential for growth than it has recently achieved in practice also originates in an investment climate perspective of its past performance. It partly stems from the contrast of this performance to that of China, and the role that differences in business climate are believed to play in it.[3] It is also partly

Figure 1.1 GDP per capita at PPP US$ (1980=100)



[1] The report's focus is on manufacturing industries rather than industry in general. We will nonetheless use the term "industry" as shorthand for manufacturing industry in the rest of the report, to the exclusion of mining, construction, and power.

cited from Srinivasan (2003a) in Box 1.2 refers only to private sector corporate investment. Unlike total private sector investment, the ratio of which to GDP was close to 16 percent in 2000/01, this does not include, for example, residential construction.

[3] For many reasons China's economic performance and constraints seem to provide natural benchmarks for India. If there is any justification at all for benchmarking any pair or group of economies against one another as an analytic tool, then a "China versus India" comparison would be hard to beat. One obvious virtue of the pairing is that the two countries are comparable both in population and territory, and are at the same level of industrialization. They also had comparable per capita real incomes and levels of industrialization in the early 1980s, when China's own reforms were taking shape. In spite of this, the contrast in their performance has been quite sharp over the last 12 years, during which China's economy has grown 30 percent faster than India's.

based on the association often made between differences in business climate and regional disparities in incomes and growth within India.

1.1 Growth and international competitiveness

Over the past decade China's GDP has grown at an average annual rate of around 10 percent. Combined with its slower population growth, rising GDP in China has produced higher per capita incomes, with concomitantly steep drops in poverty rates; see Figure 1.1 for GDP comparisons. China's growth rate is also often linked to the faster rate at which the Chinese economy is globalizing. See Figure 1.2 for an illustration of China's steep growth in both exports and inward FDI (Figure 1.3). The share of exports and imports in China's GDP today stands at about 40 percent—twice that of India's. The ratio of FDI to GDP also stands at more than 4 percent in China compared with well below 1 percent in India.

Focusing on manufacturing industry in particular, we see that the international competitiveness of India has improved a great deal in this sector since 1991. However, again, the improvement falls well short of that of China's. India's world market share in manufactures is currently half of China's,

Box 1.1. Why is the rate of private business investment so low?

Maintaining the 6 percent annual average of the past 12 years in India, let alone accelerating to an 8 percent rate envisioned in the Tenth Five-Year Plan, requires an increase in the aggregate investment rate to as high as 30 percent from the current average of 23 percent of GDP (Ahluwalia, 2002). This is a significant shortfall. More important, recent trends in the rate of business investment do not seem to suggest that it would necessarily be lower any time soon. Looking at its components, the ratio of private sector business or corporate investment (as opposed to total private sector investment) to GDP is also low as it stands, but has been declining consistently in recent years, falling "from a peak value of 9.9 percent in 1994–95 to 4.9 percent in 2000–01 and 2001–02." (Srinivasan, 2003a). Noting that private sector savings "have been buoyant" since the 1991 reforms, Ahluwalia (2002) lays the blame for this on the crowding out effect of India's huge fiscal deficit, which currently stands at 9.6 percent of GDP having expanded relentlessly since 1998. This interpretation of India's private business or corporate investment shortfall as a public sector saving problem, would be contested by Srinivasan (2003a), who also stresses the fiscal deficit as an adverse development but sees no crowding out of private investment as an outcome of it. "Had there been serious crowding out of investment," he writes, "we would not have seen a downward movement in interest rates." The fact that interest rates are falling as private investment does and the fiscal deficit builds up suggests that the private sector is saving more than it is willing to invest in "growth enhancing investment." In this particular case, causation would seem to be flowing not from fiscal deficits to private business investment rates, but the other way round. Private sector investment, being down "for other reasons," must have enabled the government to run higher deficits. In other words, the current shortfall in private investment rates is less of a public savings problem than one of *investment climate*. Among the "other reasons" that fall under this rubric, Srinivasan lists excessive trade protection, India's small-scale industry reservation policy, excessive labor regulation, unworkable bankruptcy laws, and unreliable and expensive power supply.

Figure 1.2. Values of exports: 1990-2001 (1991=100)

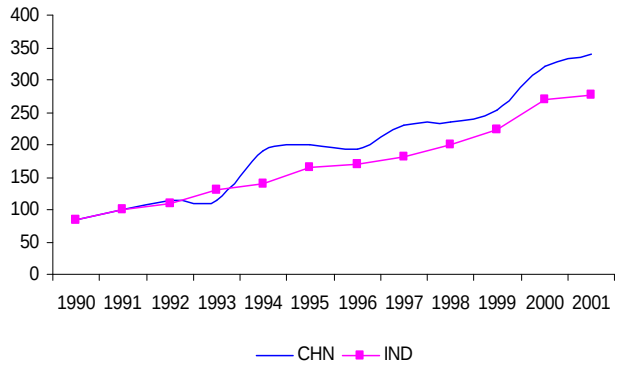


Figure 1.3. Gross foreign direct investment (percent of GDP)

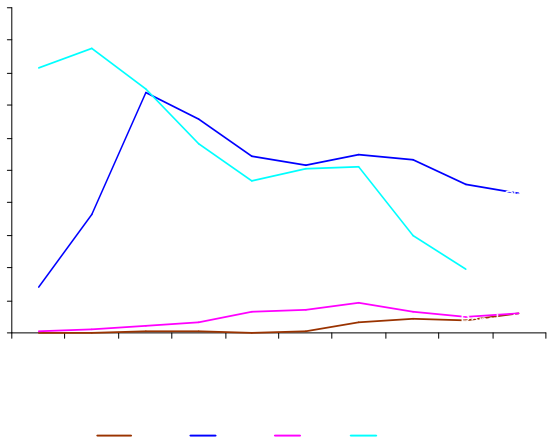


Figure 1.4. World market shares of India and China in manufactured exports

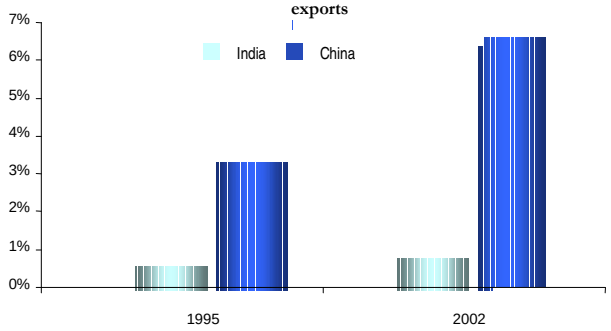


Figure 1.5. World market shares of India and China in 'complex' manufactured exports

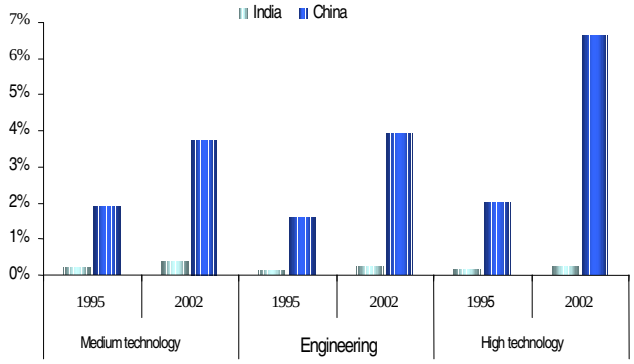


Figure 1.6. Per Capita GSDP

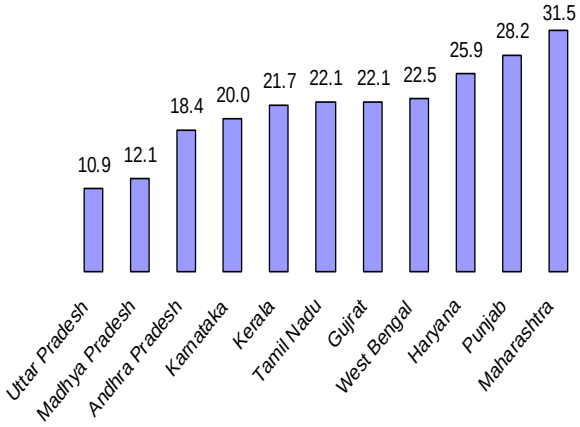
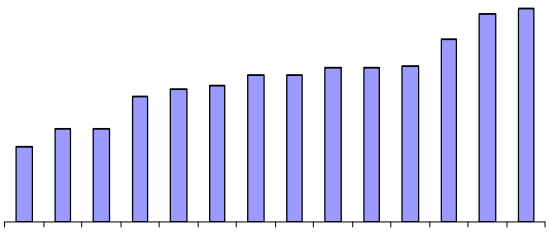


Figure 1.7. GSDP growth rate



Gujarat or Maharashtra with rates less than 4 percent seen in Bihar or Orissa (Figure 1.7).
As a rule, high-income states also have larger and faster growing manufacturing sectors. Although industrial development disparities across regions cannot all be explained by policy differences, business environment does matter.

1.2 Scope of the report

This report's immediate objective is to assess the role that business environment plays in creating disparities in productivity and growth across Indian regions and cities. The reduction of regional disparities in industrial development should be a key policy imperative for India. Understanding the role of business environment in subnational region economic performance gaps is also useful for identifying reforms that could improve the international competitiveness of Indian industry.

The limited availability of data restricts the sectoral scope of this report to manufacturing. Many of the report's findings might apply to other sectors, but we would nonetheless like to see the report's quantitative conclusions understood to refer to the performance of, and constraints on, manufacturing industries alone. This focus on manufacturing should not detract, we hope, from the report's larger value in explaining the recent role of investment climate in the performance of India's national economy. Because industry accounts for more than a quarter of the gross domestic product, anything that greatly influences its performance, one way or the other, is bound to affect the national economy as a whole.

1.3 Business Survey Data

Like the report of 2002 (World Bank, 2002), this report is largely based on an investment climate survey jointly carried out by the World Bank and the Confederation of Indian Industry (CII). The survey was conducted from March to July 2003 on a random selection of 1,860 manufacturing establishments sampled from 40 cities in 12 of India's 14 major states. These comprised Andhra Pradesh, Delhi, Gujarat, Haryana, Kerala, Karnataka, Madhya Pradesh, Mahrashtra, Punjab, Tamil Nadu, Uttar Pradesh, and West Bengal. Based on shares in aggregate sectoral output, the sample was largely drawn from eight manufactures: garments, textiles, leather, drugs and pharmaceutical, electronic goods and equipment, electrical white goods, auto parts, and food processing.

The survey instrument was a written questionnaire similar to investment climate surveys the World Bank has sponsored in other countries, including China and Brazil, both used as comparative measures for India in this report. Business managers and accountants administered the instrument in face-to-face interviews conducted by trained enumerators. Some items on the questionnaire sought to gauge a manager's evaluation of the business environment across states. Others asked respondents to rate key aspects of investment climate as growth bottlenecks on a specified scale. Still others inquired into objective indicators of the same obstacles. The results was a rich array of indicators of deficiency in investment climate across locations and industries, which the report relates to a set of financial performance indicators. The financial indicators themselves were also collected through the survey from the accounts of responding businesses using a second module concerned exclusively with production activities, finances and management. [5]

In addition to the investment climate survey, the report draws extensively on data from the Annual Survey of Industries (ASI) of the India's Central Statistical Office, 1999 to 2001. The ASI surveyed factories registered under the Factories Act of 1948—those employing 10 workers or more and using power, or 20 or more workers if not using power on any day of the preceding 12 months. Although ASI is by no means a census, it has the advantage over the investment climate survey that, even as a sample survey, it theoretically covers the formal segments of all industrial sectors across all Indian districts. Its disadvantage with respect to this report is that it lacks information on business climate, as it is confined to production technology, input usage, manpower, and basic financial statistics. Still, the World Bank–CII Investment

[5] The full survey questionnaire is available upon request and will be made public in due course on the World Bank's research website along with the data analyzed in this report.

Climate Survey (ICS) includes these as well as information on a range of business characteristics and climate indicators. But the survey is still much more restricted than the ASI in its geographical and sectoral coverage (Box 1.2).

1.4 Investment climate and decisions on plant location

The quality of investment climate affects the performance of regional or national economies in two ways: first, through its influence on firm decisions about plant location—that is, by making businesses locate in or away from the economy in question—and, second, through the effect investment climate has on plant performance in given locations. The former is studied in Chapter 3 of the report. To what extent do entrepreneurs take into account the quality of infrastructure in deciding where to set up a business? And how much do they care about the incidence of corruption, or the cost of bureaucratic hassles, or the prevalence of crime before picking a location for a project? In providing answers to these questions, the chapter shows that cities where firms in general face lower burden of regulation or have better infrastructure benefit from more and larger business start ups.

Box 1.2. Joint analysis of the ICS and ASI datasets

Establishment-level panel datasets cannot be built up from ASI datasets except, perhaps, for a rather small sample of large establishments. We have used ICS data for the purpose of the estimation of parameters of production for main manufacturing industries. The ICS allow us to build a 3-year time series of observations at the establishment level, which while admittedly short, seems enough to try and address problems of bias in the estimation of technology stemming from input endogeneity and/or establishment heterogeneity. For a similar reason the ICS dataset is also better suited for the estimation of parameters of business performance equations in which one would relate plant level productivity and growth rates to business climate. The parameters of the technology of production and of business performance equation obtained in this way from the analysis of the ICS dataset are then used to estimate regional productivity gaps and the cost of specific deficiencies of investment climate using ASI data on cities and industries covered by the ICS. In order to compute the cost of deficiencies in investment climate the report assumes that city averages of business climate indicators obtained from the ICS characterize the investment climate of all establishments in that city. More important, we have used the ASI dataset in analyzing the effect of investment climate on the plant location decisions of firms, for which it is far better suited once it is matched to the investment climate indicators of the ICS.

1.5 Investment Climate, Business Productivity, and Business Growth

Chapter 4 assesses the role of differences in investment climate in regional gaps in the productivity and growth performance of business establishments, given their current locations. This part of the report assesses the effect that investment climate deficiencies would have on the economic performance of Indian cities and states, having temporarily set aside their impact on business mobility across cities and regions. Assuming businesses are tied indefinitely to their current locations,[6] our question is now, how does a particular investment climate deficiency affect the productivity or growth rate of the average business? Firms do move in and out of cities and regions in the long run in response to persistent regional differences in investment climate. The true cost of deficient investment climates is therefore the sum of losses created through businesses mobility (analyzed in Chapter 3) and the productivity and employment losses of businesses that have not changed location (analyzed in Chapter 4).

Chapter 2 prepares the ground for the succeeding two chapters by comparing the major deficiencies in India's investment climate with those of international comparators. This is achieved with indicators from the ICS and other sources.

1.6 Investment Climate and Economic Geography

Thus far we have used the term "investment climate" without having defined it explicitly.[7] In this report it refers collectively to four components of the external (economic) environment within which business operates: (1) physical infrastructure, (2) government regulation,

[6] This could be either because they have not learned enough about the relative worth of the current location or because they trade off financial gain and loss to some nonpecuniary sources of satisfaction—attachment to one's hometown, for example.

[7] The terms *business climate, business environment, and investment climate* are all used interchangeably throughout this report.

(3) the macroeconomic-cum-trade policy regime, and (4) financial and business services. We discuss a range of objective and subjective quality indicators, along various dimensions, for each of these components, first in Chapter 2, and then in chapters 3 and 4.

In relating economic performance to indicators of investment climate, one needs to control for economic geography. By this we mean the broader economy of a business location (city or region), the localization economies of individual industries, and the location's access to external markets. These are cumulative outcomes of policies and institutions over a period of time. There is therefore a case for treating them as part of the investment climate. We nonetheless refrain from doing so in this report because it is unlikely that any of them could be altered significantly in, for example, a three- to five-year timeframe.

Geography sets constraints—and therefore destiny?

A key theme of the report is indeed that the geographic disadvantage suffered by a local economy can be substantially ameliorated by improving its investment climate. All else aside, firms prefer to locate near other firms from the same industry. Regions or cities in which a sizable cluster of establishments in a given industry has already built up will therefore attract more new businesses of the same industry than locations in which the industry is not so well developed. This in turn generates even greater localization economies simply because the average productivity of businesses increases in relation to the size of the industry cluster to which they belong. Productivity could also be reinforced by the greater diversity economies of locations that have already attracted more domestic and foreign investment. For example, labor productivity is almost 20 percent higher in the six states that have attracted nearly the whole of Indian FDI. It is also 85 percent higher in about a half-dozen metropolitan areas than in all other major cities. This is in part because high-FDI states and low-cost cities have attracted more investment in plant and equipment than other parts of India. The rate of net fixed-capital formation in low-cost cities is 10.3 percent against under 2 percent in high-cost cities, and 6.3 percent in high FDI states against 1.6 percent in other states.

All these factors seem to create a certain path dependency in industrial development, continually producing divergence in economic performances. The good news is that this divergence can be stemmed with the right policy mix. Good policies can help to offset the costs of adverse geography in lagging locations. In fact, the analysis in chapters 3 and 4 shows that timely reforms of the policy-driven components of investment climate could be compensatory instruments. Although firms consider regional differences in wage rates and geography in locating new plants, they also choose after estimating other factors: the cost of regulation on their day-to-day activities in other locations, the cost of corruption, the intrusiveness of labor regulation, the reliability of energy supplies or telecom services, and access to land rights for business premises.

Chapter 4 shows that this is the case because unreliable and expensive power supplies, problems of tax and customs administration, excessive labor regulation, shortage of land, lack of access to formal external finance, and corruption are now major drags on manufacturing productivity in many Indian states. Tax and customs administration and access to land seem to have affected labor productivity to more or less the same degree across all sectors irrespective of the type of technology. Unreliable and costly energy has also inhibited productivity everywhere. Its impact is nonetheless felt far more strongly in medium- to high-tech industries (e.g., electronics and pharmaceuticals) than in resource-based industries (e.g, food processing, mineral processing, the leather industry, and furniture making). Corruption appears to have no effect on productivity in medium- or high-cost industries although it is a major drag on productivity in resource-based industries together with excessive labor regulation and inadequate access to external formal finance.

1.7 Some Counterfactuals: Potential Gains from Reform

The following "counterfactuals" should give some idea of the cost to industry of these various investment climate deficiencies. They are also measures of the extent to which their reform could redress regional imbalances in industrial development or offset adverse geography.

Reliable, affordable energy would increase manufacturing labor productivity (at least in high-cost cities) by more than 80 percent. Tax and customs reforms would raise productivity by more than 60 percent. If both reforms were to take place simultaneously, while India improved access to land and external formal finance, labor productivity would increase by more than 160 percent.

These potential gains in labor productivity translate into large potential increments in business growth and business investment rates. For example a 10 percent reduction in all deficient indicators (power supply, tax and customs administration, access to land, access to finance and labor regulation) mentioned throughout this report would raise the average establishment-level sales growth rate from the current 11.3 percent to 15.9 percent a year.

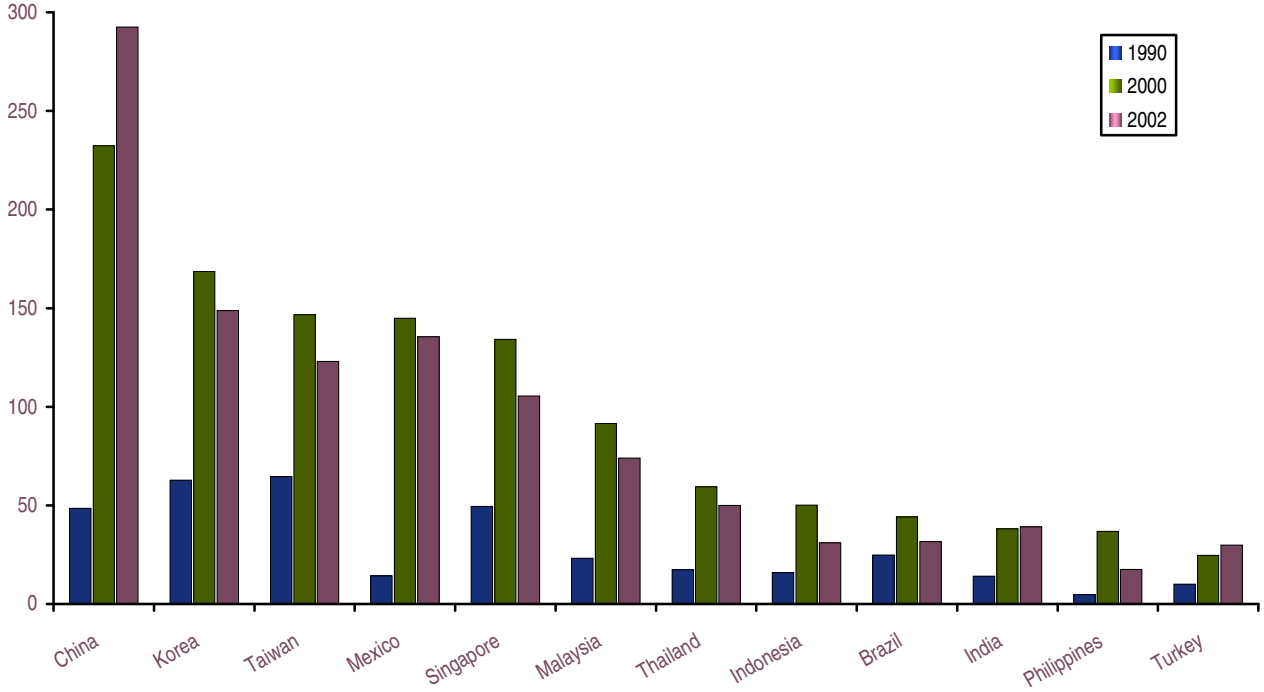
Chapter Two

INDIA'S INVESTMENT CLIMATE: AN INTERNATIONAL PERSPECTIVE

2.1 Preliminaries and Concepts

This chapter compares various aspects of India's investment climate primarily with China's, and to some extent with Brazil's. These countries were chosen because of their developmental or structural similarities to India, and because the three countries shared a common set of policy problems of interest to us. At the same time there is sufficient contrast between the performance of India's economy and that of the two comparators to make inquiry into the origin of the contrast worthwhile. In this sense, China is probably the more natural "comparator" for India. Like India, it covers a vast territory, possesses an enormous population, and has a fairly decentralized administrative structure. The two economies also are comparable in size and in degree of industrialization.[8] And yet China's per capita income is nearly double that of India; only two decades ago it was where India is today. The Brazilian economy, likewise, is also large and based on a vast territory under a decentralized administration. Despite its much higher per capita income than those of India and China, it has many of the investment climate problems common in its Asian counterparts.

Figure 2.1: Top ten exporters of manufactures in the developing world ($ m.)



India and China have the fourth and second largest economies in the world respectively.

