India's pattern of development: what happened, what follows?

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Abstract

India has followed an idiosyncratic pattern of development, certainly compared with other fast-growing Asian economies. While the importance of services rather than manufacturing has been widely noted, within manufacturing India has emphasized skill-intensive rather than labor-intensive manufacturing, and industries with higher-than-average scale (though average firm size within industries is unusually small). Some of these distinctive patterns existed prior to the beginning of economic reforms in the 1980s, and stem from the idiosyncratic policies adopted after India's independence. These patterns have not changed despite reforms that have removed some policy impediments that contributed to India's distinctive path. We discuss the implications for India's future growth.

JEL classification: E23, E24, L80, O11, O14, O40, O47

Keywords: manufacturing, services, diversification, decentralization, liberalization, labor intensity, skill intensity, scale

*We are grateful to our discussant, Abhijit Banerjee, for very helpful comments, and to Nancy Birdsall, Shanta Devarajan, Josh Felman, Enric Fernandez, Poonam Gupta, Devesh Kapur, Aaditya Mattoo, Brian Pinto, Ramana Ramaswamy, V.S. Krishnan, Shang-Jin Wei, John Williamson, and participants at various seminars for useful feedback. We thank Abhijit Banerjee

and Lakshmi Iyer, Tim Besley, Poonam Gupta, Jean Imbs and Romain Wacziarg, Andrei Levchenko, Romain Ranciere, and Catriona Purfield for allowing us to use their data for this study.

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1. Introduction

With an average of 13 million people expected to enter India's labor force each year for the next four decades, many have expressed concerns about the relatively jobless growth of the last fifteen years (see, for example, Acharya 2006, Mehta, 2005). While China, the world's manufacturing powerhouse, appears to be absorbing surplus labor from agriculture into manufacturing, there is growing concern that India has failed to match its neighbor in this process. To many, India's emergence as a world-class services hub offers scant comfort because of the relatively limited prospects of such skill-based development for employment growth. In addition, worries are mounting about the uneven distribution of opportunities across states (the fast–growing peninsula versus the slow-moving hinterland), sectors (services versus manufacturing or agriculture), and skill and education levels. Will India foster growth in labor-intensive manufacturing? If yes, how? If not, how can jobs be provided for India's vast, growing, pool of low-skilled labor? These are some of the questions addressed in this paper.

To preview the answers, we argue that the nature of the policies India followed after independence in 1947 created unique specializations prior to the economic reforms that started in the 1980s. Relative to other comparable poor countries, India's manufacturing was concentrated in skill-intensive industries rather than in labor-intensive manufacture, the usual specialization in a populous developing country. India had a greater presence in industries that required scale (and capital) than other developing countries, though within industries, the average size of enterprise was abnormally small compared to other countries. Perhaps because of the policy distortions, India had a far more diversified presence across manufacturing industries than the typical developing country. Interestingly, it had a lower-than-normal presence in services in the

early 1980s, where the skill-intensive segments such as telecommunications were still dominated by the slow-moving public sector.

Recent trends reflect a continuation of some of the patterns that existed prior to economic reforms in the 1980s, especially in the continuing movement away from labor- intensive industries and towards skill-intensive industries. The big change has been in services, which have grown substantially for a variety of reasons – for example, telecommunication perhaps because the private sector has been allowed in, software and business process outsourcing because of the opening of the economy, and construction perhaps because of the growth of retail finance. Nevertheless, even here growth has been in skill intensive areas.

We then look ahead, using the growth of fast-moving Indian states as a crystal ball. Despite economic reforms that have removed some of the policy impediments that sent India down its idiosyncratic path, it appears unlikely that India will revert to the pattern followed by other poor countries. States are not increasing their presence in labor-intensive industries. In part, this may be because not all the policies have been reformed – for example, there has been little effective change in labor laws. In part, though, valuable capabilities may have been built up during the period of heavy policy intervention. Instead of reverting to the development norm, the advanced Indian states seem to be taking advantage of the freeing up of the economy to utilize fully their acquired capabilities.

On the one hand, this freedom has increased India's overall growth rate. On the other, it has led to a considerable divergence between states in growth and incomes and in the pattern of specialization. The fast-growing peninsular states are starting to resemble industrial countries in their specialization, moving towards skill-intensive services and manufacturing. But the populous, institution- and infrastructure-poor states of the hinterland have fallen behind. Whether

these states can develop appropriate growth strategies and whether these strategies will be impeded or helped by the growth of the more advanced states is a central question for India's economic future. We offer some conjectures and discuss policy implications.

The structure of the paper is as follows. We first examine India's pattern of development circa 1980 on the grounds that a snap shot at this point reflects the legacy of India's unique and much-commented-upon development strategy: a curious combination of simultaneously favoring and disfavoring domestic entrepreneurship with a rich overlay of arcane rules and procedures. We then examine what happened between 1980 and 2001 to see how the shift in policies from dirigisme to greater reliance on the market affected the pattern of development, especially for fast-moving states. We then use this post-1980s' experience as a basis to speculate about the future.

2. India circa 1980

How should India's development strategy since Independence in 1947 and until the early 1980s be characterized? Many excellent books and papers have been written about this, and we refer the reader to them for details.[1] A (perhaps overly) simplified view of the main aspects, however, would include:

(i) Indian planners emphasized self-sufficiency to avoid excessive external influence on domestic affairs, an understandable view in a country emerging from colonialism. This translated into an emphasis on rapid industrialization, especially the creation of industries producing capital

[1] The canonical references are Bhagwati and Desai (1970), Bhagwati and Srinivasan (1993), Joshi and Little (1994), and Krueger (1975).

goods.[2] An additional focus was to reduce dependence on foreign exchange through import substitution. Trade restrictions were the inevitable side effect of these policies.

(ii) Given that India was capital poor, and given Indian planners distrusted market forces, they devised a combination of heavy public sector involvement in production (with some industries—the "commanding heights"—being reserved only for the public sector) and controlled private sector