Figure 2.2. Average sales growth rate per annum (%)

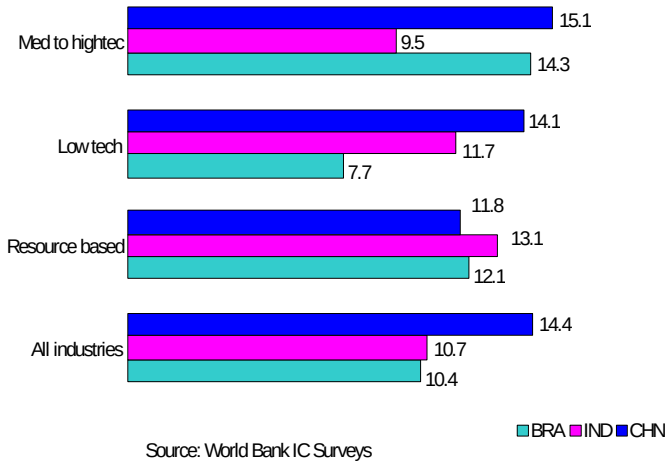


Figure 2.3. Average growth rate of manufacturing fixed assets (%)

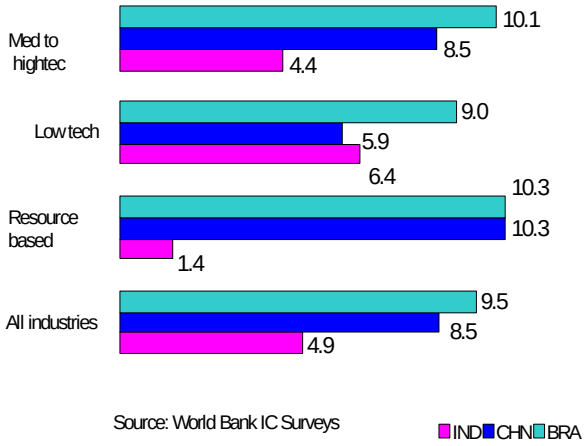


Figure 2.4. Manufacturing value added per worker per annum (US $, 1999 prices)

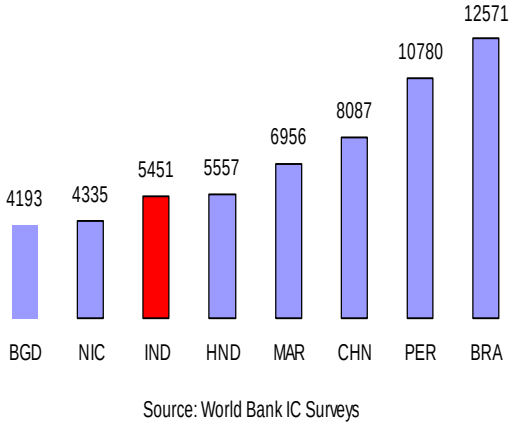
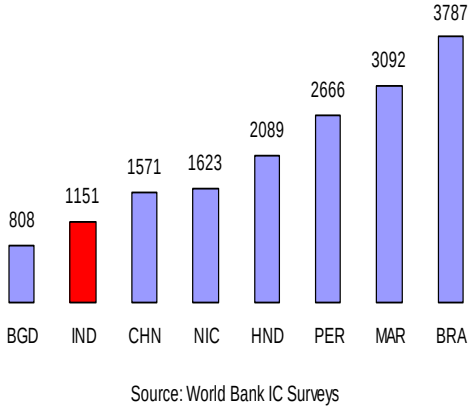


Figure 2.5. Manufacturing wages per worker per annum (US $, 1999 prices)



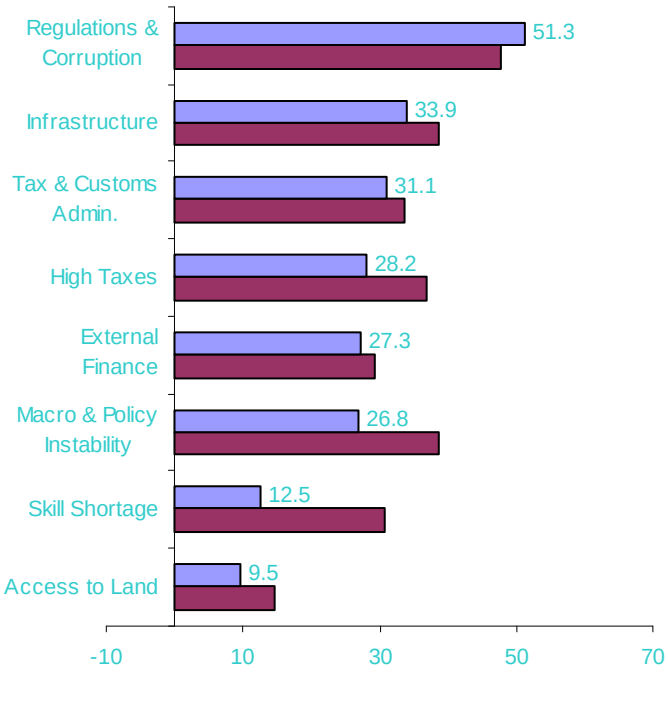
India's manufacturing sector has become more competitive in recent years: its exports have grown faster than world trade in manufactured exports. But similar exports from China and other emerging market economies have grown even faster (Figure 2.1).[9] In particular the growth of India's exports of what Lall (1999) calls medium- and high tech manufactures (e.g., electronics, for the former and certain pharmaceuticals, machine tools for the latter) is significantly lower than that of its natural comparators. Business growth and investment data from the ICS are broadly consistent with this finding (see Figures 2.2. and 2.3). Figure 2.2 shows, for example, that the average manufacturing business in India grew during the survey period at a rate of 10.4 percent a year compared to 10.7 percent in Brazil and 14.4 percent in China. Businesses in medium- and high-tech industries grew even faster in China and Brazil. Figure 2.3 tells more or less the same story, this time in terms of growth rates of business fixed assets, rather than of sales. Lall (1999) sees in this a potential problem, arguing that, in the long term India would sustain or increase its share

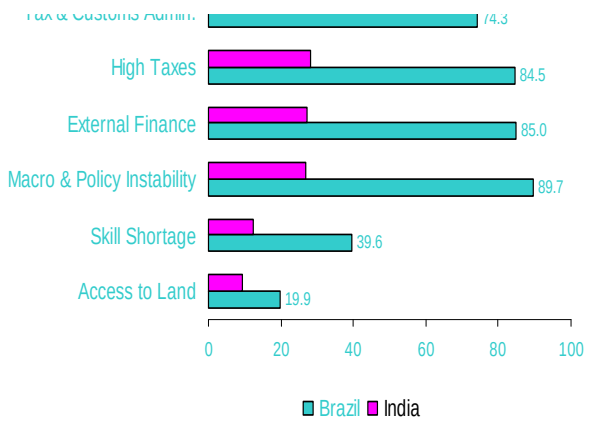
[9] Figure 2.1 has been kindly supplied by Sanjaya Lall.

in global trade in manufactures, only in as far as it manages to raise its share of exports of medium to high tech goods.

International competitiveness is ultimately determined by the productivity of factors that are relatively immobile across countries—labor being by far the most important. The competitiveness of Indian industry therefore depends on how quickly labor productivity in the sector would grow to close its current shortfall against countries like China and Brazil. We do not have comparable manufacturing productivity growth figures for the three countries. The ICS data (Figures 2.4 and 2.5) do show, however, that the smaller share of Indian manufacturing industries in global markets reflects India's lower labor productivity relative to wages. For example, although Indian manufacturing wage rates are about 25 percent lower than China's, labor productivity in Indian industry is about 50 percent lower.

Figure 2.6.Percent identifying factor as a major or sever obstacle to growth: India vs. China



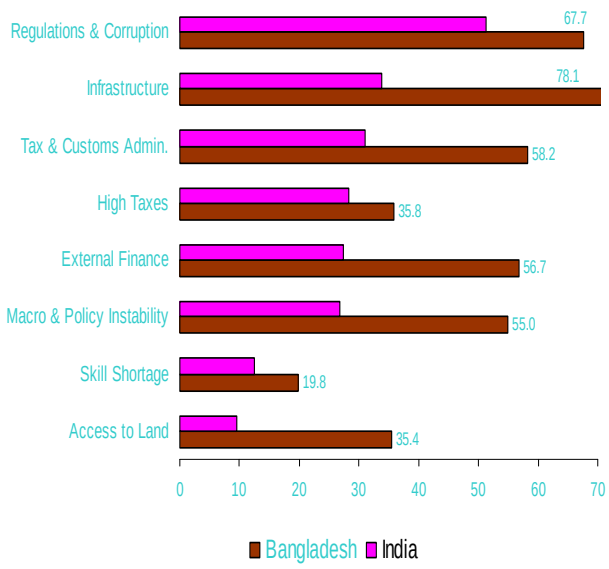


2.2 The Role of Investment Climate: The Private Sector's View

Figure 2.6 illustrates the reform priorities of India's industrial business community. It summarizes reactions to an ICS questionnaire item asking respondents to rate the obstacles to business startups or expansions using the following scale: 0=no obstacle, 1=minor obstacle, 2=moderate obstacle, 3=major obstacle and 4=severe obstacle. The bars show the proportion of respondents who identified investment climate deficiencies as major or severe obstacles. Regulation and corruption pose major obstacles for about half the respondents. About a third described infrastructure as a major or severe obstacle to growth, identifying as well tax and customs administration. A quarter of the respondents rated high taxes, macroeconomic instability, and access to finance as major to serious obstacles to growth. Inadequate access to land and skilled labor were also identified as major to severe bottlenecks by 10 to 12 percent of respondents.

Although macroeconomic stabilization, trade policy, and taxation are key aspects of the investment climate, they fall outside the purview of this report. The government of India and international development agencies subject them to almost routine scrutiny and diagnosis; little can be added to these via the analysis of

Figure 2.8. Percent identifying factor as a major or sever obstacle to growth: India vs. Bangladesh



microeconomic data on which this report chiefly relies. So for the purpose of this report we are left with the following areas of focus:

i. regulation and corruption,
ii. tax and customs administration,
iii. provision of infrastructure
iv. access to land

The rest of this chapter is organized under three broad headings:

1. Regulatory quality and corruption;
2. Provision of Infrastructure; and
3. Access to finance, land, and skills.

In addition to tax and customs administration and

Table 2.1: Respondents identifying business regulation, tax admin and customs and corruption as bottlenecks to growth (%)

	Business regulation			Tax and customs admin			Corruption		
	Brazil	**China**	**India**	**Brazil**	**China**	**India**	**Brazil**	**China**	**India**
All firms	29.8	21.3	13.8	37.8	19.3	14.4	67.2	27.3	38.1
Small firms:									
All	31.1	22.3	13.9	38.4	14.2	14.0	70.3	27.7	38.2
Metropolitan areas	43.0	24.6	16.5	44.8	16.5	9.1	71.5	27.1	40.6
Medium sized cities	28.2	21.0	12.9	36.2	12.9	14.5	68.6	27.9	41.1
Small cities	19.0	NA	14.8	30.7	NA	14.4	73.5	NA	33.0
Technology sectors									
Resource based	26.1	11.5	19.1	28.1	19.2	20.9	62.5	21.2	38.8
Low tech	30.2	8.9	11.8	42.6	17.1	14.6	71.4	23.3	38.2
Medium to high tech	32.1	17.6	13.5	42.7	22.3	12.5	61.0	22.3	37.9

Source: World Bank Investment Climate Surveys

Table 2.2: Labor regulation as a bottleneck to business growth

	% identifying labor regulation as a bottleneck			Reported overstaffing rate (%)			
	Brazil	**China**	**India03**	**Brazil**	**China**	**India03**	**India00**
All firms	56.9	20.7	17.2	2.9	19.1	10.9	16.8
Small firms:							
All	56.8	18.5	16.8	2.8	16.9	10.5	16.4
Metropolitan areas	62.0	29.2	10.6	3.4	14.4	13.2	11.3
Medium sized cities	55.8	12.7	17.5	2.1	16.3	10.9	19.3
Small cities	50.9		16.8	3.7	27.8	9.3	14.4
Technology sectors:							
Resource based	53.3	19.2	20.6	3.1	20.0	8.1	NA
Low tech	59.9	19.9	19.3	2.9	20.4	10.2	17.8
Medium to high tech	55.0	19.5	14.9	2.5	19.7	12.0	15.7

Source: World Bank Investment Climate Surveys

v. access to finance, and
vi. availability of skilled labor.

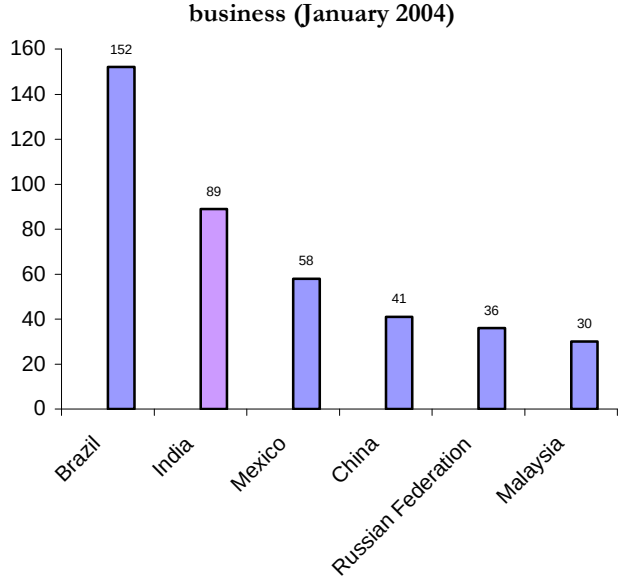
corruption, we examine under the first of these:

- entry and exit through licensing, permit and/or bankruptcy laws;
- product markets through trade policy and price controls; and
- labor markets

Before turning to a discussion of individual elements of investment climate, we should say a word or two on the reform priorities of India's private sector compared with those in other countries (see Figure 2.6) It would seem that reform priorities are broadly similar for the two countries. Regulation and corruption draw complaints from the largest percentage of respondents in both countries, followed by infrastructure, and tax and customs administration. Indeed, the only significant difference seems that Chinese respondents attach greater weight to macroeconomic instability and skill shortages.

In Figure 2.7, India's figures are compared with those from the ICS of Brazil; they seem to diverge significantly. Unlike India's macroeconomic instability, Brazil respondents cited finance and high taxes over issues of regulation and corruption. In Figure 2.8, the ICS response

Figure 2.9: Days to get clearance to start a business (January 2004)

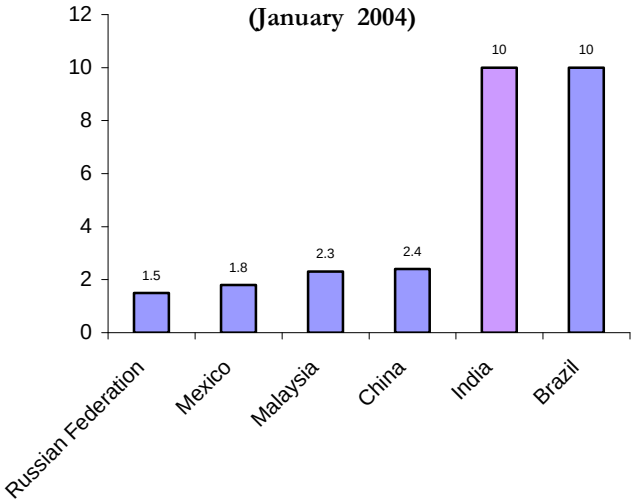


patterns are compared with those of a much smaller South Asian economy, Bangladesh. Private sector priorities in Bangladesh also differ from those in India, but not by as much as the gap between India and Brazil. As in Brazil, a far greater proportion of the respondents in the Bangladesh ICS identify practically every aspect of the investment climate listed in the diagram to be a constraint. Well over half of respondents also identify macroeconomic instability and problems of access to finance as major to severe bottlenecks, which is more than twice those in India. There is nonetheless considerable overlapping of private sector reform priorities in India with those of Bangladesh insofar as regulation, corruption, infrastructure, tax, and customs administration top the list for the majority of ICS respondents in the two countries.

2.3 Regulation and Corruption

Table 2.1 describes respondents' ratings of tax and customs administration on the one hand, and other forms of business regulation on the other. The second panel corresponds to a survey questionnaire item prompting respondents to rate tax and customs administration as obstacles to business operations or expansion. The table entries show the percentage of respondents in a specified group that found tax and customs administration to be a major or a severe obstacle. We assume that the greater is this percentage the

Figure 2.10. Years to complete insolvency (January 2004)



higher is the rating of tax and customs administration on the investment climate reform priorities of the group that the sub-sample represents. Entries of the first panel of Table 2.1 were obtained in the same way from an ICS questionnaire item, which asked respondents to

rate other aspects of business regulation. The third panel was obtained similarly from a rating of corruption as an obstacle.

A greater proportion of businesses in the Indian ICS sample find corruption to be a major or severe obstacle to business success than is the case with China ICS respondents. The proportion is far lower, however, than that seen in the Brazilian ICS. This cross-country pattern holds across subsamples of business size, city size, and technology sectors.

Corruption is often greater where the system of regulation under which businesses operate is complex, lending greater room for discretion to functionaries dealing with enforcement. How heavily is Indian industry regulated by the observed standards in comparable economies? In our definition of "reform priorities," business regulation (including tax and customs administration) would seem to rank lower. This applies to all business groups—small or large—and would seem to be as true for small-town businesses as for those located in megacities. But business regulation is viewed as a stronger constraint among resource-based industries than in other industries.

One possible classification of regulatory activities is by function into:

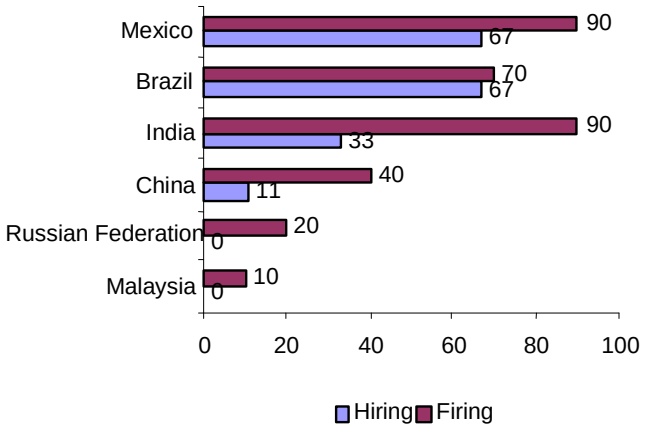
- regulatory activities relating to business start ups and closures;
- those relating to the enforcement of safety, health and environmental standards,
- those associated with the collection of taxes and customs duties; and
- the regulation of industrial (or labor) relations.

Entry and Exit Regulation

The cost of entry and exit regulation for Indian industry has dropped considerably since the 1991 reforms. These reforms ended policies reserving certain industries for the public sector and abolished licensing requirements for private investment in many industries. Until recently, private investment was prohibited in some 18 industries. The list of prohibited industries has now been curtailed to three—atomic energy, railways, and military aircraft and warships. But India has yet to end its long-standing policy of reserving labor-intensive (but potentially globally competitive) industries to small scale producers. Perhaps just as important, startup clearances by the authorities still take significantly longer in India than in comparable economies. For example, according to the World Bank's "Doing Business" database, a startup in India as of January 2004 required 89 days; comparable waits were 41 days in China, 152 in Brazil, and 58 in Mexico (see Figure 2.9). The figure refers to the average number of days that "incorporation lawyers" estimate it takes "an entrepreneur to obtain all necessary permits, and to notify and file with all requisite authorities, in order to operate a [nonexporting, limited liability] business."[10]

The conventional wisdom still holds that bankruptcy procedures take far longer in India than they do in countries with similarly constrained or impaired regulatory environments. See Figure 2.10, which again draws on the World Bank's "Doing Business" database as of January 2004, showing the average number of years needed to complete a bankruptcy procedure for an incorporated medium-sized business in the hotel industry. The estimate for India is a staggering 10 years—the same as Brazil's, but more than four times that of China.

Figure 2.11. Hiring and Firing Difficulty Indices (January 2004)



[10] It is assumed that in each of these countries, the business operates in rented premises in the most populous city of the country in question, does not employ more than 50 people, is entirely owned by domestic nationals, and does not benefit

The Regulation of Industrial Relations

Excess regulation of industrial relations is often singled out as a major drag on the international competitiveness of many of its labor-intensive industries. [11] It also reinforces exit barriers. The link between industrial exit barriers and labor regulation stems from the employment security provisions of the Industrial Disputes Act of 1947. This act sets out the rules for settlement of employment termination disputes. One of its main provisions requires establishments with more than 100 workers to secure state government permission before plant closure or a retrenchment of workers; critics point out that permission is rarely granted (Sachs et al., 1999). This has added to the protraction of insolvency procedures.

The provisions of the Industrial Disputes Act have also combined with other pieces of labor legislation to inhibit the exploitation of economies of scale in industry by reducing the flexibility firms need to respond to changes in market conditions. The "service rules" provisions of the Industrial Employment Act of 1946 and those of the Contract Labor (Abolition and Regulation) Act of 1970 are also implicated. The Industrial Employment Act provides for the definition of job content, employee status, and work area by state law or by collective agreement, after which changes would not be made without getting the consent of all workers.[12] Zagha (1999) points out that the 1946 act has always made it difficult for businesses "to shift workers not only between plants and locations, but also between different jobs in the same plant." As a way around such restrictions, businesses may resort to contract workers, which is where the Contract Labor Act comes in. It gives state governments the right to abolish contract labor in any industry in any part of the state. In states where recourse to contract labor has been more restricted as a result, keeping employment below the threshold level of 100 employees or contracting out jobs has been the only way of maintaining flexibility in the allocation of manpower.

The World Bank's "Doing Business" Database provides indices of the flexibility of industrial labor markets across a number of developing economies based on the interpretation of pieces of legislation such as these. Two of its indices—namely, the flexibility of hiring and of firing—are shown for India and four comparators in Figure 2.11. Each index is on a scale of 0 to 100, with higher values indicating more rigid hiring or firing regulations. Indian labor laws give firms significantly less control over their hiring and firing decisions than China's labor code provides. Indian labor legislation is even more restrictive than legislation in Malaysia and the Russian Federation. But see Table 2.2 for a summary of how 2003 ICS respondents in India evaluate the regulatory costs of industrial relations. The entries, again, show the percentage of respondents from the specified subsample who thought regulations were a major obstacle to business operations and growth. About 17 percent of the Indian sample identified labor regulation as an impediment to growth, which is comparable to percentages reported for Chinese businesses but much smaller than that for Brazil. This could mean that the burden of labor regulation in India is not as large as what a literal reading of legislation might suggest. It could, alternatively, mean that much of Indian industry has already adjusted itself beyond the reach of the law through its choice of lines of activity and scales of operation. In other words, the misallocation effect of the law, though real enough, has been rendered invisible.

We tend toward the second explanation for the seeming disparity between the restrictiveness of Indian labor laws (high) and the ratings of their cost to businesses (low). Based on an objective indicator of labor market flexibility, the cost of labor regulation seems to be higher in India than in Brazil, but not necessarily than that in China. The indicator is based on the following ICS questionnaire item posed to business managers:

---

from investment incentives or any other special treatment programs.

[11] See, for example, Sachs, Vashney, and Bajpai (1999), who blame labor market rigidity not only for keeping the growth rate of exports low, but also for the "shockingly low" share of formal sector employment in India's economy. The authors calculate that only 8.5 percent of India's labor force or 27 million people are in formal sector employment, of whom 70 percent work for government agencies.

[12] This too applies for establishments with more than 100 employees, but Zagha (1999) notes that some states have made the provisions mandatory to firms with 50 or more workers while other states have abolished the employment size limit altogether.

Given your current level of output, if you were free to choose without restrictions your current level of employment, what percent of the current level would you choose?

Subtracting the answer provided to this question from 100 measures the degree of overstaffing at a factory, for which the Indian sample average is 11 percent. This compares with 19 percent for China, suggesting that India's industrial labor market could be significantly more flexible than China's in the sense of allowing firms to adjust their workforce to changes in market conditions. But India's labor market also seems to be far less flexible than Brazil's on the same criterion. Perhaps because these industries have a greater share of skilled workers, overstaffing rates are also higher in medium- to high-tech industries than in low-tech and resource-based industries, and also higher in metropolitan areas than in smaller cities.[13]

Tax administration, customs clearance, and the regulation of day-to-day business operations

Apart from its role in regulating business startups, business closures, and industrial relations, the government routinely comes face to face with private industry through its customs inspectors, tax officials, and those enforcing a variety of health, safety, and environmental standards that apply to all establishments employing 10 workers or more. The standards are set out in several pieces of legislation, including the Factories Act of 1948, the Water Act of 1974, the Air Act of 1981, and the Environmental Protection Act of 1986.[14] Although these are in essence federal law, their administration is also mainly the responsibility of state governments, which again have considerable discretion in enforcement.[15] State inspectors are the chief enforcers through their routine visits to business premises; they have the power to suspend plant operations if required for inspection purposes.

Table 2.3: Indicators of the cost of business regulation

	Number of inspections a year			Senior management time spent dealing with regulation (%)			Days to clear customs (average)		
	Brazil	**China**	**India**	**Brazil**	**China**	**India**	**Brazil**	**China**	**India**
Small establishments:									
All	7.8	26.7	6.7	7.2	7.8	11.9	8.9	9.8	6.9
Metropolitan areas	6.6	22.3	5.6	7.0	7.6	14.5	7.9	8.1	6.5
Medium sized cities	8.4	27.2	6.3	7.5	7.6	12.2	9.8	8.3	6.8
Small cities	8.2	27.5	7.4	6.8	8.3	11.0	8.6	13.9	7.4
Technology sectors:									
Resource based	15.3	51.4	7.3	7.1	8.0	12.4	7.5	8.1	7.2
Low tech	7.4	35.7	11.3	8.7	6.5	7.5	8.7	6.5	7.5
Medium to high tech	10.0	40.3	7.6	8.6	7.4	12.7	8.3	8.4	7.1

Source: World Bank Investment Climate Surveys

The inspections are designed to enforce many rules and regulations that are likely not much different from those implemented on a routine basis by governments in developed economies. There is, however, an important difference. In India, as in much of the rest of the developing

[13] Not all the overstaffing reported in Table 2.2 is likely to be involuntary on the part of firms. Employers normally retain workers in excess of current needs if they anticipate an upturn in their sales in the near future and if the combined cost of firing, hiring and training that would be involved in adjusting manpower through the market to a particular phase of the business cycle exceeds the cost of retaining some workers at wages exceeding their marginal product. Indeed, more than 60 percent of respondents who reported overstaffing at the time of the survey cited anticipated growth in demand as a reason for their decision to retain workers in excess of their current needs. However, there is also clear indication that a substantial part of the reported overstaffing has been forced on employers by existing labor laws as borne by the fact that 29 percent of overstaffed businesses cite labor laws to be the reason why they are retaining more workers than they need.

[14] More specialized standards are set in a number of statues such as the Building and Constructions Act, the Mines Safety Act, and the Child Labour Act.

[15] For example, the government of Tamil Nadu exempts the software producers from the provisions of the Factories Act as long as they do not engage manufacturing activities.

world, individual government officers seem to have too much discretion in deciding which rules to enforce, on whom, when, and, sometimes, how. In many cases inspection visits are arbitrary or excessive, and are viewed by business owners as punitive, or as a veiled demand for bribes. Often the latter is a price worth paying for avoiding the disruption to production plans or the loss of staff time that more frequent or more intrusive visits would otherwise bring about.

A useful proxy for the cost of tax administration and the regulation of day-to-day business routines is therefore the frequency of visits government officials make to business premises (see Table 2.3). On this measure, the burden of regulation is, on the average, smaller in India, at 6.7 visits a year for a small business, than in China (26.7 visits a year). But India's burden is comparable to Brazil's. In all cases, India's figures are significantly higher in low-tech industries than in other technology sectors; they are a little higher in smaller cities than in metropolitan areas. But senior management of small businesses in India typically spends a greater share of their time dealing with regulations (11. 9 percent) than their Chinese (7.8 percent) or Brazilian (7.2 percent) counterparts. The reported time cost in India is larger in medium- to high-tech industries than in low-tech industries, and is significantly larger in metropolitan areas than in smaller towns (Table 2.3).

Indian industry appears to be slightly better off than industry in both China and Brazil on yet another proxy for the burden of regulation of routine business activities. This is the number of days that a shipment of inputs from abroad would take to clear customs. Many establishments are direct importers of inputs and would be adversely affected by significant delays in clearance, just as they would benefit from anything that would shorten the interval between the arrival of shipment at ports and their factory-gate delivery. The longer this interval, the higher the cost of input inventories that need to be maintained in order to avoid costly production interruptions. The interval undoubtedly depends on port efficiency in cargo handling and the speed and availability of inland transport. But clearing customs is a significant factor. The average time in India is now about a week for all business groups

Table 2.4: Objective indicators of the cost of business regulation

	No. of inspections a year	Senior management time spent dealing with regulations (%)	Days to clear customs	
			Average	Max. experienced
All sizes, all industries:				
India-00	11.7		10.3	20.2
India-03	7.4	14.2	7.3	13.4
Brazil	9.6	7.8	8.4	16.9
China	36.0	8.1	9.9	12.5
Small firms in mega cities and low tech industries:				
Mumbai-00	5.3		16.5	32.4
Mumbai-03	4.4	19.6	13.6	25.5
Sao Paolo	5.1	9.9	9.5	14.5
Shanghai	27.9	6.1	5.9	7.4

Source: World Bank Investment Climate Survey

(Table 2.3). This compares with almost 10 days for a small business in China and almost 9 days for a similar business in Brazil.

How far has the quality regulation improved since the 2000 survey?

Survey evidence does not show that Indian industry bears larger regulatory burden on day-to-day routines than Chinese or Brazilian industry. If anything, regulatory costs on day-to-day routines appear to be lower in India than in China and are comparable to those in Brazilian industry. The burden of labor regulation also seems to be significantly lower for Indian industry compared with that of China, although it is larger than Brazil's. Indian industry does suffer, however, from more cumbersome and costly entry and exit regulation, compared not only to China and Brazil, but also to other large-economy comparators such as Mexico and the Russian Federation.

How have things changed since the 2000 investment climate survey of India? With respect to entry and exit regulations, we lack figures for that survey year. We do have information for the same year on the regulatory burden of industrial relations on day-to-day business operations. Concerning the first of these, we see from Table 2.2 that the average overstaffing rate was much

higher in 2000, at nearly 17 percent, compared with 11 percent in the 2003 survey. Because the samples across the two surveys do not vary much by size distribution or industry structure, we think the change may reflect marked improvement in labor market flexibility. With no recent labor legislation, the change seems to have been due to government reluctance to enforce the more intrusive provisions of existing laws.

Table 2.4 compares the 2000 and 2003 surveys in terms of how two of our proxies for the regulatory burden on routine business activities. It shows how the indicators vary across India and across samples selected from small businesses in low-tech industries in the Mumbai metropolitan area. The average number of inspections per year for the 2003 India-wide sample (7.4) represents an improvement over 2000 (11.7). For small businesses sampled in the Mumbai metro area for the 2003 survey, the average number of inspections is 4.4—a reduction by 1 visit per year since the 2000 survey. Clearing customs has shown similar improvements: the average number of days needed for a shipment of inputs to clear customs has fallen from 10.3 days (the 2000 average for the India-wide sample) to 7.3 in 2003; for small businesses in low-tech industries in Mumbai, this figure fell from 16.5 in the 2000 survey sample to 13.6 for the in 2003. Similar changes were reported for "maximum delays" in customs clearance. In international comparative terms, India's national average for customs clearance dropped below China's in 2003. Likewise, the 2000 figure for Mumbai (small business in low-tech industries) would have been higher than Sao Paolo in 2003, which in turn is a little higher than the 2003 figure for Mumbai. These significant reductions in indicators of regulatory burdens may be the result of specific government reforms. We simply do not have the data to prove a relationship. It seems reasonable to assume, however, that the improvements represent increased government goodwill toward business, evident in the willingness to ease regulatory burdens, expedite processes, and cutting a less intrusive figure than in the past.

2.4 The Provision of Infrastructure

Table 2.5 is a presentation of data on different infrastructural elements in India (and their relative importance) as possible obstacles to growth. Power supply is clearly identified as the most deficient element with nearly a third of businesses rating it as a major or severe bottleneck. Transport was identified by only about 13 percent of ICS respondents; less than half as many rated telecommunications as a major problem area.

If these data were all we had for comparisons on infrastructure problems, we might conclude that India's power supply situation is not necessarily worse than China's, though perhaps not as good as Brazil's. Likewise we might be tempted to

Table 2.5: Percent of respondents rating bottlenecks in infrastructure as obstacles to growth: India, Brazil and China

	Telecom			Electricity			Transport		
	Brazil	China	India	Brazil	China	India	Brazil	China	India
All firms	6.2	23.5	5.4	20.3	29.7	28.9	19.3	19.1	12.6
Small firms:									
All	6.7	25.9	5.2	19.7	28.5	29.1	18.3	16.1	12.7
Metropolitan areas	8.2	31.1	3.0	23.2	31.1	7.5	20.3	17.7	3.0
Medium sized cities	6.4	23.0	6.8	19.8	27.1	30.2	18.8	15.2	14.1
Small cities	5.0	NA	3.0	13.2	NA	31.9	13.2	NA	12.5
Technology sectors									
Resource based	7.0	9.6	9.1	24.0	23.1	32.8	22.3	11.5	16.0
Low tech	5.5	9.6	5.1	23.0	20.5	30.6	18.2	11.0	13.1
Medium to high tech	5.9	18.5	4.6	16.8	30.2	26.9	18.1	21.7	11.3

Source: World Bank Investment Climate Surveys

Table 2.6: Objective indicators of infrastructure bottlenecks

	Days to get a new fixed line phone connection			Days to get connected to the public grid			Average inventory days of major inputs		
	Brazil	**China**	**India**	**Brazil**	**China**	**India**	**Brazil**	**China**	**India**
All firms	16.7	9.3	29.8	22.6	25.0	47.8	19.9	24.2	32.5
Small firms:									
All	17.4	8.6	32.7	22.7	21.1	45.7	19.8	23.5	31.0
Metropolitan areas	18.5	16.5	14.9	30.9	32.7	25.8	20.3	44.4	24.1
Medium sized cities	16.1	8.1	24.0	22.2	15.0	40.7	18.8	23.3	28.7
Small cities	20.0	5.7	49.5	12.7		53.5	22.2	13.0	37.5
Technology sectors									
Resource based	17.8	9.4	30.1	21.0	14.9	50.2	15.8	26.1	34.0
Low tech	14.9	8.2	32.7	19.3	35.8	52.3	22.1	18.0	32.0
Medium to high tech	16.0	10.4	27.8	29.2	23.4	44.2	19.4	24.1	32.6

Source: World Bank Investment Climate Surveys

conclude that India has a better transport system and telecommunications than either China or Brazil. Neither of these conclusions would of course be warranted. The data in Table 2.5 show only that nearly as many Indian business managers identify energy supply as a major obstacle to growth as Chinese businesses. But these data are not adequate for purposes of comparing India's power supply with that of any other economy. The data presented in Table 2.6 are. There we use one proxy each for the quality of power supply, telecom, and transportation systems, each collected through the investment climate surveys of India, China, and Brazil. For the quality of power supply, the proxy was the number of days a firm reported that it took them to be connected to the public electric grid; these were average figures and they related only to hookups over the previous two years. On this indicator, the quality of power supply is seen to be considerably inferior in India compared with that in China or in Brazil. It would take 45 days in India for a small business startup to get connected to the public grid; 26 days for business located in one of the metropolitan areas and 54 days for startups based in one of the smaller cities. Its Chinese counterpart would need only 21 days overall—32 days if in a metropolitan area, and just 15 days in a medium-sized city. Brazil's figures are comparable to China's.

For the quality of telecom services, the proxy we use, again, is the average number of days it takes firms to obtain its last fixed-line connection—if that connection occurred within the last two years. This too is more than three times higher for the average small business in India than it is for its counterpart in China and is almost twice the figure for the average small business in Brazil. At 15 days, the hookup time for a small business in India is lower in metropolitan areas but would be much higher (50 days) in smaller cities.

Our proxy for the quality of transport services is the average number of inventory days a business would require in submitting fresh orders for major items. The more days, we assume, the more unreliable the freight transport system, as firms respond by carrying more stock to deal with uncertain supply. The figures in the third column of Table 2.6 support the view that India's freight transport system is inferior to China's, which in turn is much inferior to Brazil's. The average small business in Indian industry would have approximately a one-month inventory of its major inputs when it orders fresh supplies. For metropolitan-area businesses, this figure drops to 24 days but rises to a staggering 37.5 days for businesses based in one of the smaller cities.

Power supply

India's present difficulties with basic power supply (shortages, costs, unreliability) stem more from transmission and distribution deficiencies than from generation. We have already discussed one indicator of the quality of power supply. The frequency of outages is another and it indicates

both shortages and unreliability of supply. A third is the cost of lost output owing to the outages. Table 2.7 shows that for the average business in India power outages occur almost every other day. In contrast, outages occur once every two weeks in China and once a week in Brazil. The average manufacturer in India loses 8.4 percent a year in sales; the figure is less than 2 percent for the average manufacturer in China or Brazil. Outages can lead to loss of sales by forcing downtime (or idle capacity) on managers. They can also cause waste of materials. This happens when power disruptions cause damage to materials in-process—materials that cannot be used when power and thus production resumes. Power disruptions also damage equipment, adding maintenance and repair costs that are directly attributable to the outages.

In response to power shortages, businesses run their own generators. In fact, 61 percent of respondents to the India ICS reported to have their own generators (Table 2.7); the figure is 21 percent in China and 17 percent in Brazil. In India, generators are standard industrial equipment, accounting in many cases for as much as 30 percent a business's power consumption.

Generator use undoubtedly cuts output losses. Yet, with the enormous economies of scale found in power generation, the unit costs of self-generating additional power are much greater than that achieved through better or more reliable supply from the public grid. Any gains in output that manufacturers realize through self-generated power should thus be weighed against the losses they incur in doing so, and in tying up capital that could have been employed more profitably. As a rule, tied-up capital constitutes about 11 percent of total fixed assets for small businesses in the India-wide ICS sample.

On top of this expense, Indian industry is charged higher tariffs for power consumption from the public grid not only relative to favored domestic consumer groups but also compared to competitors abroad. Power tariffs in India are considerably higher than in many countries, particularly Southeast Asian countries such as Indonesia and Thailand. Average tariffs for industrial use are around US$0.08 per kwh in India compared with US$0.05 in Southeast Asia. Further, India has significant interstate variations in power tariffs. For instance, Uttar Pradesh and Gujarat charge Rs. 6.64 and Rs. 4.39 per kwh respectively,[16] compared to Rs. 3.22 and Rs. 3.00 per kwh in Orissa and Punjab respectively.

It should be noted that in spite of the unfavorable comparison that India's power supply situation bears to those of China or Brazil, there have been recent signs of improvement. One indicator of this is that the percentage of businesses that rely on self-generated power in the 2003 investment climate survey is lower by 10 percent than the percentage reported for 2000. This progress suggest that power sector reforms, at least in some states, are working. At the root of the power

Table 2.7. Objective indicators of deficiency in power supply from the public grid

	Percent running generators	Share of electricity from own generators (%)	Outages per month	Output lost due to outages (%)	Days for new connection to the public grid
All sizes, all industries:					
India-00	69.0				
India-03	60.9		14.8	8.4	47.8
Brazil	17.0	1.6	4.1	1.9	22.6
China	21.2	1.5	2.1	1.7	25.0
Small firms in megacities:					
Mumbai-00	24.8	3.2			
Mumbai-03	26.1	5.6	3.5	3.3	24.2
Sao Paolo	9.2	0.2	5.1	3.8	32.5
Shanghai	9.4	1.1	2.9	0.9	14.6

Source: World Bank Investment Climate Surveys

supply problem in India is serious underinvestment over the years in transmission and distribution infrastructure. This underinvestment in turn can be traced to the government-owned monopoly of enterprises operating under State Electricity Boards (SEBs)—at least until the early 1990s, Many of the SEBs adopted a deliberate and longstanding policy of underpricing the supply of electricity to households and farms; higher costs were therefore borne by industry through excessive tariffs by international standards.[17] The failure of the SEBs to protect transmission and collect payments has also produced significant financial shortfalls, leaving maintenance and additional capacity wanting. India has made recent efforts to attract private investment in generation and distribution and has sought to unbundle SEBs into independent commercial agencies specializing in generation, transmission, or distribution only. In most states, these efforts have yet to bear fruit partly because of the absence of a regulatory framework in which potential investors have confidence.

Road and Rail Transport

The ICS has not generated as many telling indicators regarding the quality of transport or telecommunication services as it has for power supply. There are nevertheless some clear pointers to serious deficiencies in the provision of transport services to industry, notably in road and rail transport. Severe capacity and quality constraints in both these areas impose additional costs on firms. India currently has no interstate expressways linking its major economic centers, and only 3,000 km of four-lane highways (China has built 25,000 km of four- to six-lane, access-controlled expressways in the past 10 years). The average speed of trucks and buses on Indian highways is 30–40 km an hour, about half the expected average.

With a 150-year history and a network 63,028 km, the Indian Railways (IR) is the second- largest rail network in the world, and one of the country's major national institutions. But IR is an inefficient means for transporting goods. The practice of cross-subsidizing passenger fares is a key problem, as it produces high cargo tariffs. Long-haul goods traffic is steadily moving away from rail to roads. For instance, in 1991–92, the IR transported 57 percent of the cement produced. By 2002 to the figure dropped to 43 percent. Similarly, the volume of iron steel transported by rail has dropped from 72 percent to 34 percent over the same period. The IR's cross-subsidization of passenger fares is among the highest in the world. In a situation of zero cross-subsidization, the ratio of passenger earning per passenger km to freight earning per metric ton of freight km should be 1. For India it is 0.3—compared with 0.65 in Thailand, 0.85 in Malaysia, 1.1 in China, and 1.4 in South Korea. Moreover, congestion on main lines is steadily increasing long-haul delivery times and making the IR even more unattractive as a transport provider. Finally, the rapidly deteriorating quality of rolling stock has led to declining safety standards

2.5. Land, Finance, and Skills

Access to Land

With just about 10 percent of ICS respondents citing access to land as a major or serious obstacle to business operations, this is not necessarily as urgent a reform area as power supply. Neither does it seem to be a graver problem in India than in comparators (see the first column in Table 2.8). However, there are considerable restrictions on the use and transfer of land in India, the cost of which could be far higher than that suggested by the number of ICS respondents identifying it as a major problem. Urban land policies and regulations create artificial scarcity in India, driving up prices and restricting competition.

Specific land market distortions that are of interest in terms of limiting firm entry and exit as well as competitiveness include the following:[18]

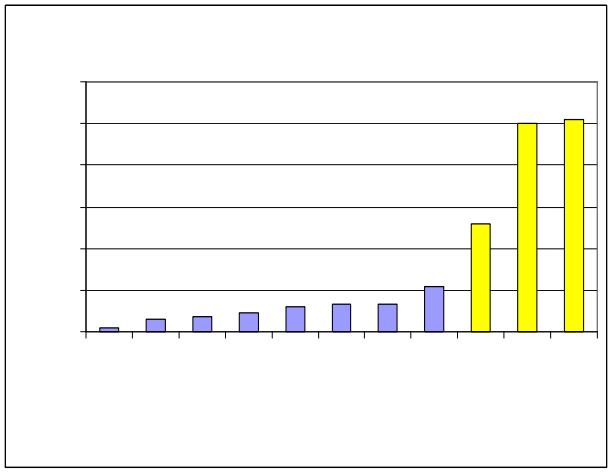
(a) unclear land ownership
(b) widespread institutional ownership
(c) inflexible land use and property rights

[17] See, for example, Parkih (1995), who points out that SEBs managed to cover only 80 percent of their costs through user charges, despite the levying of high tariffs on industrial users.

[18] This section draws on a recent presentation made by Sonia Hammam (SASEI) on Land Market Distortions in South Asia.

(d) high transaction costs in the form of stamp duties

These constraints have combined to create high land prices for businesses and households. Distortions in the land market in India have produced escalating land costs relative to per capita incomes (see Figure 2.12). For example, relative land costs in New Delhi are 80 percent higher than those in Tokyo, Singapore, Jakarta, and Seoul.



Unclear property titles, which are supposed to show who owns what land, impede transactions and restrict the supply of land for development. In general, the government does not certify a title to property (land). Revenue records are not documents of title, and ownership can be established only through the sequence of prior transfers. The resulting ambiguity of property rights has often led to litigation and supply constraints. Widespread institutional ownership also imposes supply constraints as it restricts land available for private sector investment and underutilization of prime serviced land.

Inflexible land use (created by zoning difficulties and land conversion regulations) freezes land that would otherwise be available for development and affects economic entry and exit. Zoning changes involve long and cumbersome procedures resulting in pockets of "dead land." For instance, obsolete cotton mills in Mumbai and Ahmedabad dominate huge land parcels in central locations; it is neither environmentally desirable nor economically feasible to put these mills back into operation. But still the mills stand. Businesses cannot sell their assets and reinvest in other activities, and new businesses cannot build in these desirable locations.

High stamp duties further discourage land transactions, and as a consequence reduce the supply of land on the market. High stamp duty is an incentive to grossly underdeclare the real value of land. This in turn adversely affects the use of land as collateral for construction financing.

Access to finance

Some 27 percent of ICS respondents rate access to finance as a major to severe obstacle to business operations or growth. So problems of access to external finance should be high on the agenda of policy reform dialogues. By external finance we mean finance from any sources outside of the firm. One indicator of the ease of access to formal sector external finance is the proportion of small businesses that have active bank credit lines or overdraft facilities. Some 54 percent of small businesses in the India ICS sample belong to this group (see Table 2.8). This is much higher than the figure for China, suggesting India's investment climate is clearly better in this respect. But the India figure is lower than Brazil's by about 50 percent. A greater proportion of small business might thus have been rationed out of formal credit markets in India than could otherwise be the case even by emerging market standards.

Even during their initial phase, Indian SMEs have traditionally relied much more on debt financing—from banks and nonbank financial institutions (NBFIs)—than their counterparts elsewhere. But the shrinkage of the NBFI sector in response to policy and regulatory changes since 1997 has meant that SMEs no longer have access to finance from this source. And bank credit to SMEs has also dropped sharply since 1997. The limited debt financing available to Indian SMEs is of a short maturity (less than one year) and is relatively costly compared with their counterparts in other countries.

In large part, the financing constraint faced by SMEs may be attributed to credit market

imperfections, resulting in high transactions costs and default risk associated with bank lending to SMEs. Specific problems include: (a) insufficient credit information on SMEs; (b) poor SME credit-assessment practices and poor lending technologies, such as inadequate use of credit scoring/rating tools; and (c) problems in using land as collateral and nonrecognition by lenders of other types of collateral, difficulty in collateral enforcement and loan recovery, and a bankruptcy framework that prevents easy exits for troubled firms. A fourth possible contributor is the degree of confidence lenders have in courts contract enforcement mechanisms.

Availability of skills

One in eight businesses in the India ICS sample identifies skill shortages as a major obstacle to the expansion of their businesses. A comparison of the number of days needed to fill a skilled-job vacancy in India and Brazil suggests that skill shortages are not as ubiquitous or biting a problem in Indian industry as they appear to be in China and Brazil. An India firm reports filling a skilled vacancy within 3 days as opposed to six in Brazil (see Table 2.8). This does not necessarily mean that India has a larger pool of skilled workers than China or Brazil. It means only that there are more skill shortages in the other two countries, possibly because the demand for skills in those countries is greater, which would also be consistent with their higher investment rates in more skill-intensive industries (see Figure 2.3). That India apparently faces fewer skill shortages than China is not therefore necessarily a plus for the current investment climate in India.

2.6. A summing up

This chapter has described key aspects of India's investment climate in comparison with China and Brazil from the point of view of industrial growth. Survey respondents identify the following major bottlenecks in India's current investment climate : (a) excessive or costly business regulation: (b) the corruption that this seems to breed and sustain; and (c) serious deficiencies in power supply, the allocation of urban land, access to finance, and the supply of skilled labor.

There is no evidence in existing business survey data that Indian industry suffers from greater burden of government regulation of routine industrial activities and industrial relations, or bears greater cost of tax and customs administration. The proportion of Indian businesses that identify these as major problems is not larger than that of Chinese or Brazilian businesses. Objective indicators such as the frequency of official visits, the time that management spends dealing with regulations, delays in customs clearance, and so on are also not higher for India than they are for China. Indeed, two of these indicators also suggest that this component of industrial regulation has dropped between the investment climate survey years of 2000 and 2003. The number of factory inspections per year for 2003 was 7.4 compared to 11.7 in 2000. The average number of days spent on customs clearance for industrial imports has also fallen from 10.3 in 2000 to 7.3 in 2003.

Yet secondary sources show that Indian businesses lose out more than their counterparts in China or Brazil because of because of the greater entry and exit regulation in India. Costly and unreliable power supply also cost Indian businesses. This despite the fact that the proportion of businesses generating their own power supply has dropped considerably since ISC 2000. There is also significant evidence, again from secondary sources, that Indian industry might be losing more in productivity owing to the deficient urban land market, which makes land-use rights account for a higher proportion of business costs in India than they do in East Asia. Finally, inadequate external finance is a significant obstacle to growth for Indian industry. Although India's situation appears better than China's in this respect, small Indian businesses report their access to formal sector external finance is not what their counterparts enjoy in Brazil. As many as 75 percent of small businesses in Brazil have bank credit lines; the corresponding figure for India is only about 54 percent.

The next two chapters will evaluate the cost of these investment climate deficiencies for India with respect to lost industrial productivity and growth. Chapter 3 assesses the impact of investment climate on the plant location decisions made by manufacturing firms. The aim is to

provide some idea of how much industrial growth a region or a city loses when businesses decide not to locate there because of investment climate deficiencies. Chapter 4 moves beyond investment climate and location decisions to focus on business climate and its effect on plant-level productivity and growth. The true cost of an investment climate deficiency on the industrial growth of a region is the sum of these two distinct but highly correlated components: (1) the costs foregone when (a) potential entrants decide against operating in the region at all, or (b) incumbents depart; and (2) the costs of lower growth on businesses which for one reason or another cannot move out of the region.

Chapter Three

SUBNATIONAL REGIONAL DIFFERENCES: INVESTMENT CLIMATE AND THE LOCATION CHOICE OF FIRMS

3.1 Introduction

Chapter 2 presented a comparative picture of India's investment climate, using China and Brazil as comparators. This chapter describes the differentials in investment climate faced by industries within India. It then assesses how these differentials explain the geographical distribution of industrial activity in the country by estimating the influence that specific investment climate deficiencies have on the plant location decisions of manufacturers. Many factors that influence firms' spatial mobility also affect entry or exit decisions with respect to lines of activity. We can indeed take geographical mobility as the spatial analogue of entry and exit decisions made in relation to industries. By understanding the factors governing firm locations, we can thus gain greater insight into business entry and exit decisions.

As noted in the introduction to this report, the influence of investment climate on location decision is only one aspect to the interaction of economic performance and business environment. The other aspect is the effect investment climate has on the productivity or growth of businesses in their given locations. This second aspect is discussed in Chapter 4.

The subnational perspective, discussed in this chapter, is important for two main reasons. First, the already large state-to-state disparities in economic performance seem to have become more pronounced in recent years. Second, the decentralization of economic policymaking appears to have created a political constituency for countering these regional inequalities by reforming the business environment in lagging regions.

Table 3.1 illustrates the point about regional divergence in economic performance over time. It shows that between 2000 and 2003 FDI inflows to India were concentrated in the states of Delhi, Maharashtra, Karnataka and Tamil Nadu. In 2003, Delhi led FDI flows receiving Rs. 21 billion, accounting for 22 percent of foreign investment in India. In 2000, Maharashtra led FDI flows in India receiving Rs. 35.8 billion (45 percent). Looking at total investment over an extended post -reform period, investment trends between 1992 and 1998, most 'new' private sector investments have a strong coastal bias and were made in previously established locations (Table 3.2).[19] Recent analysis using investment data for this period provide evidence path dependence in process of investment location: in seeking efficient locations, private sector investments tend to favor existing industrial clusters with access to the coast (Chakravorty, 2003).[20] At the same time, they show that investors avoid regions with inhospitable investment climates and unfriendly local governments.

The twofold question posed in this chapter is thus: (1) How important are regional disparities in investment climate in the distribution of economic activity in India? And (2) How do these disparities compare with the force of geography and of agglomeration economies? To understand the process of industrial location and concentration, it is important first to analyze the location decisions made by firms in particular industries. Two main factors affect the individual firm's location decision:[21]

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[19] This is based on analysis of data collected by the Center for Monitoring [the] Indian Economy (CMIE). The database contained about 4,650 records or projects (covering the entire period), containing only those projects that have been completed or are under implementation, and those that are not being funded solely by local government, forms the basis of all the post-reform calculations.

[20] At the district level, for the private sector the most significant factors are the size of investment from the pre-reform period in the same district, and the size of new post-reform investment in neighboring districts

[21] This classification draws on Burgess and Venables (2004) who identify sources of 1st and 2nd advantage, which are similar to business environment and agglomeration economies respectively. Also, Lall and Chakravorty (2004)

Table 3.1: States attracting highest FDI flows in India (2000-2003)

	2000		2001		2002		2003	
	Amount	% Share	Amount	% Share	Amount	% Share	Amount	% Share
Delhi	24,576	30.60	69,183	18.90	29,943	18.50	21,047	22.00
Maharashtra	35,789	44.50	29,917	43.70	48,657	30.10	10,228	10.70
Karnataka	5,826	7.20	13,104	8.30	8,929	5.50	9,991	10.50
Tamil Nadu	5,519	6.87	7,427	4.70	13,412	8.30	8,055	8.40
Chandigarh					8,426	5.20		
Gujarat							10,426	10.90
Andra Pradesh	2,517	3.13	3,398	2.10				

Note: Amount in million Rupees

a) *"business environment"* includes access to inputs (quality and cost of labor and capital); access to markets; provision of basic infrastructure; institutional environment; and industry-specific subsidies or tax breaks
b) *"agglomeration economies"* are external economies from localization and urbanization that increase returns on scale and can lead to cumulative causation.

There are two broad approaches to identifying the influences on firm location decisions: One is survey-based or the "stated preference" approach; it asks decision makers what location factors are important to them. The second is a modeling approach used to identify the revealed preferences based on site/region characteristics. A large number of factors, with some overlap, have been identified using these two approaches. In general, the most important firm location criteria are market access, infrastructure availability, agglomeration economies, state regulations (such as environmental and pollution standards, incentives in lagging regions or for emerging technologies), and the general level of political support (see Hanushek and Song 1978, Webber 1984, McCann 1998). Survey-based approaches reveal a random element in the choice of location: personal circumstances, chance, and opportunity are given as explanations almost half the time (see Mueller and Morgan 1962, Calzonetti and Walker 1991).

examine how these factors influence firm level costs in Indian manufacturing.

Here we employed both approaches. In the survey-based approach, we summarize responses from the recently completed 2003 Investment Climate Survey (ICS) to identify proximate determinants of location and economic performance. In using the modeling approach we analyze the ICS data and the data from the Indian Annual Survey of Industry (ASI) to make robust inferences about firm-level location decisions.

3.2 The Survey-Based Approach: Comparing the Investment Climate Across India's States

The results from the ICS provide many useful insights on factors that influence location decisions and performance of individual firms. The ICS covers approximately 1,855 manufacturing firms in 40 cities across 12 states. The sample of states is chosen to reflect regions with diverse business environments. These states also reflect a broad range of development outcomes measured by state-level per capita incomes. For instance, the states of Delhi, Punjab, Haryana, and Maharashtra rank among the nation's top five, in comparison to Madhya Pradesh and Uttar Pradesh, which rank at the lower end of the per capita income distribution. Within these states, cities have been selected as the basic units of analysis as these are the centers of manufacturing activity, and cited as engines of national economic growth.

The ICS data indicate that the typical firm is a single establishment firm located in the native

state for the owner(s) or major shareholder(s).[22] A small proportion of firms make their location choices based on a location feasibility report comparing attributes across various states.[23]

Table 3.2: Posteconomic reform (1992–1998) investment statistics by location

	Private Sector	Central Government
Number of districts with investment	294	164
Average investment in receiving districts	13.55	11.40
All India per-district investment	9.84	4.61
Metropolitan Districts		
Number of districts with investment	17	14
Average investment per receiving district	40.14	25.14
Share of total sectoral investment (%)	17.13	18.82
Non-Metropolitan Districts		
Number of districts with investment	277	150
Average investment per receiving district	11.92	10.12
Share of total sectoral investment (%)	82.87	81.18
Coastal Districts		
Number of districts with investment	48	32
Average investment per receiving district	40.82	22.00
Share of total sectoral investment (%)	49.18	37.65
Inland Districts		
Number of districts with investment	246	132
Average investment per receiving district	8.23	8.84
Share of total sectoral investment (%)	50.82	62.35

Note: The investment averages are in billion Rupees (in June 2003, 1 US Dollar = 48 IN Rupees).

A. Entrepreneurs Rank Regional Investment Climates

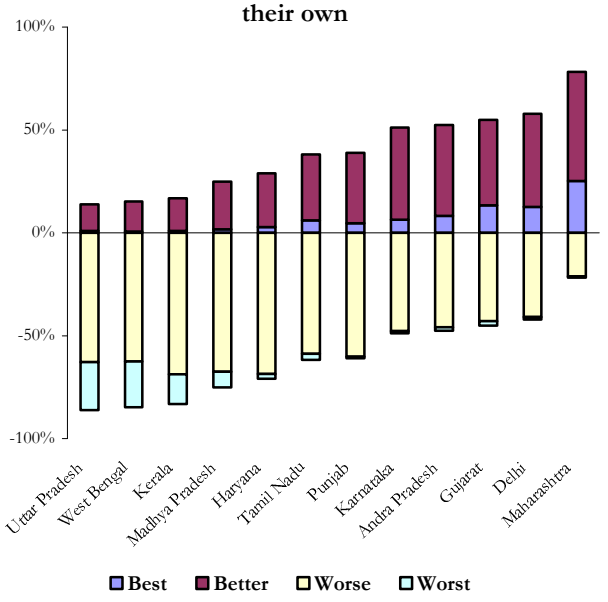
The ICS asked business managers to identify the states they thought had a better or worse investment climate than the state in which they were currently based. They were also asked to name which of the 12 states had the best investment climate, and which had the worst. How much lower would their unit cost of production be lower if their business were in the manager's "best state"? By how much would unit costs be higher if the business were, instead, in the manager's "worst-climate" state? More than 75 percent of respondents thought that Maharashtra had a better investment climate than their own state. About 81 percent thought that the investment climate of Uttar Pradesh was worse than that in their state. Each of the other eleven states is ranked between these extremes by the difference between the percentage of those identifying it as a better-climate state and the percentage of those identifying it as a worse-climate state (see Figure 3.1). Figure 3.3 shows

[22] 74 percent of firms are single establishment firms; and 83 percent of the firms responded that their location choice was guided by the fact that the owner(s)/ major shareholder(s) were from that state.

[23] 70 percent of responding firms do not base location decisions on a location feasibility report.

that these rankings line up well with the pattern in the average plant level rate of net fixed investment. An alternative criterion for state rankings is the difference between the percentage of those who thought a state had the best climate and the percentage of those who thought it had the worst climate. Both approaches lead to the same ranking.

Figure 3.1. Outside responents ranking a state's investment climate relative that of their own



Yet another alternative index (also leading to the same ranking as the other two) is a state's average cost advantage according to those who thought it had the best climate less its average cost disadvantage according to those who thought it had the worst climate. This is plotted against the percentage of outside respondents rating the investment climate of a state better than their own in Figure 3.2, which brings out the following list of "better climate" states: Andhra Pradesh, Delhi, Gujarat, Haryana, Karantaka, Punjab, and Tamil Nadu. Moving to any of the other states is also thought to escalate the unit cost of production of the mover on average, as more respondents rate these states as worst climate states. We can see from Table 3.1 that with the exception of Haryana and Punjab, all better-climate states are also high FDI states. They belong to the select group of states (see Table 3.1) accounting for the bulk of FDI to India in the last three years. Three of the better-climate states—namely, Delhi, Maharashtra and Gujarat—have registered a 6.5 percent or higher annual average growth rate of per capita real GDP. Four of the better climate states are also high-income states in the sense of having a per capita GSDP of 25,000 Rs or more for 2002.

Figure 3.2. Better climate states

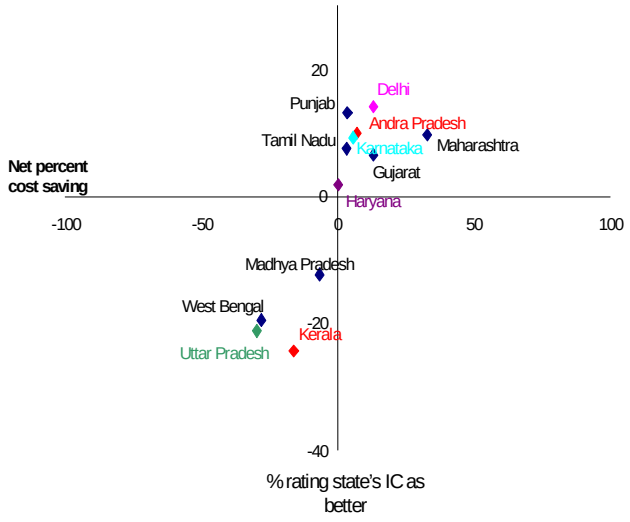
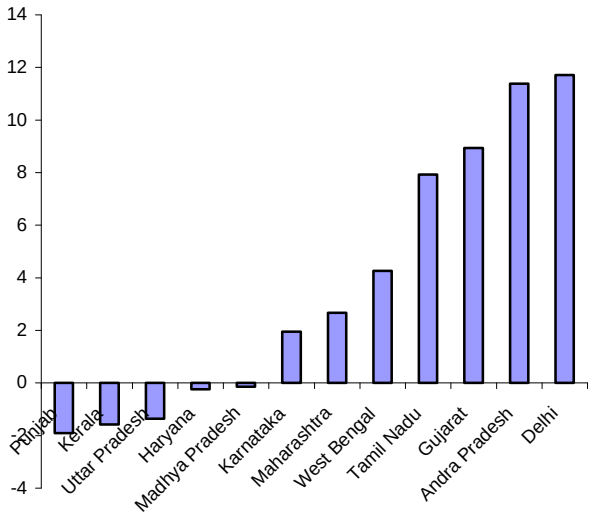


Figure 3.3. Growth rate of manufacturing net fixed assets (% pa)



Source: FACS 2003

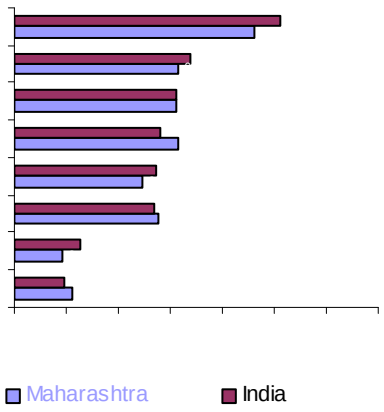
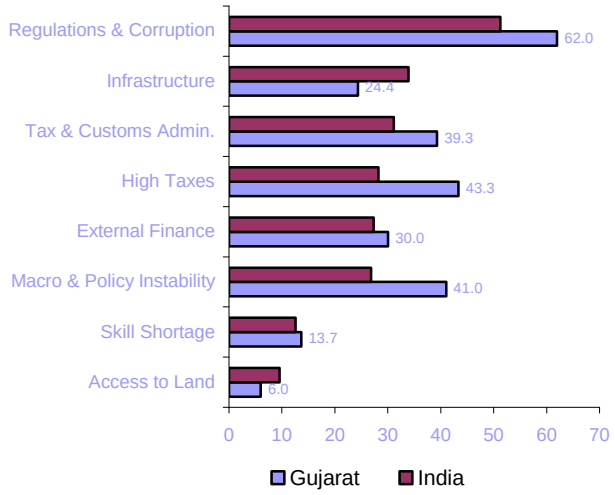


Figure 3.5. Percent of respondents identifying factor as major or severe obstacle - Gujarat



B. Entrepreneurs Rate Investment Climate Obstacles

What factors do survey respondents consider when comparing states or regions by investment climate? The order of priority does not vary much across the 12 states (see Figures 3.4 to 3.8). Looking at Figure 3.8 first, we see that excessive regulation and corruption would be at the top of the priory list in better climate states just as they would be in the other states; infrastructure, customs administration, and the rest have more or less the same order in the priority list shown in Figure 2.6. Priorities of bottlenecks do not seem to vary either in individual states, starting with Maharashtra (Figure 3.4) as a better climate state with almost the same priorities as Uttar Pradesh (Figure 3.6). Nor can we say that particular bottlenecks are consistently rated worse in better climate states than in other states or vice versa. For example, although regulation and corruption are rated as major to severe obstacles to business growth by a greater proportion of respondents from Uttar Pradesh than Mahashtra (a better climate state), an even larger proportion of respondents would rate it the same in Karnataka (another better climate state) and Gujarat (a better climate state), as can be seen from Figure 3.7 and Figure 3.5, respectively.

Figure 3.6. Percent of respondents identifying factor as major or severe obstacle - Uttar Pradesh

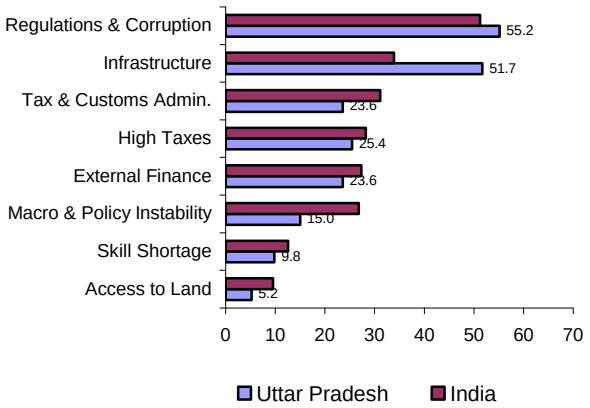


Figure 3.7. Percent of respondents identifying factorasmajororsevereobstacle-Karnataka

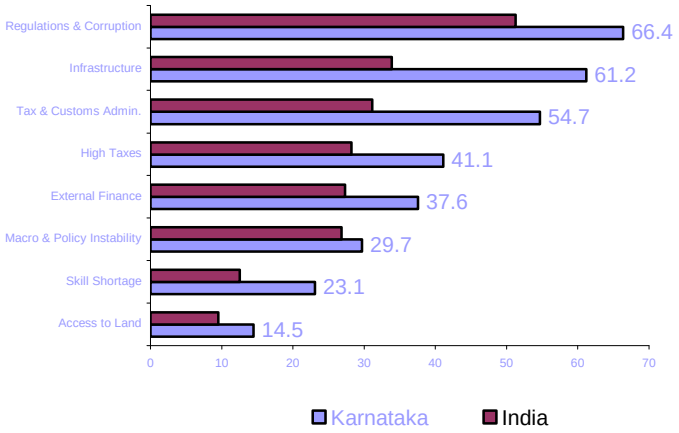


Figure 3.8. Percent identifying factor as a major or severe obstacle to growth

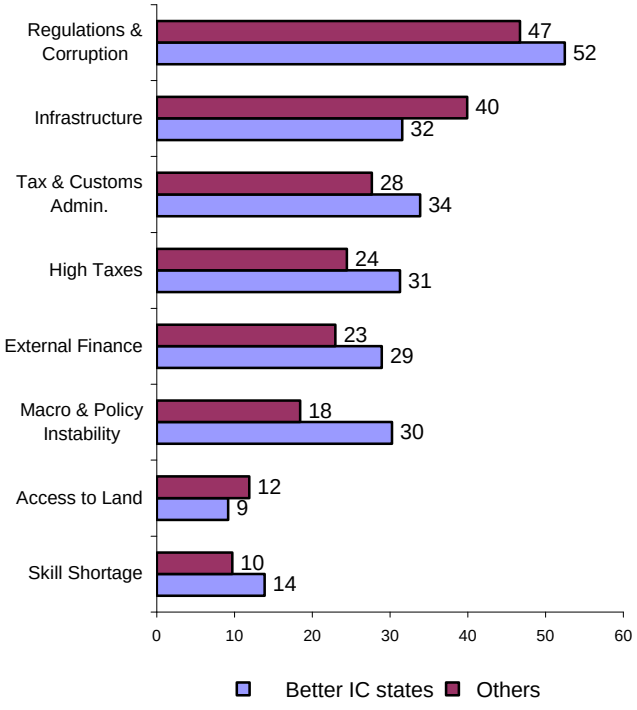
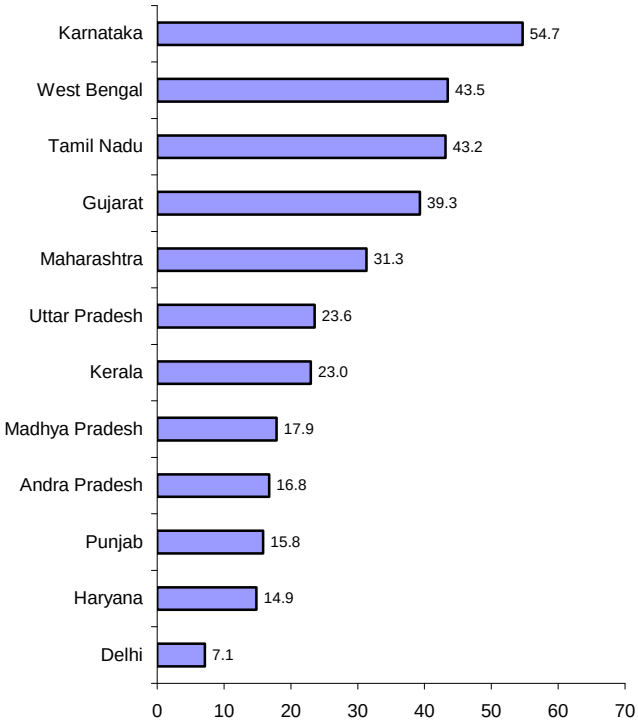


Figure 3.10. Percent of respondents identifying tax and customs administration as major or severe obstacle



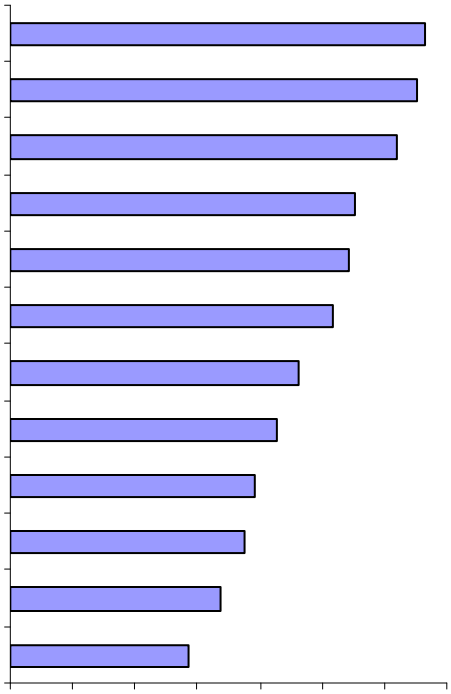
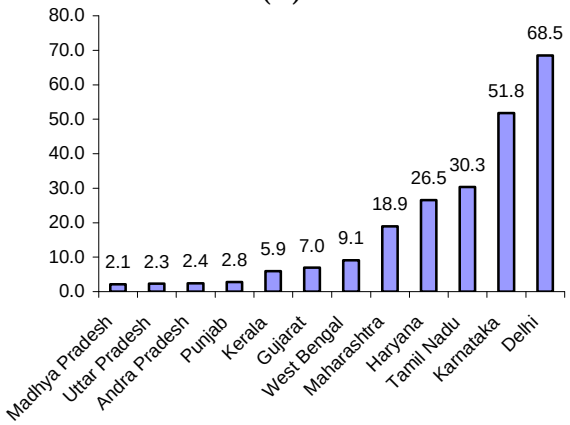


Figure 3.11. Respondents identifying labor regulation as a growth bottleneck (%)



Differences in quality of regulation and corruption

Haryana is the only state in which less than a third of respondents rate regulation and corruption as major obstacles to business growth (Figure 3.9). But among the 11 states, the urgency for reform in this area seems significantly greater in the states

Figure 3.12. Respondents identifying corruption as a growth bottleneck

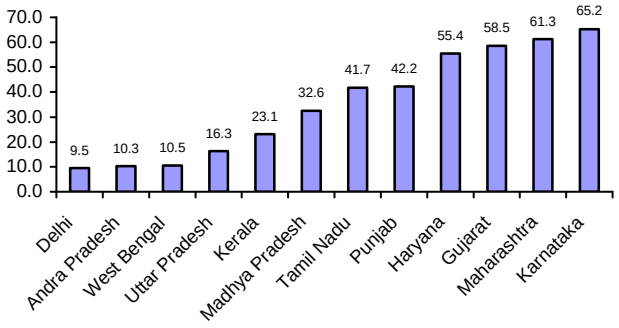


Figure 3.13. Reported overstaffing rates (%)

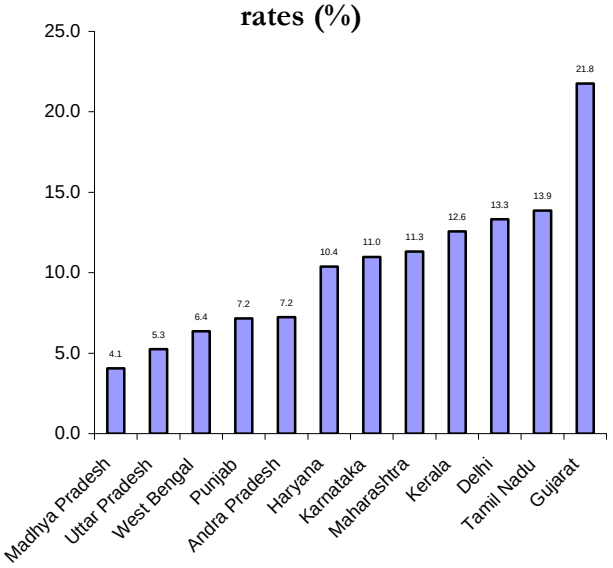


Figure 3.14. Number of inspections by government officials

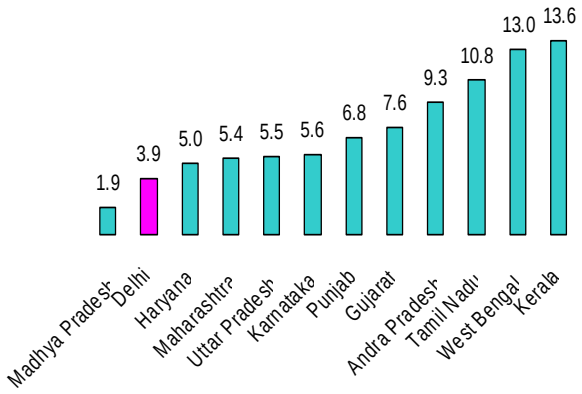


Figure 3.15. Senior management time spent dealing with regulations (%)

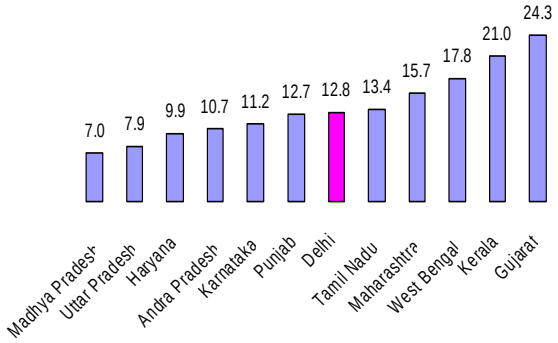


Figure 3.16. Days to clear customs (imports)

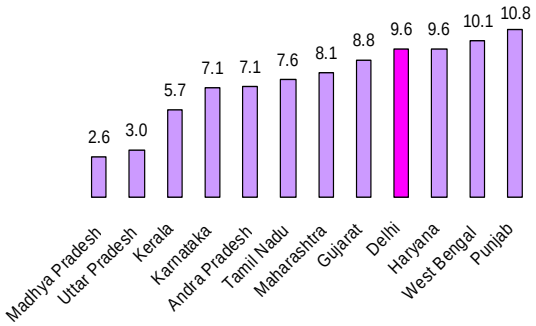
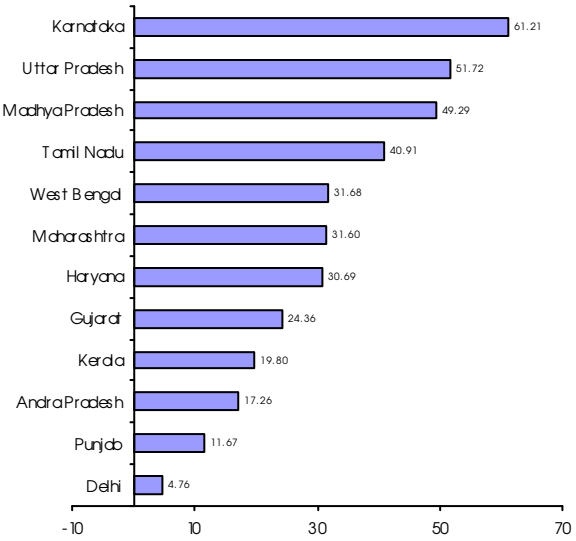


Figure 3.17. Percent of respondents identifying infrastructure as major or severe obstacle



Pradesh, Punjab, and West Bengal, in each of which the majority of respondents identify regulation as a major bottleneck. Adding the cost of tax and customs administration to the overall burden of regulation and corruption would alter this conclusion (see Figure 3.10).

Within the broad category of regulation, labor regulation seems to be a major source of the

Figure 3.18. Respondents identifying power supply as a "major -to- severe" bottleneck to growth

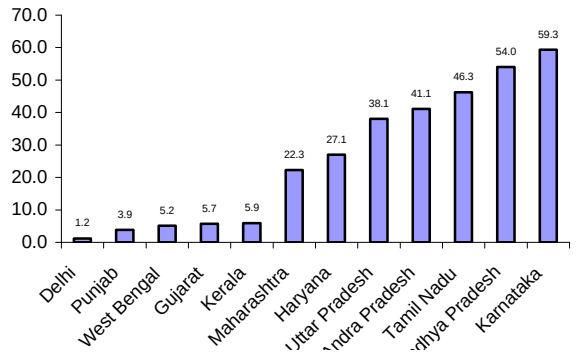
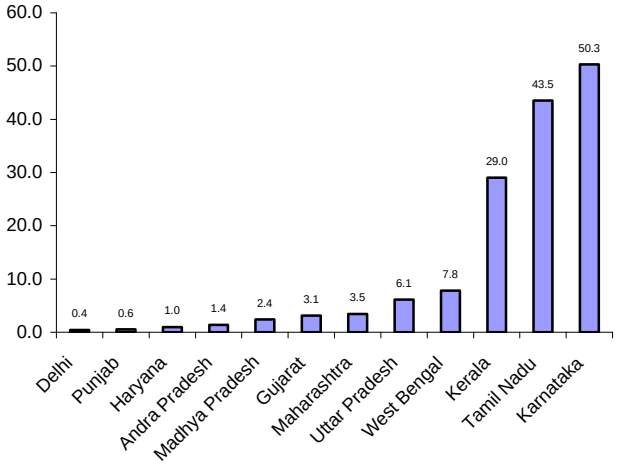
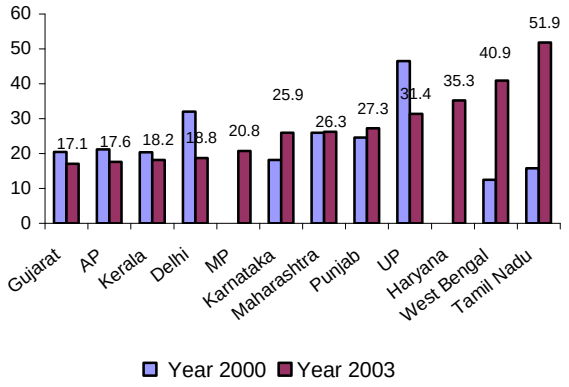


Figure 3.19. Respondents identifying transport as a "major- to -severe" bottleneck to growth



complaint in almost all better climate states— the exceptions being Andhra Pradesh and Gujarat (Figure 3.11). This is consistent with the pattern in reported overstaffing rates in Figure 3.13. Corruption is a major bottleneck according to one- to two-thirds of respondents in all better climate states (Figure 3.12)—a result reflected in all our objective proxies of the burden of regulation, which are all higher for better climate states, including the frequency of inspection visits (Figure 3.14), management time, cost of regulation (Figure 3.15), and the duration of customs clearance (Figure 3.16). This suggests that the better climate states are not, after all, rated because the burden of regulation and corruption is less onerous.

Figure 3.20. Percent of Power Supply from Own Generators



Differences in the provision of infrastructure

On the average, the better climate states provide better infrastructure. But industry seems to be as much constrained by this factor as any of the southern (better climate) states of Karnataka and Tamil Nadu (Figure 3.17). Indeed, it is in Karnataka that the largest proportion of businesses (61 percent) rate infrastructure as a major to severe bottleneck to industrial growth. Power supply is the main infrastructure bottleneck that respondents have in mind (Figure 3.18). Better climate states are also not as bad as the other states in two of our objective indicators of infrastructure provision—the shortage or unreliability of power supply (i.e., the percentage of firms with self-generated power generators, see Figure 3.20) and the number of days needed to obtain a new connection to the public grid (see Figure 3.21). Not surprisingly, transport is rated as a major bottleneck by more than a tenth of respondents only in the three southern states of Kerala, Tamil Nadu, and Karnataka (Figure 3.19),

Figure 3.21. Number of Days to Get a New Power Connection - 2003

Figure 3.22. Days of inventory of major inputs

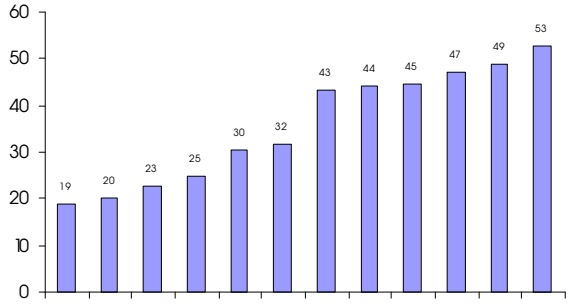


Figure 3.23. Days to get a new fixed line phone connection

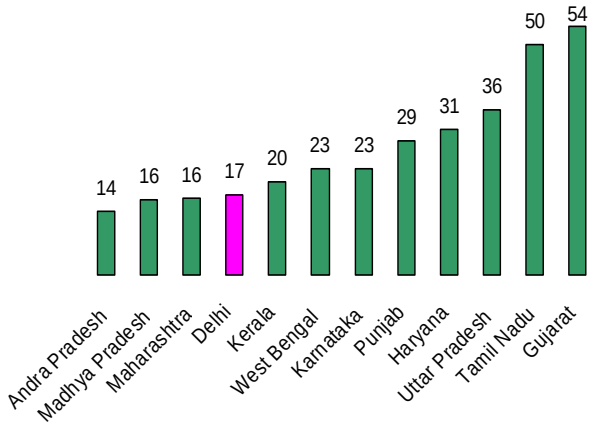


Figure 3.24. Percent of respondents identifying access to land as a growth bottleneck

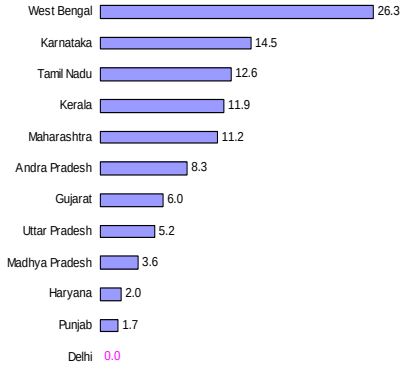
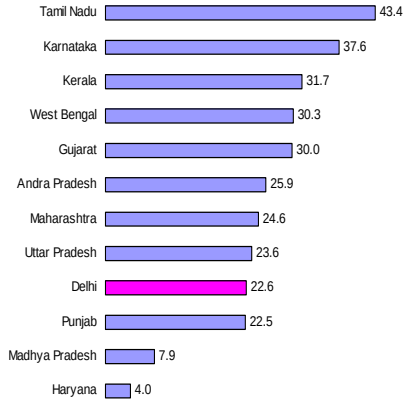


Figure 3.25. Percent of respondents identifying external finance as a growth bottleneck



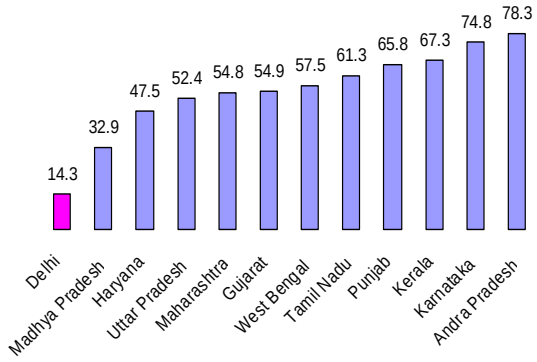
which is consistent with the average inventory duration of major inputs being higher in those states than in most others (Figure 3.22).

Differences in access to land, finance, and skilled labor

The states where land availability is a problem are West Bengal, Karnataka, Tamil Nadu, Kerala, and Maharashtra; the proportion of respondents identifying lack of access to land as major bottleneck in West Bengal being twice or more of the proportion for any of the other states (Figure 3.24).

A significantly larger proportion of businesses in the southern states of Kerala, Karnataka; Gujarat in the west; and West Bengal in the east, rate the

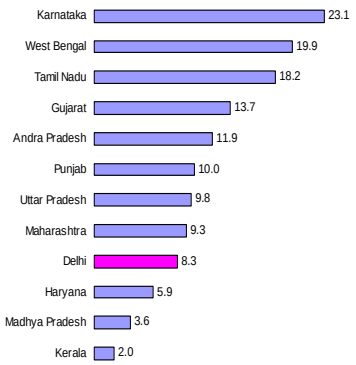
Figure 3.26. Establishments with bank overdraft facility(%)



cost of or access to external finance as a major bottleneck than businesses in other states, with the proportion being 30 percent or more in all these cases (Figure 3.25). Notice, though, that this picture does not match up well with the proportion of businesses with bank overdraft facilities (Figure 3.26), possibly because the ratings in Figure 3.25 reflect complaints about the cost of, rather than access to, external finance.

Ten percent or more firms have serious complaints about skill shortages, especially in

Figure 3.27. Percent of respondents identifying skill shortages as a growth bottleneck



Karnataka, West Bengal, Tamil Nadu, Andhra Pradesh, and Gujarat (see Figure 3.27). This complaint correlates with the number of days it would take in these states for a business to fill a skilled-worker vacancy (Figure 3.28)

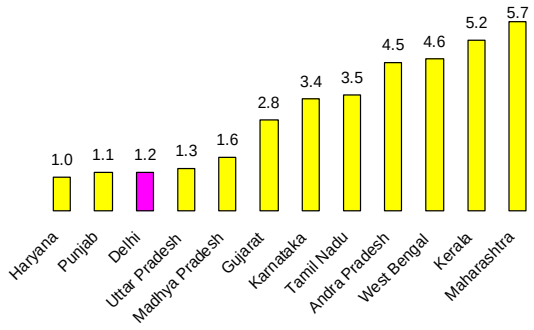
3.3 Location Modeling Approach

This section reports findings of a location choice model, which examines factors that influence the decision of a firm to establish production facility across 40 cities in the sample. As with the previous literature, this analysis assumes that market considerations alone need to be factored into the industrial location decision. The basic assumption in this analysis is that all location decisions are made by profit-maximizing private firms. Factors influencing location decisions are broadly classified as "business environment" and "agglomeration economies." These are described below:

Business environment

Regulation and corruption: We look at the average burden faced by firms in complying with regulations and the extent to which corruption accompanies, or is caused by, onerous regulatory compliance. The underlying data to measure these indicators are taken from the 2002 ICS, and summary measures for each of the 40 cities in the sample are computed from average values for all sample firms in each city. The measures of regulatory burden are:

Figure 3.28. Days needed to fill a skilled vacancy



a) The percentage of senior management's time per year spent addressing government regulations, officials, and paperwork
b) The frequency of inspection visits (central and state government, independent government agencies) in the previous year; this relates to various types of regulatory compliance.
c) The cost of dispensing gifts/bribes to inspectors from various regulatory agencies

Infrastructure: The measures of infrastructure used in this analysis are:

a) Frequency of power outages or surges from the public grid in the previous month
b) Frequency of water shortages in the previous month
c) Frequency of unavailability of mainline telephone services
d) Access to markets though the state and national transportation network

The first three measures are drawn from the ICS survey. The measure on market access needs a bit more explanation. In general, improved access to consumer markets (including interindustry buyers and suppliers) will increase the demand for a firm's products, thereby providing the incentive to increase scale and invest in cost-cutting technologies. The distance from market centers (and the size and density of those centers) in the vicinity of the firm determine access to markets; the market access indicator in this analysis is based on the accessibility index developed in Lall, Shalizi, and Deichmann (2004). Their index bases market access on the Indian road system and the location and populations of urban centers. They distinguish between state and national highways and account for quality differentials along these transport networks. The market access measure is based on a gravity model, commonly used to analyze trade between regions and countries (Evennet and Keller 2002). In this model, interaction between two places is proportional to the size of the two places as measured by population, employment, or some other index of social or economic activity, and inversely proportional to some measure of separation such as distance.

Factor markets: The efficient functioning of factor markets (energy, labor, land) has important consequences for location decisions and firm productivity. Energy pricing for industrial activities is much higher in India than in most developed and developing East Asian countries (particularly the newly industrialized countries). For example, in the year 2000, average electricity prices for industry were estimated to be US$0.08 per kilowatt hour (kwh); it is US$0.04 for OECD countries, US$0.05 for Mexico, and US$0.06 for Thailand.[24] Subnationally, data from the ASI show considerable variations in average electricity costs paid by manufacturing firms across the 40 cities in the sample. We use average citywide electricity costs to examine if these differentials influence firm-level location choices.

Labor market restrictions (i.e., rigid regulations for hiring and firing workers), shortages of skilled professionals and production workers, and work culture characterized in part by absenteeism are impediments to economic performance. The ICS reports that 30 percent of the firms in the sample would employ fewer workers if they were free to choose their employment levels. Of those reporting excess labor, 30 percent attribute overstaffing to laws and regulations that limit firing of workers; 17 percent report pressure from unions; and 13 percent report government or political pressure. Absenteeism also imposes costs on production and the potential profitability of enterprises. In this analysis, we use average city-level absenteeism as a measure of labor market problems. We also use average wages for manufacturing workers from the ASI, which as profit maximizers would want to minimize production costs.

In addition to labor market issues, the use and transfer of land are major problems in India. A recent report by McKinsey Company reports that land market distortions account for 1.3 percent of lost growth per year in India. Distortions include unclear ownership, inflexible zoning and tenancy laws, and counterproductive taxation (World Bank, 2002). About 90 percent of land parcels are subject to ownership disputes that take decades to settle in court. Subsidized user charges for water and power, low property tax rates, and ineffective tax collection leave local governments unable to recover investments in infrastructure. On the other hand, high stamp duties, at 8–10 percent of the value of property changing hands, discourage land transactions. Further, there are considerable interstate variations in stamp duty rates. For example, a hypothetical property valued at Rs. 1

[24] Data are from the U.S. National Energy Information Center, accessed from http://www.eia.doe.gov/emeu/international/elecprii.html

million would be liable to pay as stamp duty Rs. 50,000 in Andhra Pradesh, Rs. 125,000 in Haryana, Rs. 38,750 in Maharashtra, and Rs. 145,000 in Uttar Pradesh.

Agglomeration Economies

Own-industry concentration: The co-location of firms from the same industry (i.e., localization economies) generates externalities that increase productivity for all firms in that industry. These benefits include sharing sector-specific inputs, skilled labor, knowledge, intraindustry linkages, and opportunities for efficient subcontracting. Firms that share specialized inputs and production technologies are more likely to cooperate in a variety of ways. In many industries, it is common for competitors in the market to launch joint projects for new product and process development. Further, a disproportionately high concentration of firms within the same industry increases possibilities for collective action to lobby regulators or bid-prices of intermediate products.

An extensive empirical literature supports these conclusions about the positive effects of own-industry concentration, often called *localization economies* (Henderson 1988, and Ciccone and Hall 1995). In a recent study of Korean industry, Henderson et al. (1999) estimate scale economies using city-level industry data and find localization economies of about 6 to 8 percent. Although industry concentration provides many benefits, some of these may be offset by costs of competition between firms for labor and land. These rivalries cause wages and rents to rise—even congestion, which in turn produces higher transport costs. Therefore, the net benefits of own-industry concentration may be marginal for sectors characterized by low-skilled workforces and standardized technologies.

There are several ways of measuring localization economies. These include own- industry employment in the region, own-industry establishments in the region, or an index of concentration, which reflects disproportionately high concentration of the industry in the region as compared with concentrations countrywide. A measure developed by Lall, Funderburg, and Yepes (2004) is used in this analysis—it accounts for local differences in the industry's firm-size distribution in measuring localization economies.[25] Typical measures used in industry studies cannot distinguish if industry employment (i.e., its concentration) in a particular region reflects several similar firms employing similar workers or a single firm with many workers. This inability to

Box 3.1: Urban diversity and economic performance

Urbanization economies driven by economic diversity enhance productivity. There are important knowledge transfers that primarily occur across industries, and a diverse local industry mix is important for these externality benefits (Chinitz 1961, Jacobs 1969). Cities are breeding grounds for new ideas and innovations owing to the great diversity of knowledge sources both concentrated and shared in cities. The diversity found in cities facilitates innovative experiments with an array of processes; therefore new products are more likely to be developed there. Therefore, industries with Jacobs-type externalities tend to cluster in larger and more diverse metropolitan areas. The benefits of locating in such areas transcend the technology-spillover argument. Firms in large cities have relatively better access to business services, such as banking, advertising, and legal services. Particularly important in the role of diversity is the heterogeneity of economic activity.

On the consumption side, increasing the range of local goods enhances the utility level of consumers. At the same time, on the production side, the output variety in the local economy can affect the level of output (Abdel-Rehman 1988, Fujita 1988, Rivera Batiz 1988). Urban diversity can yield external scale economies through the variety of consumer and producer goods. Recent empirical studies by Bostic (1997) and Garcia-Mila and McGuire (1993) show that diversity in economic activity has considerable bearing on the levels of regional economic growth.

[25] This measure $\tilde{e}_{ri}$ is firm-size adjusted employment for industry *i* in region *r*, and is defined as:

$$\tilde{e}_{ri} = e_{ri}(1 - h_{ri}) \qquad (1)$$

where $h_{ri} = \sum_{j=1}^{n} z_{ij}^2$ is the Herfindahl index for industry *i* in region *r* and is calculated as the sum of squared firm shares of local industry employment and e_{ri} is industry *i*'s employment in region *r*. Multiplying raw industry employment by $(1 - h_{ri})$ has the desired effect of penalizing regions that have "lumpy" industry employment, that is, few firms with many workers.

distinguish is problematic as localization economies require interaction among a number of firms. A more appropriate measure would therefore identify, or recognize, the number of firms in addition to the number of workers in an industry as both factors affect the scope and scale of interaction. The own- industry concentration measure is calculated from establishment-level employment statistics provided in the 1998–99 sampling frame of the ASI, which provides employment data on the universe of registered industrial establishments in India.

Economic diversity: In addition to own-industry localization economies, interindustry externalities also influence location decisions and productivity. Prominent among these is the classic Chinitz-Jacobs diversity measure, which provides a summary of urbanization economies accruing across industry sectors and provide benefits to all firms in the agglomeration. Chinitz (1961) and Jacobs (1969) proposed that important knowledge transfers occur primarily across industries and that a diverse local industry mix is important for these externality benefits to accrue (Box 3.1).

Results from empirical studies on the relative importance of specialization and diversity are mixed. On the one hand, Glaeser et al. (1992) find evidence only in favor of diversity. On the other, Mirachy (1995) finds little evidence to support the diversity argument. Henderson et al. (1995) show that the relative importance depends on the choice of industry. In general, they find evidence of specialization externalities in mature capital goods industries and of diversity externalities in new high-tech industries. These findings are consistent with the product cycle theory (Vernon 1966), which predicts that new industries tend to prosper in large and diverse urban areas, but with maturity they move their production facilities smaller and more specialized cities.

For this analysis, the well-known Herfindahl measure is used to examine economic diversity in each city.[26] Unlike measures of specialization, which focus on one industry, the diversity index considers the industry mix of the entire regional economy. The largest value for the Herfindahl measure is one, when the entire regional economy is dominated by a single industry. Thus, a higher value signifies less economic diversity. To obtain a more intuitive interpretation for the diversity index, the Herfindahl is subtracted from one. Therefore, diversity DV_r=1-H_r, where DV is the diversity index for city r, and H is the Herfindahl (specialization) for city r. A higher value of DV signifies that the city's economy is relatively more diversified. As in the case of own-industry concentration, the diversity measure is calculated from establishment-level employment statistics provided in the 1998-99 sampling frame of the ASI.

Firm-level characteristics

In addition to the business environment and agglomeration economies described in the previous sections, we use specific firm-level attributes and examine how they influence an establishment's decision on a location. These attributes include information on whether the establishment is part of a larger firm, is located the native state of the owner/major stockholders, legal status of the firm (is it publicly traded?), gender and educational attainment of the owner or general manager, and the demand for skilled professionals.

Analytic underpinnings

To understand the impacts of regional policies on economic performance, we first need to examine factors that influence location choices at the firm level. In this section, we outline an empirical model for quantifying the causes and consequences of firms' location decisions across Indian cities. A more technical description of the model is available upon request. Building upon previous work in regional economics and industrial organization, we measure the role of both classical determinants of firm location (e.g., input costs; access to markets and transportation infrastructure,) and network effects (e.g., interindustry spillovers and intraindustry agglomeration effects). Properly identifying each of these effects and determining how each differs by industry will have important implications for

[26] The Herfindahl index of a city r (H_r) is the sum of squares of employment shares of all industries in city r:

$$H_r = \sum_j \left(\frac{E_{jr}}{E_r}\right)^2$$

predicting the consequences of both explicit policies and regional endowments to attract economic activities across Indian cities.

The most difficult part of such an analysis is obtaining unbiased estimates of network effects among firms. Such firm interactions are often explicit (e.g., in the form of supply chains), but can also be subtler in nature (e.g., in the formation of a specially trained workforce, the sharing of costly public investments, or knowledge spillovers in R&D). A large body of work on the role of industry clusters highlights the importance of these interactions, but is also likely to overstate their importance, suffering from biases that favor finding significant agglomeration effects. Only by controlling for the equilibrium location decisions of all firms in response to a policy change can we be sure of its full consequences for productivity. Moreover, we may find that for policies to be effective, they must provide incentives for multiple industries to relocate at the same time—economic diversity matters (see Lall and Chakravorty, 2004).

The underlying model estimates a "profit function" in a particular city where a firm will locate if the profits to be realized there are higher than profits in any other city in the urban system. Input prices, the business environment, agglomeration economies, and a set of unobserved local city attributes influence a firm's profits.

Patterns of industry concentration

Before proceeding to a discussion of the results from the empirical analysis, we provide a general overview of the concentration and characteristics of firms in the study sectors. We first survey the economic landscape, identifying nonurban areas, urban areas, and large metropolitan areas. The metropolitan areas include the following cities and their urban agglomerations—Delhi, Mumbai, Kolkata, Chennai, Bangalore, and Ahmedabad. Using the sample data from the ASI for 1998–99, we see that average wages across industries are the highest in metropolitan areas (see Table 3.3). In comparison with nationwide average annual wages of Rs. 60,000 per employee, labor remuneration is Rs. 74,000 in metropolitan areas, Rs. 54,000 in urban areas, and in nonurban areas is Rs. 50,000. Among various industries, annual wages are the highest in electrical/electronics (Rs. 101,000 per employee) and lowest in the leather industry (Rs. 41,000 per employee). Even within sectors (not shown in this table), wages tend to be higher in the larger cities.

Table 3.3: Characteristics of firms in Indian industry (ASI sample)

Location	Industry	Firms	Employment	Wages/ Employee	Output/ Employee	Value Added/ Employee
Nationwide	All industries	23,201	4,605	60	277	127
	Food processing	4,168	671	47	253	147
	Textiles	3,409	1,111	44	140	76
	Leather	468	79	41	211	135
	Paper products & printing	1,043	129	70	314	204
	Chemicals	2,811	474	83	376	79
	Metals	2,331	410	77	261	114
	Mechanical machinery	1,300	237	78	189	95
	Electrical and electronics	1,267	251	101	344	65
	Other industries	6,404	1,243	54	385	195
Non Urban		8,343	1,494	50	301	126
Non Metro Urban		9,446	1,972	58	235	125
Metro Urban		5,412	1,139	74	320	133

Data for employment, wages/ employee, output/ employee and value added / employee are in thousands. Data Source: ASI 1998-99)

Productivity indicators such as output per employee and value added per employee show interesting trends. While per-employee output is relatively quite high in several industries, the value-added figures show quite a different situation. For example, per employee output in computing and electronics is Rs. 344,000 but value-added per employee is only Rs. 65,000. Similarly, the numbers for output and value added per employee are Rs. 376,000 and Rs. 79,000 for chemicals and Rs. 314,000 and Rs. 204,000 for printing and publishing respectively. These numbers suggest that these industry sectors are not very efficient in transforming inputs into higher-value outputs.

Spatial Distribution: Spatial distribution of employment in two industry sectors, leather and metals, is shown in Figure 3.29, which presents the "location quotient" of industry representation. This quotient shows the extent to which the industry is overrepresented in the region vis-à-vis the country as a whole. A location quotient of 1 would suggest that the industry is equally concentrated in the region as in the nation, and index values greater than 1 would suggest local over concentration. From this figure, it is evident that industrial activity in these sectors is spatially concentrated in a few locations. The same story emerges from the spatial concentration index (Ellison Glaeser index) presented in subsequent paragraphs.

The Ellison Glaeser [EG] (1997) index of concentration is used to determine if industrial activity within sectors is clustered across locations. The EG index is explicitly derived from the micro foundations of a firm's location choice.[27] It takes on a value close to 0 when the distribution of plant location is completely random (and not uniform). Therefore, a non-zero value implies agglomeration, or clustering, above and beyond what we would observe if the firm's location decisions are made randomly Figure 2.12 shows that (in general, an industry is highly concentrated if *r* is greater than or equal to 0.05, moderately concentrated if *r* is between 0.02 and 0.05, and not concentrated if *r* is less than 0.02). The index is designed to allow comparisons across industries, countries, and over time. Therefore, in principle it is possible to compare the concentration of industries in the U.S. and Mexico or that of high-tech and low-tech industries. Industry-level summaries of EG index for Indian industry are in Table 3.4.

The *r* concentration index in Table 3.4 is computed at the state level, using data from the sampling frame of the ASI. Therefore, the employment summaries in Table 3.4 reflect the universe of all employment in registered establishments. High spatial concentration is found for the leather and metals sectors, and moderate concentration in food products, textiles, mechanical machinery and computing and electronics. Firms in the paper products and chemicals sectors do not exhibit patterns of spatial concentration.

The main findings on factors influencing location choices of individual firms are summarized in this section. Detailed tables that present the results of the econometric analysis is available upon request. We begin by describing the impact of variables classified as *business environment*. Regulations and corruption are important determinants of business locations across Indian cities. Cities where firms in general face lower regulatory burdens are likely to receive more investment and have higher shares of manufacturing activity. We find that the time management spends on addressing regulations is negatively associated with business profitability, thereby having an adverse effect on location of economic activity. This measure (time spent addressing regulatory matters) is also correlated with costs of corruption, as regulatory compliance involves interaction with inspectors, which provide the likely openings for demands of irregular payments.[28]

[27] The EG concentration index can be defined as:

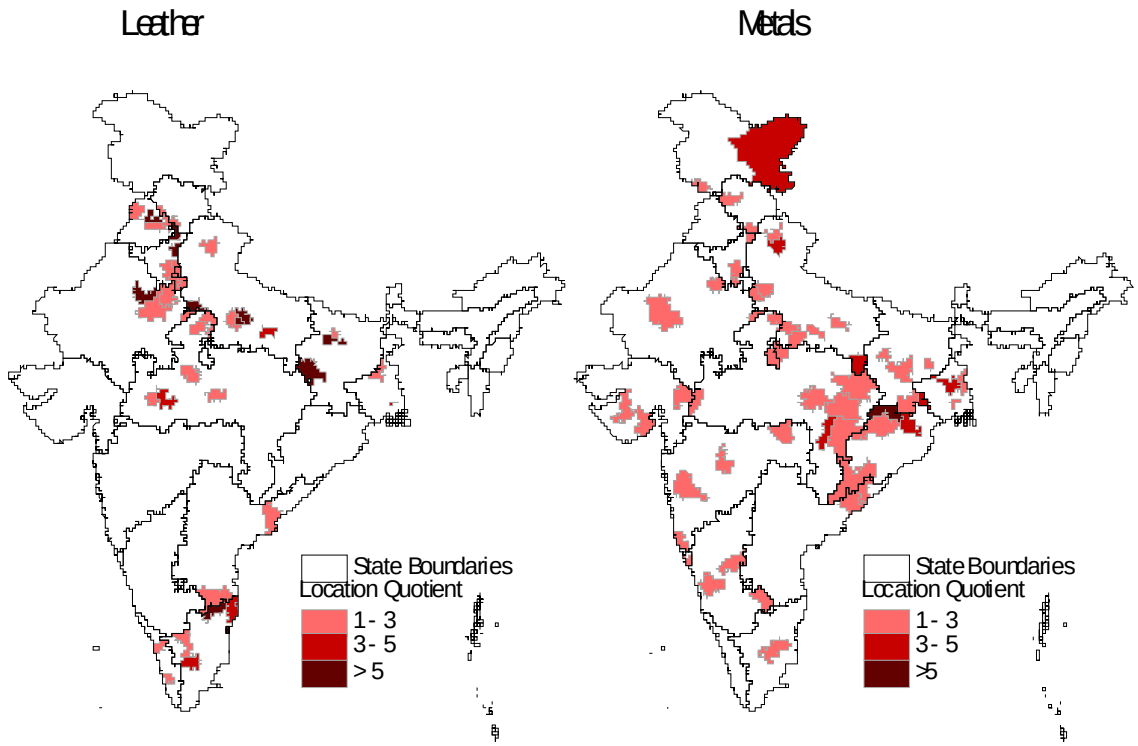
$$r = \frac{\sum_{i=1}^{M}(s_i - x_i)^2 - (1-\sum_i^M x_i)H}{(1-\sum_i^M x_i)(1-H)}$$

where *r* is the extent to which an industry is geographically concentrated, s_i is the region *i*'s share of the study industry, x_i is the regional share of the total employment, and *H* is the Herfindahl industry plant size distribution index,

$$H = \sum_{j=1}^{N} z_j^2 .$$

[28] We also tested if characteristics of the firm's owner or General Manager, such as gender and education attainment, had any influence on the responses to regulatory burden and corruption. We do not find these to be significant effects.

Figure 3.29: Spatial Distribution of Industry in India



The results for corruption are counterintuitive. Our general results show that the city-wide average for informal payments to inspectors is positively associated with profitability and thereby location decisions. It can be argued that firms in general perceive informal payments as a transaction cost, and would rather pay these amounts rather than undergo further inspections.

Table 3.4: Spatial concentration

Industry	Industry Employment
Food processing	1,303
Textiles	1,917
Leather	159
Paper products & printing	296
Chemicals	1,526
Metals	1,658
Mechanical machinery	392
Electrical and electronics	483

Data Source: ASI sample frame, 1998–99.
r shows concentration across states
Employment is reported in thousands

Let us now turn to factor prices. The results clearly show that electricity prices are the most important factor determining the attractiveness of individual cities. Energy prices for industry are considerably higher in India than in many industrialized and developing countries. Even across Indian cities, there is considerable variation in what firms pay for electricity. Energy costs increase consistently and significantly (in the food processing, textiles, metals, and machinery sectors) with superior market access, own industry clustering, and industrial diversity, thereby lowering the benefits of locating in these areas. This effect is most likely related to the complicated energy pricing methods used by Indian state electricity boards, where in most cases the cross-subsidy systems punish urban industrial consumers to reward agricultural users. The welfare implications of such energy pricing policies are questionable, and these policies should

be reevaluated with a view to boosting industrial growth. Notwithstanding the passage of the Electricity Act in 2003, the absence of adequate, reliable power supply remains a key concern for Indian businesses (World Bank 2003). In 2002–03, there was a shortfall of more than 9,000 mw, or 11 percent, between peak demand and peak met through power generation. The 2002–2003 ICS found that, on average, manufacturers in India face almost 17 significant power outages per month, versus one in Malaysia and less than five in China. Approximately 9 percent of the total value of output of firms is lost due to power breakdowns—compared to 2.6 percent in Malaysia and 2 percent in China. Because of erratic power supply, almost 61 percent of Indian manufacturing firms own generator sets, versus 20 percent in Malaysia and 27 percent in China. Moreover, India's combined real cost of power is 74 percent higher than Malaysia's and 39 percent higher than China's.

In terms of labor costs, we use average manufacturing wage rates from the ASI to examine if businesses are shopping across cities to minimize labor costs. We find that once we account for the skill mix and labor market problems, firms are in fact willing to pay higher wages for better workers. Other results for labor markets not reported here show that work culture issues have a detrimental impact on the location of firms. We used worker absenteeism as an indicator of labor market problems, and find that on average, higher levels of absenteeism are negatively associated with business location decisions.

Inadequate access to land has a negative impact on business location decisions. We find that when a higher share of firms say they lack access to land this reduces the probability of firms locating in individual cities. The local state's land policies have considerable impact on industry location across and within metropolitan areas. Specific policies appear to discourage zoning changes (e.g., from industrial to commercial or residential, or from residential/agricultural to industrial), and land transfer (with assessing stamp duties). Such policies make for inefficient use of land, especially at the urban center, where aging unproductive industry is not modernized, and prevents the conversion of unused land to profitable uses. Land-use policies in metropolitan areas should be rationalized in keeping with a better understanding of the current urban functions: urban core areas should house service industry and commercial interests. Older manufacturing industry in the urban core should helped in relocating to mixed industrial districts, or, where uncompetitive, handed a practical exit policy.

The availability and reliability of infrastructure is a major determinant of business profitability. Thus, intercity differentials in infrastructure have important consequences for where firms will locate across the national urban system. We find that intercity differentials in the frequency with which landline telephone services go down is negatively associated with the likelihood of business location. Similarly, the frequency of power outages has a negative impact on firm location decisions. However, once we control for land market problems, the results are not statistically significant. This is partially because both land and electricity policies are determined at the state level and are often correlated. High-quality and reliable power supply and telecommunications infrastructure reduce the cost of doing business and improve the city's comparative advantage.

For market access, we find that among the cities in the sample, firms tend to be located in areas with relatively less access to markets. First, we need to specify that all cities in the sample have relatively good access to markets. Among these cities, we find that availability of inter-regional infrastructure linking a city to larger markets and the rest of the urban system is negatively associated with profitability and business locations.

Now we will describe the findings for *agglomeration economies* on the location decisions of manufacturing firms. Own-industry concentration is an important source of agglomeration, which in principle provides pecuniary and nonpecuniary externalities. We find positive and statistically significant estimates for own-industry concentration, which means that firms prefer to locate near other firms in the same industry. This also confirms some notions of path dependency or inertia in the system. Own-industry concentration provides externalities, which can

arise in various ways, with the most dominant being information spillovers (Eberts and McMillen, 1999). By locating near similar firms, observing them and learning about what they are doing from their workers, purchasers, and buyers, plants gain information on market agents such buyers and suppliers, whom to hire, and the type of products selling in the market. As Indian manufacturing is standardized in the mature stages of the product cycle, pure technology spillovers will be less important than spillovers of information.

In comparison, we find that economic diversity is negatively associated with profitability. Typically economic diversity is related with city size, and larger cities can support a diverse set of economic activities and provide more amenities than smaller cities. However, these cities also have higher wages and rents, and commuting creates congestion and its costs. Although firms in large cities have relatively better access to business services—such as banking, advertising, and legal services, which reduce the cost of doing business—the net gains tend to be offset by higher prices. These results are consistent with theoretical and empirical work on urban economics and economic geography (see review by Henderson et al., 2001), which suggests that the net benefits of industry location in dense urban areas are disproportionately accrued by technology- intensive and innovative sectors. This is because the benefits of knowledge sharing (ideas) and access to producer services (e.g., venture capital) are considerably higher in these sectors than in low-end manufacturing that employs standardized production processes. As a result, innovative sectors can afford the high wages and rents in dense urban locations. In this framework, low-end industry producing standardized products can be expected to move to smaller urban centers with their lower costs. In fact, most manufacturing activities cannot afford the cost of wages and rents in large metropolitan areas (Henderson et al., 2001). In a recent empirical study, using a cross-section sample of 80 cities worldwide, Henderson (2000) finds elasticities of 0.25 for both housing prices and commuting times with respect to metro-area population. As most of the study industries are standardized manufacturing, the benefits of being located in dense and diverse urban areas do not outweigh the associated costs.

We suggest that industrial location decisions are influenced by some random factors (such as the decision-maker's ethnicity, hometown bias, personal political connections, etc.) that have little bearing on actual cost calculations, and by the relative absence of location choices (in terms of the availability of physical and social infrastructure), especially for small firms. That is, in the absence of location choices, firms are willing to tolerate the higher costs of locating in existing industrial clusters and metropolitan regions. In other words, cumulative causation processes may be driven by the absence of alternatives rather than productivity advantages.

3.4 Impacts of policy changes

The 2003 ICS survey covers 40 cities in 12 states, covering a wide range of state policy regimes and city sizes. There are two cities (defined as administrative limits, not as agglomerations) with populations of between 5 and 10 million people, 20 cities with between 1 and 5 million people, 12 cities between 0.5 and 1 million people, and 6 cities with populations of fewer than 500,000 people. At the top of the distribution are Mumbai and Delhi, and cities such as Hosur (Haryana) and Shahajanpur-Lakimpur (Uttar Pradesh) are at the bottom of the urban population distribution.

To examine the impact of potential policy changes, let us consider the profitability of a representative firm from being located in a medium sized Indian city (in this case, between 0.5 and 1 million people). We take Lucknow in the state of Uttar Pradesh for illustrative purposes. The motivation to start with a medium-sized city is that standardized manufacturing will be more efficient in these cities in comparison to larger cities, as described in the discussion on urban diversity and cost increases. We now want to find out the impact of improving infrastructure, particularly electricity. If the state and the city governments cut power outages from the average of six per month reported in the ICS data to about one outage per month, we find a 0.05 percent increase in profitability. Along with this, if land use regulations were to improve such that firms in general did not perceive obstacles, firm

profitability would increase by 1.15 percent. Both these improvements appear to provide very small increases in profitability. So what really matters? Let us turn our attention to electricity prices. Firms in Lucknow currently report paying about US$0.10 per kwh for electricity, compared to the Indian average of US$0.08 for industrial use, and lower costs in some cities. Now, if the cost of electricity were around the nationwide average, firm- level profitability would increase by almost 8 percent. Further, if prices were around those of Thailand at US$0.05 per kwh, then profits would increase by almost 30 percent relative to the baseline scenario. We find similar estimates for electricity pricing across cities in the urban system.

Chapter Four

INVESTMENT CLIMATE, GEOGRAPHY, AND BUSINESS PERFORMANCE

4.1. Introduction

Chapter 3 showed that agglomeration economies promote path dependency in regional industrial development in India by pushing new investment to previously established locations. However, it also presented evidence that firms take into account specific aspects of the local investment climate when choosing locations. These include the relative cost of business regulation, the cost of corruption, the cost and reliability of power supply, how intrusively industrial regulations are enforced, and the ease with which land rights can be secured for buildings. The possible role of adverse economic geography in the growth of industry in certain regions can thus be mitigated by reforms that improve the policy-driven component of investment climate.

In this chapter, we turn our attention to the second channel through which investment climate can affect industrial development—its effects on the performance of businesses at their given locations. We measure performance in terms of labor productivity and growth in business assets or revenue. By labor productivity we mean value added per worker or the sum of wages and gross profits. Value added is computed as the excess of a business's output over its consumption of intermediate inputs and indirect costs.

The analysis of productivity gaps is confined to 12 of India's 14 largest states, those from which the sample of the investment climate survey was drawn. Within the 12 states we focus on the 40 cities covered by the survey. It seems safe to assume that the business environment of the 40 cities is fairly representative of that faced by formal-sector manufacturing businesses in the other major urban centers in the 12 states. We also use recent ASI datasets to make inferences about regional productivity gaps applicable to industry in the 12 states, beyond the limits of the city and sector coverage of the investment climate survey.

To reduce the dimensions of comparison from 12

Box 4 .1. Labor productivity and wage rates as an indicators of business performance

Because labor is less mobile across locations than capital as a factor of production, value added per worker is a useful indicator of business productivity when assessing the business environment. On the assumption that labor is immobile relative to capital, the mark of a better investment climate would be that more capital flows to that region than to locations where the business environment is not as good. A normal result of the disproportionate flow would be that each worker in the favored region would be better equipped with machines and tools, as a result of which labor productivity would be higher in the region where the investment climate was better. However, it should also be noted that greater capital intensity of techniques of production is not the only way through which a better investment climate can lead to higher labor productivity. Labor productivity may be higher even if factor intensity does not vary by region if all factors are more productive in the region due to differences in the quality of management, production externalities, or the supply or productivity of public goods.

Sometimes figures on wage rates are more reliable than those on value added per worker. They can be used as a proxy for labor productivity in checking the robustness of conclusions that we may draw based on the analysis of value added per worker. This is justified for two reasons. First, in a competitive economy, more productive workers will always earn more. Second, to the extent that the mobility of workers between regions is restricted, businesses that are located in less productive regions will sell the same products in the same national or international markets as businesses in more productive regions only if their productivity disadvantage is compensated by their lower local wages. A comparison of locations by wages and labor productivity should then reveal a pattern whereby wage rates are higher in locations where labor productivity is also higher.

Table 4.1: Performance categories of major states

High income states[a]	High growth states[b]	High FDI state[c]	Better IC State[d]
Delhi	Delhi	Delhi	Delhi
Maharashtra	Maharashtra	Maharshtra	Maharshtra
Punjab	Gujarat	Gujarat	Gujarat
Haryana	West Bengal	AP	AP
		Karnataka	Karnataka
		Tamil Nadu	Tamil Nadu
			Punjab
			Haryana

a. States that had a per capita GSDP of Rs 25,000 in year 2002
b. States that had annual average GDP growth rate of 6.5 or more over the 1990s
c. States reporting proposed FDI projects of value Rs 5 billion and above in 2003
d. States rated as having a better investment by outsider respondents than their respective states.

or 40 to something manageable, we have classified states and cities into two or three categories, based on economic performance and the quality of business environment. One possible classification is between states rated as having a better investment climate by the survey respondents and other states. An even more natural dichotomy seems to be one between high-income states and low-income states. A third classification is between high-growth states and low-growth states, on the one hand, and between high-FDI states and low-FDI states, on the other. States falling under the better half of each of these dichotomies are shown in Table 4. 1. In the table, high-income states are defined as those that had a per capita gross domestic state product (GSDP) of 25,000 Rs or more in 2001. They include the states of Delhi, Maharashtra, Punjab, and Haryana. The high-growth states are defined as those that registered an annual average GSDP growth rate of 6.5 percent or more during the 1990s. Delhi and Mahrasthra belong to this category, in addition to the states of Gujarat and West Bengal, which grew considerably faster than the much wealthier states of Punjab and Haryana. With the exception of West Bengal, all the high-growth states are also among our high-FDI states, which we define as those that attracted FDI inflows of Rs 5 billion or more in 2003. This category includes the states of Andhra Pradesh, Karnataka, and Tamil Nadu, all three of which registered average GSDP growth rates of 5 percent to 6 percent in the 1990s. Between them, the six high-FDI states have accounted for nearly 80 percent of FDI flows to India in the last four years. Not surprisingly it is this group of states that survey respondents identify as having a better investment climate than others. A "better climate state" is one rated by at least 10 percent of respondents outside of the state as having a better business environment than their own states.

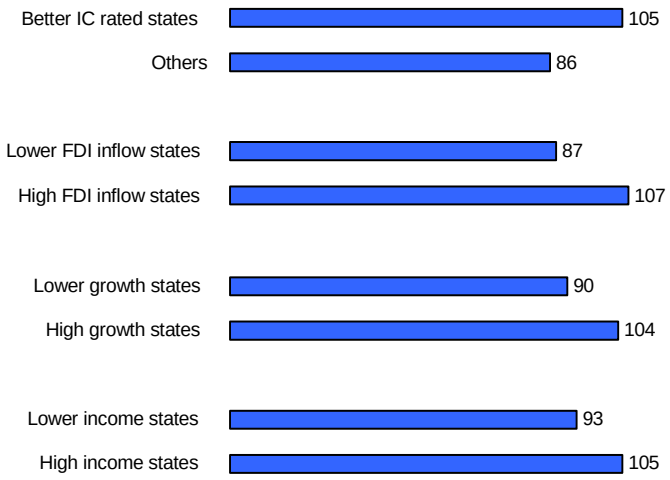
Table 4.2. Average manufacturing productivity indices and related variables by state groups
(in Lakh Rs per annum where applicable)

	Value added per worker	Wages per worker	Estd. price cost margin	Fixed assets per worker	TFP without control for skill gaps	TFP net of effect of skill gaps
All India average	1.64	0.72	1.35	4.54	0.58	0.63
High-income states	1.72	0.71	1.35	3.75	1.00	0.94
Lower-income states	1.52	0.72	1.36	4.99	0.35	0.45
High-growth states	1.71	0.75	1.38	5.13	0.94	0.84
Lower-growth states	1.48	0.70	1.35	4.22	0.37	0.48
High FDI inflow states	1.75	0.75	1.39	4.85	0.69	0.64
Lower FDI inflow states	1.43	0.68	1.32	4.17	0.41	0.56
Better IC-rated states	1.72	0.72	1.37	4.57	0.63	0.62
Others	1.41	0.71	1.33	4.44	0.42	0.56

For lack of data on incomes and FDI flows we are unable to use the same classification criteria for cities. One obvious choice for a criterion is population size, which tends to move together with per capita incomes—up to a point. Accordingly we classify all cities of a population of more than four million into the "metropolitan" group. This includes Delhi, Mumbai, Kolkata, Chennai, Bangalore, Ahmedabad, and Hyderabad. We put cities in the population range of 1 million to 4 million in the "large cities" category. This includes 9 other cities, leaving a balance of 24 "smaller cities." An alternative classification based on an investment climate deficiency index would put all the metropolitan cities save Chennai and Mumbai into a low-cost-city category (Table 4.4) in contrast to a high-cost-city category including four of "large cities" and five of the "smaller cities." We define low-cost cities as those that have an investment climate deficiency index of less than 5 and for which the estimated average cost gain from moving from the city to a lower-cost state is less than 10 percent. The estimated cost gain is obtained from an ICS questionnaire item asking respondents for the estimate. The investment climate deficiency index is a weighted sum of the IC indicators used in Table 4.6, where the weighting is based on the absolute value of the elasticity of labor productivity with respect to each indicator.

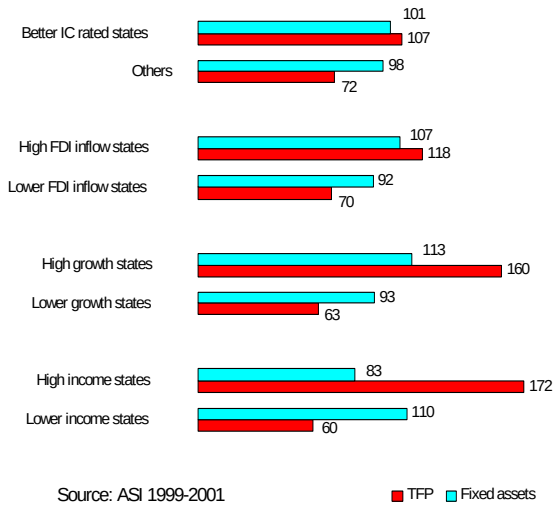
Table 4.2 presents selected indicators of productivity computed from the 1999–2001 ASI data sets. There are significant gaps in manufacturing labor productivity across states

Figure 4.1. Manufacturing value added per worker, All India = 100



Source: ASI 1999-2001

Figure 4.2. Manufacturing fixed assets per worker and TFP, All India=100



Source: ASI 1999-2001

in India. The average Indian manufacturing worker produces 164,000 Rs worth of goods net of consumption of materials, energy, and other intermediate inputs. This is 5 percent lower than the average for high-income states and 7 percentage points higher than in low-income states (Figure 4.1). The figures imply an 11 percentage point gap in value added per worker between low-income states and high-income states, which is comparable with the 13 percentage point gap between high-growth states and low-growth states, but far smaller than the 18–19 percentage point gap between high-FDI states and better climate states and the rest of India. The estimated price-cost margin varies very little between categories of states or cities. The observed gaps in value added per worker therefore seem to have little to do with quality differences or differences in product market structure.

Table 4.2 suggest that labor productivity gaps between high-FDI states and high-growth states and the rest of the country are in part due to large interstate differences in the equipment of manpower with tools, machinery and space.[29] For example, establishments in high-growth states have 18 percent more equipment and machinery per employee than those in low-growth states. Similarly plants in high-FDI states employ 14 percent more capital per worker than their counterparts in low-growth states.

It is also clear from Table 4.2 that regional differences in the capital intensity of production are only one source of the gaps in manufacturing labor productivity. Indeed, the average manufacturing plant of high-income states is significantly less capital intensive than the average plant in lower-income states. Labor productivity is nonetheless 11 percent greater in high-income states, implying that labor productivity is greater in high-income states because of greater overall business productivity or total factor productivity,

Table 4.3. Cities covered by the investment climate survey of 2003

Metropolitan cities	Large cities	Smaller cities	
Delhi	Pune	Chandigarh	Gwalior
Mumbai	Surat	Cochin	Mangalore
Kolkata	Lucknow	Mysore	Nashik
Chennai	Kanpur	Vijayawanda	Nagpur
Bangalore	Bhopal	Guntur	Thane
Ahmedabad	Ludhana	Gurgaon	Jalandhar
Hyderabad	Indore	Panipat	Coimbatore
	Vadodara	Hubli-Dharwad	Hosur
	Faridabad	Calicut	Madurai
		Palakkad	Ghaziabad
			Noida
			Howarah
			Shahjahanpur-Lakimpur

Box 4.2. TFP differences and skill gaps

The TFP differences reported in Figure 4.2 include productivity gaps due to regional differences in the average skill levels of factory workers. This is because they are based on the TFP figures reported in column 5 of Table 4.2, which are computed without taking into account such differences. However, a comparison of column 5 with column 6 shows that the fraction of the gaps in column 5 that could be attributed to skill differences, while significant, is not large. The reason we focus on column 5 in spite of skill differences is that our attempt to control for these in column 6 is based on using the wage bill rather than the number of man hours as the measure of labor input. This is based on the assumption that labor is mobile across states so that regional gaps in wage rates are explained entirely by differences in labor's marginal productivity. Since this is not necessarily a realistic assumption, the difference between the two columns should be taken as an upper bound of productivity gaps due to skill differences.

[29] This in turn is reflection of the higher investment rates that the high FDI and high growth states have benefited from over the years.

over and above that needed to make up for the effect of lower capital intensity of production in those states.[30] Figure 4.2 shows similarly large total factor productivity gaps between high-growth states and others, between high-FDI states and low-FDI states, and between better investment-climate-rated states and others. Total factor productivity in high-FDI states is nearly 70 percent higher than that in lower-FDI states. More strikingly, total factor productivity in high-growth states is more than 2.5 times that in lower-growth rate states.

Table 4.4. Survey cities by investment climate indicators

Low-cost cities	High-cost cities
Ahmedabad	***Large cities***
Bangalore	Indore
Delhi	Kanpur
Hyderabad	Pune
Kolkata	Vadodara
	Smaller cities
	Coimbatore
	Mysore
	Nagpur
	Nashik
	Vijayawanda

Table 4.5 suggests that there are larger labor productivity gaps between cities than there are between states. The table is based on data from the investment climate survey rather than the ASI dataset. Looking at gaps between size groups of cities first, value added per worker is 85 percent larger in metropolitan cities than it is in smaller cities. This in part reflects higher equipment endowment of the workforce in the bigger cities. However, as is the case in interstate gaps in productivity, a major explanation of the gap between metropolitan cities and smaller cities is the larger TFP premium of the larger cities. Metropolitan cities have a 17 percent TFP premium over small cities and an even larger one over intermediate cities.

In the lower half of Table 4.5, we contrast the productivity of low-cost cities with that of high-cost cities. Manufacturing value added per employee in the average plant in low-cost cities is US$7,134 per annum at 1999 prices and (average) official exchange rates. This is 85 percent higher than for the average plant in a high-cost city. One

Table 4.5. Average manufacturing productivity indices and related variables by state groups
(in 1999 US dollars per annum where applicable)

City types	Value added per worker	Wages per worker	Fixed assets per worker[a]	TFP net of skill gaps[b]	Estd. price cost margi[c]
Size groups:					
Metropolitan	7560	1473	4802	223	1.64
Large cities	3964	944	2871	126	1.52
Smaller cities	4054	1017	2993	190	1.48
IC groups					
Low cost cities	7134	1386	4353	225	1.64
Medium cost cities	4748	1139	3532	180	1.52
High cost cities	3855	897	2692	145	1.50

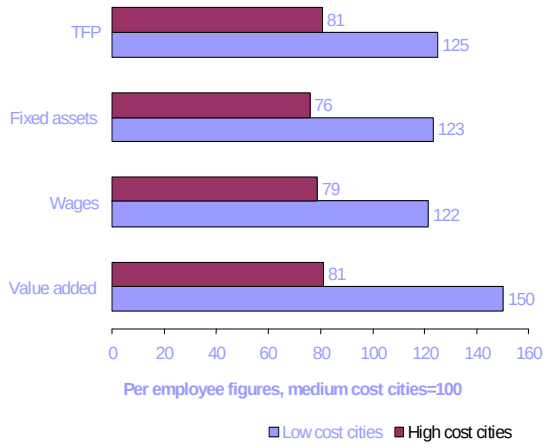
a. End of year book value and including buildings
b. Ratio of gross output to labor cost and the cost of intermediate inputs
c. Gross of differences in price cost margins and based on the estimation of Cobb Douglas
Source: Investment Climate Survey 2003

Table 4.2 are based on a Levinsohn-Petrin estimation of a Cobb-Douglas production function based on the ICS dataset and for each of the seven industries covered by the survey. Estimates have been adjusted for the effect of possible differences between firms in price-cost margins. The full set of estimation results is available upon request, along with a detailed methodological note on the estimation of the production functions and of price-cost margins.

Table 4.6. : Percentage increase in labor productivity due to a doubling of investment climate deficiency indicators and other sources of external economies

Factor	Percentage increase in labor productivity due to a doubling of factor				
	All firms	Entrepreneurial -roots located firms			
	All industries*	All Industries	Resource-based industries	Low tech industries	Med to high tech industries
Percent of respondents considering this as a major obstacle to business expansion:					
Tax administration	–9.8	–11.3	–15.2	–11.8	–9.1
Lack of access to land	–4.6	–4.6	–4.6	–4.6	–4.6
Corruption			–29.4		
Percentage of :					
Firms with no bank credit line	–6.0		–94.3	39.4	
Own-generated power supply	–27.9	–35.9		–66.1	–36.9
Overstaffing	–2.9		–25.6		
Average, relative to current maximum, of					
Longest delay in customs clearance of imports	–9.4	–7.2	–10.1	–16.7	–3.4
Average, relative to current maximum, of					
Market-access index	124.4	314.4		800.1	541.4
Diversity economies index				–103.6	
Localization economies index	146.9	157.4	328.8		

Figure 4.3. Manufacturing productivity indices by city types: ICS data



source of the gap is that the average plant of a low-cost city is 62 percent more capital intensive. Another is that TFP in the average plant of a low-cost city is 55 percent greater (Figure 4.3).

4.2. Explaining gaps in labor productivity

Where do these labor productivity gaps between states and cities come from? In other words, why is labor more skilled or more equipped in some states or cities than in others? And why does overall business productivity or TFP tend to be higher in states and cities where workers are more skilled or production more capital intensive?

The productivity advantage of some regions or cities has little to do with investment climate, stemming as it does from economic geography. Broadly understood, the latter includes proximity to domestic and international markets and the structure and scale of local economic activity, which predetermines the magnitude of localization economies and interindustry spillovers and linkage effects from which current businesses may benefit.[31] In Table 4.6, we assess the effect of

[31] In the long term the economic geography of a region or a city is probably endogenous to the institutional and policy framework of business activity, that is, to its investment climate. The kind of industries that flourish in the region can only be the cumulative outcome of the kind of public policies

changes in indicators of investment climate on productivity and other measures of economic performance relative to the explanatory power of economic geography. The table is based on an analysis of the investment climate survey data and presents our estimates of the elasticity of labor productivity with respect to indicators of deficiency in business environment.[32]

One obvious reading from the table is that the productivity of manufacturing plants is powerfully influenced by the (economic) geography of plant location. First, access to markets matters—labor productivity is higher in cities and locations better connected to other economic centers. Second, localization economies are associated with higher labor productivity. That is, a business can enhance its productivity by locating its plants in cities where businesses in its line are concentrated. One interpretation of this is that cities or regions that enjoy either kind of "natural advantage" can afford a greater degree of deficiency in their investment climate without losing out in competitiveness in national and international markets. Indeed, we see in Table 4.7 that high-cost cities have a higher composite investment-climate index. At the same time it is clear from Table 4.6 that labor productivity would be adversely affected by investment-climate deficiencies. For example, we see in the first column of Table 4.6 that labor productivity would fall by almost 28 percentage points with a doubling of the share of power supply that firms obtained from their own generators. Likewise a doubling of the percentage of businesses seriously dissatisfied with tax administration would be associated with a 10 percentage point fall in labor productivity. Labor productivity would fall by 4.6 percent with the doubling of the share of businesses seriously complaining of lack of access to land, by 6 percent with the doubling of the percentage of those lacking a bank credit line, and by 3 percent with the doubling of the overstaffing ratio. What this means is that, although high-cost cities have an investment climate that is marginally better than low-cost cities, they can eliminate their productivity shortfalls by improving their investment climate sufficiently to make it even more attractive than that attained in locations enjoying better geography.

The first two columns of Table 4.6 are based on the assumption that the technology and organization of industry are such that deficiency in investment climate or economic geography influences productivity uniformly across sectors. This is highly unlikely to be the case. In the last three columns of the table we drop the assumption by estimating separate labor productivity equations for sectors of technological sophistication, in terms of which Lall (1999) analyzes the structure of India's manufactured exports. At one end of the spectrum are what Lall calls resource-based industries, involving primary processing of agricultural products and natural resources. This sector includes the food and tobacco industries, wood processing, tanneries, and precious stones. Although most industries in this sector are relatively labor intensive, their distinguishing characteristic in the context of trade is that the competitiveness of a locality or a country in their production stems from the availability of specific natural resources. Relatively labor intensive, low-entry-barrier industries, in which competitiveness depends more on the

Table 4.7: Impact weighted indices of investment climate and other sources of external economies by cost groups of cities (Weights=elasticity of labor productivity with respect to IC indicators)

	Low-cost cities	Medium-cost cities	High-cost cities
IC indices:			
Access to credit/land	0.91	0.90	0.88
Regulation/governance	0.55	0.62	0.62
Infrastructure	0.46	0.46	0.63
Total=overall IC index	0.23	0.26	0.38

that have been pursued in it over decades. That said, economic geography is *pretty much given* in the short to medium run, during which radical changes can occur in investment climate.

[32] The analysis involves the regression of each measure of productivity on investment-climate indicators and variables of economic geography, while controlling for unobserved firm, industry, and region effects. The full set of results is available upon request, along with a note on issues of estimation and inference. Although Table 4.6 summarizes results based on the analysis of labor productivity only, a similar picture emerges from the analysis of gaps in wage rates and TFP.

relative price of unskilled labor than on the cost of raw materials, are the low-tech industries, including textiles, garments, leather goods, furniture, and fabricated metal products. Then there are the medium- or high-technology industries that are, as a rule, more capital and skill intensive and characterized by significant R&D expenditure. Lall argues that although there is significant room for growth in India's exports of resource-based and low-tech industries, the country will be able to generate sustained growth of manufactured exports of the kind observed in China and the East Asian Tigers only by shifting the structure of its exports more and more toward medium- to high-tech industries. The reason is simply that world trade is growing much faster in medium- to high-tech products than it is in low-tech and standardized products, in which market shares are not easy to defend against low-wage economies.

It is clear from Table 4.6 that the three technological sectors are affected differentially by specific deficiencies in the investment climate. For example, unreliable or expensive power supply seems to be the single most important investment-climate drag on productivity in both low-tech and medium- to high-tech industries. On the other hand, power does not seem to affect productivity to the same extent in resource-based industries, where poor access to external finance, corruption, and excessive labor regulation are the main bottlenecks. The deficiencies that seem to affect all three sectors to more or less the same degree are problems of tax and customs administration and of access to land.

Box 4.3. Investment climate, business mobility, and plant-level productivity

The conclusions that we draw from the first column of Table 4.6 need to be qualified in an important respect. The qualification relates to the fact that the conclusions are based on a general least squares regression of value added per worker on investment-climate indicators, without taking into account the possibility that inherent productivity-enhancing characteristics of businesses make them tend to avoid or tolerate specific deficiencies in investment climate more than other firms. If we fail to include any of these characteristics among the right-hand-side variables of the regression, our estimates of the impact of the investment-climate indicators will be biased. That is, regression of investment climate on productivity without taking into account the effect of the unobserved business characteristic behind their location decisions and their higher or lower productivity is likely to be problematic. For example, it is possible that some business managers are better informed of alternative locations and can move in response to adverse developments in the local investment climate at lower cost than others, perhaps because they are part of a national or regional business network. It is also possible that membership in the same network enhances their productivity relative to that of nonmembers, say, by lowering the cost of technical or market information or by facilitating access to trade credit or long-term external finance. Suppose now that power crises developed in parts of India dividing the country into areas of poor power supply and areas of good power supply. If members of our hypothetical business network found it easier to relocate to the regions of good power supply in anticipation of the crisis or as soon as it broke out in their previous location, then part of what we would report in the first column of Table 4.5 as the effect of deficiency in power supply on labor productivity would in fact be the effect of membership in the network.

Dealing with this kind of selectivity bias in the estimation of the effect of business climate on economic performance is comparatively easy when one has observations over an extended period of time on both sets of variables. Unfortunately our time series of observations on investment climate is not long enough. An alternative way of avoiding selectivity bias is to identify a subsample of businesses that can reasonably be assumed to be relatively immobile for one reason or another. In column 2 of Table 4.6 we report results of estimating the productivity equation for one such subsample, namely, businesses whose owners said that they located the business in their home town or region. Picking one's home town as the location for a business suggests a behavioral rule stemming from the maximization of an objective function of which profits are one rather than the sole argument, and whereby an apparent profit loss from locating somewhere could be offset by a nonpecuniary gain from the same, such as the value of residence or running a successful business, as it were, among your kin.

Assuming that there would be more immobile businesses among those citing entrepreneurial roots for the choice of the current location than in the full sample, one would expect the elasticity estimates of column 2 to be smaller in magnitude than those in column 1. This clearly is not the case. If anything, correlation between mobility decisions and the inherent productivity of firms could possibly introduce a downward bias in the least squares estimation of the effect of investment climate on productivity. Factors that might make some firms more productive than others in our sample and that we might not have captured in the estimation reported in Table 4.6 seem to make firms more, rather than less, tolerant of deficiencies in investment climate.

4.3. Gaps in labor productivity: counterfactuals

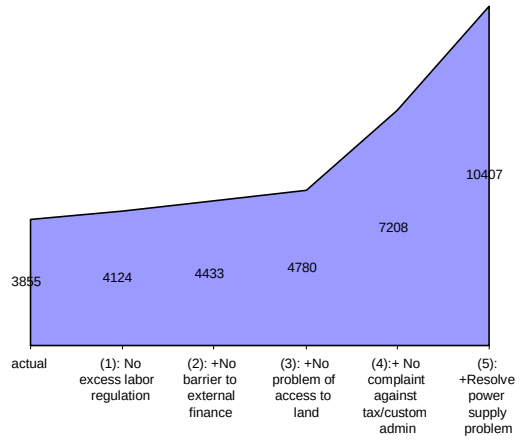
Table 4.8 presents a few telling aggregate counterfactuals relating specific improvements in investment climate to productivity. Each entry of the table measures the percentage gains in labor productivity from hypothetical reforms by different investment-climate upgrades in the 40 cities covered by India's ICS for 2003. We read from the first row of the table that if the state of labor regulation were to be improved to the point where involuntarily overstaffing became zero on the average, manufacturing value added would increase by 7 percentage points across all three city types. The removal of barriers to access to external finance to the point where nobody would consider lack of finance to be significant constraint to business expansion would similarly increase labor productivity across the board by about 8 percentage points. Likewise, if we had a situation where no one complained of lack of access to land as a significant deterrent to business growth, average labor productivity would be higher by 6 percent in low-cost cities, by 11 percent in medium-cost cities, and by 9 percent in high-cost cities. Substantial as these gains would be on their own, they are several times smaller than the gains that would accrue from the resolution of the ubiquitous power supply problem of Indian industry, or from successful reforms of tax and customs administration. Attaining a state of affairs whereby neither tax administration nor customs clearance was a major subject of complaint would increase average value added per worker by 63 percent in high-cost cities, by 56 percent in medium cost cities, and by 65 percent in low-cost cities. The gains from solving the power supply would be even higher. If own-generated electricity were insignificant in magnitude compared to the supply of power to industry from the public grid, average labor productivity would be 83 percent higher in high-cost cities than it is today. The corresponding gains would be 85 percent and 79 percent, respectively, for medium- and low-cost cities.

Productivity would increase by 165 to 170 percent if all five hypothetical reforms happened simultaneously. Interestingly this result is 20 to 30

Table 4.8: Manufacturing value added per worker under alternative counterfactuals

Reform	Percent gain in value added per worker per year		
	Low-cost cities	Medium-cost cities	High-cost cities
(1) Eliminating excessive labor regulation	7	7	7
(2) Remove barriers to access to external finance	8	8	8
(3) Remove problems of access to land	6	11	9
(4) Successfully reform tax and customs administration	65	56	63
(5) Resolve the power supply problem	79	85	83
Sum of (1) through to (5)	165	167	170
Other counterfactuals:			
Geographic variables set at low-cost city levels		5.6	8.5

Figure 4.4. Annual value added per worker (US $): some counterfactuals for "high cost" cities



times larger than the productivity premium that could be attributed to the superior geography of low-cost cities over that of medium- or high-cost cities. Figure 4.4 shows how the percentage gains add up to these levels of productivity when we use high-cost cities as the reference group. Average manufacturing labor productivity for our subsample from those cities is US$3,855 of value added per worker per year at 1999 prices. This would be US$4,124 in the absence of excessive labor regulations. It would be US$4,433 if, in addition, access to external finance were not a constraint to business growth. If, further, access to land were not a problem either, productivity would be US$4,780. The resolution of the power supply problem and successful reforms of tax and customs administration would raise productivity further to $ 10,407—well over the current average value added per worker of China (US$9,884, according to the investment climate survey for that country).

4.4. Investment and Growth

What do these counterfactuals imply about the growth effects of potential reforms of investment climate?

We see in Table 4.9 that the average sales growth rate of firms in high-FDI states was, in real terms, 15.6 percent, against an average of 7.3 percent in low-FDI states and an all-India average of 11.3 percent. As is to be expected, there is a similar contrast in the average rate of output growth in high-growth states (14.2 percent) and that for low-growth states (9.9 percent). Likewise, the rate of fixed assets growth or net fixed capital formation stood at well over 6 percent in high-growth and high-FDI states, more than twice the rates for lower-FDI and lower-growth states. Although there is little contrast in sales growth between investment-climate categories of cities and states, the rate of net fixed capital formation is several times higher in states with a better investment climate and in low-cost cities than it is in states with a poorer climate and in high-cost cities.

This broad pattern is consistent with the direct positive correlation that we observe between the rate of plant-level investment or the rate of business growth, on the hand and, establishment productivity on the other. On average, high-productivity, high-wage firms grow faster, partly because they invest in fixed assets at a greater rate and partly because of their faster productivity growth. As a result, investment climate deficiencies causing productivity losses also tend to lower rates of growth and capital formation. This can be seen from Table 4.9, where we report results of a generalized least squares estimation of alternative specifications of the firm sales growth equation for all industries in the investment climate survey as well as by level of technology. We see from the first column of Table 4.9, for example, that controlling for initial business size, line of activity, and economic geography, a 50 percentage point increase in the proportion of businesses complaining about tax administration would reduce the average annual sales growth rate per establishment by about 3.6 percentage points. A similar increase in the proportion of those that rely on own-generated electricity would reduce growth by 11.5 percentage points. Neither tax administration nor power supply would matter as much if we confined our attention to growth in resource-based industries, where corruption would seem to be of far greater concern. A 50 percent increase in those complaining of bribery and bureaucratic harassment as a major or severe obstacle to business growth in those industries would actually reduce the average sales growth rate by 14.5 percentage points. Corruption is not a subject of much complaint among those operating

Box 4.4. Explaining growth performance using ICS data

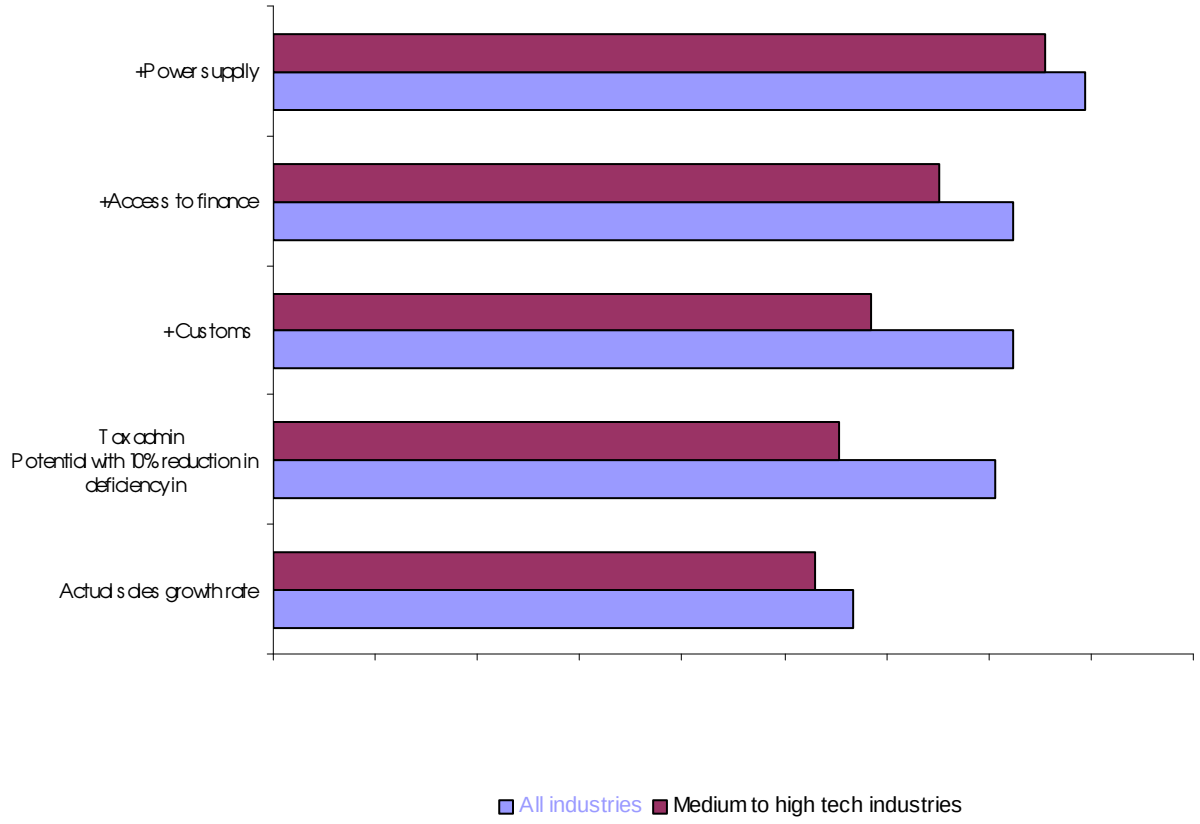
Although data from the investment climate surveys include production statistics from which growth in productivity, output, and assets can be computed at the firm level, the surveys have so far provided us with only cross-sectional variation in business environment variables. We cannot therefore tell how real-time changes in business environment influence business growth and mobility. We do nonetheless observe a strong correlation in the data between levels of indicators of investment climate and business growth in terms of output, assets, and productivity. While the behavioral mechanisms underlying this empirical correlation are not yet known, the pattern of correlation is intuitively appealing in that, as a rule, the rate of business growth is higher among the more productive firms irrespective of whether we measure size in terms of sales revenue, fixed assets, or employment. More significantly, investment climate indicators that are positively/negatively correlated with the level of productivity also tend to be correlated in the same way with the state of business growth.

Table 4.9 Average growth rates of sales, employment, and fixed assets by state and city groups
(percent per annum)

	Growth rate of		
	Sales	**Fixed assets**	**Employment**
All-India average	11.3	3.8	6.1
High-income states	11.4	2.7	6.1
Lower-income states	11.0	3.5	6.5
High-growth states	14.2	6.4	6.8
Lower-growth states	9.9	2.5	5.7
High FDI inflow states	15.6	6.3	7.5
Lower FDI inflow states	7.3	1.6	4.8
Better IC-rated states	11.5	5.2	6.5
Others	11.0	0.4	5.1
Low-cost cities	16.3	10.3	6.3
High-cost cities	14.0	1.8	7.3

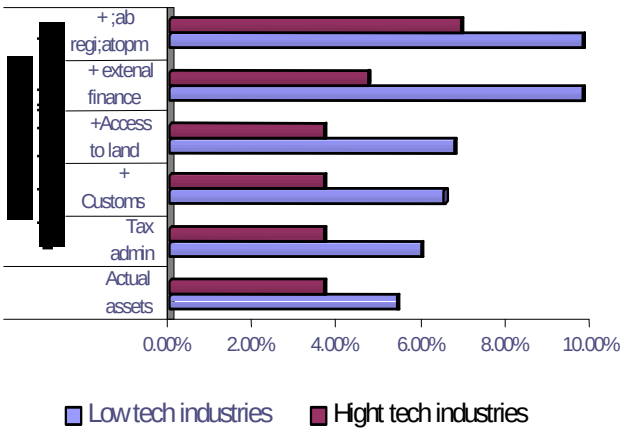
however, tax administration and power supply are major constraints. Here a 50 percentage point increase in the proportion of those regarding tax administration as a major or severe constraint would reduce the average sales growth rate by 6 percentage points. The average growth rate would be less by almost 18 percentage points with a similar increase in the proportion of those relying on their own generators for electricity.

Problems of access to land and of access to external finance do not seem to be much of a constraint to sales growth. This is probably because we are measuring growth here over the short term—a year—during which time factors that determine capacity utilization could be stronger influences on output growth than determinants of investment in fixed assets. Problems of access to finance nonetheless affect rates of investment powerfully in all technological sectors. Access to land is a strong constraint to investment in low-tech industries, where a 50 percentage point increase in those seriously complaining of lack of access to land would



reduce the rate of net fixed capital formation by 14 percentage points. A similar increase in the proportion of those with no bank credit lines would reduce the rate of capital formation in medium to high-tech industries by 13.5 percentage points.

Figure 4.6. Potential gains in assets growth with improvement in IC Indicators



We convert these estimates into counterfactual gains in sales growth and net fixed capital formation in Figures 4.5 and 4.6, where we show the increment in growth that specific reforms in investment climate would generate. In Figure 4.5 the average sales growth rate per establishment is 11.3 percent per year across all industries covered by the ICS, in contrast to 10.6 percent for medium-to high-tech industries. A 10 percentage point reduction in the proportion of businesses that consider tax administration as a major to server obstacle to growth would raise the average sales growth rate for all industries to 14.13 percent and that for medium- to high-tech industries to 11.07 percent. Additional improvements in each of the three areas of customs administration, access to finance, and power supply simultaneously would raise the average growth rate to 15.9 percent in all industries and to 15.1 percent in medium- to high-tech industries. In Figure 4.6, a 10 percentage point improvement in all indicators of deficiency in tax and customs administration, access to land, access to external finance, and labor regulation would raise the rate of net fixed capital formation from 5.4 percent a year to 9.8 percent in low-tech industries and from 3.8 percent a year to 6.9 percent a year in medium- to high-tech industries.

4.5. Summary and conclusion

The concentration of industrial employment and output in a few states and a few major metropolitan areas reflects large gaps in manufacturing labor productivity across cities and states. For example, labor productivity is almost 20 percent higher in the six states that have attracted the most FDI to the country compared to the rest of India. It is also 85 percent higher in about half a dozen metropolitan areas than in all other major cities. This is in part because high-FDI states and low-cost cities have managed to attract more investment in plant and equipment than other parts of India. The rate of plant-level net fixed capital formation in low-cost cities is 10.3 percent (against under 2 percent in high-cost cities) and 6.3 percent in high-FDI states (against 1.6 percent in other states). The cumulative outcome of these differences in capital formation is that the average employee is better equipped with machines and tools in high-FDI states and in low-cost cities than in other states and cities. Because wage rates are higher in high-FDI states and low-cost cities, the average employee is more skilled and motivated.

However, gaps in workforce skills and equipment are only part of the explanation of the spatial disparities in manufacturing labor productivity. Even if there were no skill gaps between cities and between states—if every employee was paid the same, exerted the same effort, and used the same technology—labor productivity would still be considerably higher in high-FDI states and low-cost cities than in other parts of India because of the differences in external economies stemming from the geography of locations and in the policy environment in which businesses operate—that is, in business climate. While external economies arising from the (economic) geography of any location are given in the short to medium term, unfavorable productivity gaps arising from deficiencies in the business climate can, by

definition, be remedied through appropriate policy changes.

The main drags to manufacturing productivity in the current business climate in many sates of India are unreliable and expensive power supply, problems of tax and customs administration, excessive labor regulation, shortage of land, lack of access to formal external finance for too many firms, and corruption. Problems of tax and customs administration and access to land seem to have affected labor productivity to more or less the same degree across all sectors of technological sophistication. The unreliability and high cost of power has also kept down productivity everywhere. Its impact is, however, felt far more strongly in medium- to high-tech industries such as electronics and pharmaceuticals than in resource-based industries such as food processing, mineral processing, the leather industry, and furniture making. On the other hand, corruption does not seem to have any effect in productivity in medium- or high-cost industries. It is the a major drag, though, on productivity in resource-based industries, as are excessive labor regulation and lack of access to external formal finance.

Resolution of the power-supply problem to the point that the typical business need not rely on its own generators as a significant source of power supply would increase manufacturing labor productivity in high-cost cities by more than 80 percent. Reforms that would remove tax and customs administration as areas of concern to the business community would increase productivity by more than 60 percent. If both reforms took place at the same time and with resolution of problems of access to land and to external formal finance, average manufacturing labor productivity would rise by more than 160 percent.

These counterfactuals for the level of labor productivity translate to large gains in business growth and business investment rates from the same hypothetical reforms in business climate. For example a 10 percentage point reduction in the indicators of deficiency in power supply, tax and customs administration, access to land, access to finance, and labor regulation that we have used in this report would raise the average firm-level sales growth rate from the current 11.3 percent to 15.9 percent a year.

CHAPTER FIVE

THE POLICY REFORM AGENDA

The investment climate of Indian industry in international perspective

This report has assessed the costs of deficiencies in business environment to Indian industry. In setting the theme, the first chapter noted the consensus that India's GDP needs to and can grow significantly faster than it has done in the last 12 years. This view is based on two facts: (a) that India's natural comparator, China, has grown at an average rate of 10 percent against India's 6 percent over the same period in spite of similarities in initial conditions; and (b) that there are huge disparities in the growth performance of India's own regions. It is also widely believed that performance gaps at both levels (national and subnational) have a great deal to do with differences in investment climate. The performance gap in industrial growth between India and China is even wider than the gaps between India's cities and states.

The second chapter argued that India's investment climate has two sets of problems that put industry at a disadvantage in an international perspective. These are

a) High entry and exit barriers in industry that are reinforced by insufficient labor market flexibility;
b) Unreliable and expensive power supply.

There is no survey evidence that the burden of regulation of industrial routines and foreign trade is higher in India than in China. It is nonetheless quite high in absolute terms and compared to other developing large economies, which is really what should matter to policy makers.

Investment climate and regional concentration of industry

The third chapter of the report described how the investment climate varies among India's states and how this has affected the location choices of firms and thus the spatial distribution of industrial activity. We cannot measure accurately enough the effect of investment climate on firm- or plant-level productivity and growth in large decentralized economies if we do not know how business climate affects the spatial distribution of firms.

In terms of subnational variations in investment climate, the chapter showed that the chief source of disadvantage in states where the business environment is popularly perceived to be poor is power, the burden of regulation and entry and exit being similar across states and in some cases worse in states with better investment climates.

Although geography and agglomeration economies go a long way in explaining why industry is concentrated so heavily in some regions and cities, those where firms in general face a lower burden of regulation are likely to receive higher investment and have higher shares of manufacturing activity. The probability that a business will locate in a city falls with increases in employee absenteeism or in the time that business managers spend dealing with regulations, used as a proxy for the quality of labor regulation. Three objective indicators of deficiency in the provision of infrastructure have a similar effect. These are electricity tariffs, the frequency of power outages, and the frequency of disruption in telephone service. The local state's land policies have considerable impact on industry location across and within metropolitan areas. The larger the proportion of survey respondents complaining about land shortages in a city, the less likely new businesses are to locate there.

Table 5.1: Regulatory jurisdictions over factor markets and infrastructure

Issue	List
Labor regulations	Concurrent
Finance and capital market	Union
Land rights	Mostly state
Entry/exit (including SSIRs)	Concurrent
Taxation policy and administration	Concurrent
Power	Concurrent
Local transport (roads, minor ports)	State
Water supply and irrigation	State
Interstate water dispute	Union/states
Major ports / air markets / national highways	Union
Telecommunications	Union

Source: World Bank (2004b).

Investment climate and industrial productivity

The fourth chapter of the report assessed the impact of investment-climate differences in business productivity and growth, with location taken as given. Plant-level labor productivity is almost 20 percent higher in the six states that have attracted the most FDI**.** It is also 85 percent higher in about half a dozen metropolitan areas than in all other major cities. This is in part because high-FDI states and low-cost cities have managed to attract more investment in plant and equipment in the past than have other parts of India. The rate of net fixed capital formation in low-cost cities is 10.3 percent against under 2 percent in high-cost cities, and 6.3 percent in high-FDI states against 1.6 percent in other states. The cumulative outcome of these differences in capital formation is that the average employee is better equipped with machines and tools in high-FDI states and low-cost cities than elsewhere. Wage rates are also higher in high-FDI states and low-cost cities, which suggests that the average employee is more skilled and/ or more motivated in those states and cities. More significantly, unreliable and expensive power supply, problems of tax and customs administration, excessive labor regulation, shortage of land, lack of access to formal external finance for too many firms, and corruption all are negatively correlated with both productivity and business growth rates.

The case for reforms in investment climate

The main conclusion of the report is that the performance gap between Indian industry and its international comparators—particularly Chinese industry—has a great deal to do with differences in investment climate, as does that between high-FDI and high-growth states within India and less successful regions. The report has shown that part of the reason why manufacturing industry is not doing as well in some regions and cities as in others is because of the disadvantages of some regions in geography (and history)—that is, because of remoteness from domestic and international centers of economic activity, poor market access, and limited localization economies. The policy message is nonetheless that these disadvantages can be compensated by making the investment climate of the region better than that in more successful regions. Put another way, geographically disadvantaged states and regions cannot afford as many or as severe deficiencies in their business environment as those whose natural or historical advantages make them attractive to potential domestic and foreign investors. The case for further improvement in the investment climate in low-growth and low-FDI states is not really that their investment climate is worse than the rest of India, for which there is no evidence, but rather that it must be better, because a better investment climate is the only way of making up for

disadvantages over which the states have no control.

Dimensions of reforms

What specific policy measures are required to bring about the needed improvement in investment climate? The answer cannot be inferred directly from a diagnostic analysis such as the one presented here. We can, however, point to several current and prospective reform initiatives that are consistent with our conclusions. For information on existing initiatives the reader is referred to several recent studies dealing with reform proposals for Andhra Pradesh, Tamil Nadu, and Karnataka (see World Bank 2004a and 2004b; World Bank 2000).

It is clear that improvement of the investment climate of Indian industry will require at least two sets of interrelated regulatory and institutional reforms. One set consists of regulatory reforms aimed at reducing entry and exit barriers to manufacturing industries, including those aimed at improving the functioning of labor, land, and product markets, and reducing the burden of government regulation of business start ups, bankruptcy procedures, and industrial and trade routines. The second set consists of institutional and regulatory reforms aimed at improving the provision of physical infrastructure and of financial and other business services. Jurisdiction over components of both sets of reforms is currently divided between state governments and the central government along the lines shown in Table 5.1.

Power sector reforms

Power supply remains the main physical infrastructure bottleneck to industrial growth in India at the moment, the problem being one of chronic shortages, high cost, and unreliability. On the average, power outrages occur almost every other day for the average business in India, as compared to once every two weeks in China and once a week in Brazil. The average manufacturer in India loses 8.4 percent a year in sales on account of power outages as opposed to less than 2 percent in China and Brazil. Outages can lead to loss of sales by forcing downtime (or idle capacity) on managers. They also waste material in process at the point of the outage if that material cannot be used when production resumes. And there is the additional cost of equipment maintenance directly attributable to physical damage. Businesses have generally responded to the power problem by running their own generators. Yet another measure of the gravity of the power-supply problem in India is that 61 percent of respondents to the ICS claimed to have their own generators, as compared to 21 percent in China and 17 percent in Brazil. The frequency and average duration of outages is such that, far from being tools for dealing with an emergency, generators are used as routinely as any standard industrial equipment in India, accounting for as much as 30 percent of power consumption.

There have been recent signs of significant improvement. One indicators is that the percentage of businesses that reported relying on their own generators in the 2003 investment climate survey was 10 percentage points lower than in the 2000 survey. This seems to reflect progress with power-sector reforms, which some states have pursued more aggressively than others. The enactment of the Electricity Act (2003) is a very positive development.[33] But much more needs to be done to make the enabling legal and structural environment work. Looking ahead, reform will need to focus on the following key areas: (i) organizational and financial reform of the state electricity boards (SEBs); (ii) open access to SEB grids; (iii) establishment of truly independent, technically competent, and fully professional state-level electricity regulatory commissions; (iv) reduction of transmission and distribution losses arising from theft and leakages; (v) rationalization of power tariffs, depoliticization of tariff setting, and implementation of a phased reduction in cross subsidies that operate against industrial customers.

[33] The Act allows: (i) delicensing of generation (thermal) and freeing captive power plants from control, (ii) providing for private transmission licenses and allowing open access, (iii) recognizing power trading as a distinct business activity, (iv) mandatory setting up of state-level electricity regulatory commissions, and (v) mandatory metering of all electricity supplied. But to get maximum mileage out of the new Electricity Act, it has to be implemented in all key states.

Improving road transport

Although the investment climate surveys of India have not generated as many telling indicators of the quality of transport or telecommunication services as of the quality of power supply, there are some clear pointers to serious deficiencies in the provision of transport services to industry. These include low vehicle speeds caused by road congestion and poor riding quality by international standards, longer long-haul delivery times, and, as a reflection of these, longer hold times of input inventories by Indian manufacturers.

Not surprisingly, therefore, the development of the road transport system has become the second most important focus of initiatives for improving physical infrastructure for industry. Notable among these initiatives is the Golden Quadrilateral (GQ) project of the National Highway Authority of India, which links Delhi, Mumbai, Chennai, and Kolkata. The project, financed by a Rs.1.50 per liter "cess" on petrol and diesel, is expected to be completed by mid-2005. The North South-East West (NS-EW) highway project is also slated for completion by December 2008.

These initiatives are nonetheless a fraction of what is needed to meet the challenge of raising India's road transport network to desirable standards. Even if the GQ and the NS-EW projects are implemented on schedule by the end of 2008, reasonably well surfaced, four-lane national highways will account for just 22 percent of India's national highways and none of the state highways, which are in serious disrepair. Making further headway will require a significant increase in investment. One view is that this can be addressed through better cost recovery from users. Another challenge is reducing uncertainties arising from political interference and weak contract enforcement, which are believed to have inhibited private-sector participation in roads.

Regulatory reforms

According to objective indicators, the burden of regulation of routine industrial activities is not much worse than in China or Brazil. The indicators include the frequency of official visits, the time managers spend dealing with regulations, and delays in customs clearance. Two of these indicators also suggest that this component of industrial regulation has improved between 2000 and 2003. The number of annual factory inspections in 2003 was 7.4, compared to 11.7 in 2000, while the average number of days required for clearance of imported industrial inputs seems to have come down from 10.3 in 2000 to 7.3 in 2003.

The cost to Indian industry of entry and exit regulation has also come down considerably as a result of policy reforms implemented since 1991. Early reforms include the removal of a policy of reservation of certain industries to the public sector, and the abolition of licensing requirements for private investment in many industries. Until recently, private investment was prohibited in some 18 industries that were reserved for the public sector. The list of prohibited industries has now been curtailed to three—atomic energy, railways, and military aircraft and warships. The production of a few environmentally sensitive or hazardous materials is also subject to government licensing. However, the long-standing policy of reserving many labor intensive industries to small-scale operators has yet to end. Perhaps as important, there is some evidence that in spite of these measures of deregulation, it still takes significantly longer in India to obtain approval for a new business than in comparable economies. Bankruptcy procedures also take much longer in India than in countries whose regulatory environment is otherwise not much different from India's.

Exit barriers in India's industries are strongly reinforced by the excessive regulation of industrial relations on the basis of the employment security provisions of the Industrial Disputes Act of 1947. One of the main provisions requires establishments employing more than 100 workers to seek the permission of the state government before closing a site or retrenching workers. Although this has added to the extraordinarily protracted nature of insolvency procedures, very little progress has been made at amending any part of the law at the federal or state levels, probably because of the constraints imposed by electoral politics.

Reforming land markets

Little progress has been made in reforming land markets.[34] There are nonetheless a number of reform proposals aimed at reducing the cost of transactions in land or increasing the flexibility of land-use rights. Reforms that could reduce transactions costs include reducing stamp duties, reducing delays in issuing building permits, and providing in advance and in a transparent manner all information related to land-use regulations and restrictions affecting plots in the city. In some states, reform may include repealing the Urban Land Ceiling Act. Property tax systems may also need adjustment since, in many states land is reassessed only when sold. In addition, rent control laws could be amended until it becomes possible to eliminate them althogether.

Zoning and land-conversion regulations freeze land that would otherwise be available for development and can considerably raise entry and exit barriers to economic activity. In India such regulations have made land-use changes within cities long and cumbersome, resulting in pockets of "dead land." Increasing the flexibility of urban land use is therefore a potential source of gains in industrial productivity.

Role for interregional coordination

Given the growing decentralization of policy reforms to the state level, policy reforms of the kind just listed are increasingly likely to occur at the initiative of state governments. It could be useful to look at the consequences of local or subnational initiatives from a national perspective, because what is optimal from a state's point of view would not necessarily be so from the perspective of the national economy. Assuming that improvements in the investment climate enhance the attractiveness of reforming regions, it will attract mobile industries from regions with poorer investment climates and improve the performance of relocated firms. Interregional competition provides incentives for regions with poorer investment climates to improve their playing fields or risk losing jobs and investment. In the absence of coordination, however, each region may embark on large-scale investment programs without considering the scale economies needed to sustain such investments (as in electricity and transport) or the interregional externalities of their actions. In these cases, it will be useful to develop coordination mechanisms so that lumpy and long-term investments are made optimally for individual states and so that regions can understand the externalities of their actions.

[34] This subsection heavily draws on the land market reform section in World Bank (2003).

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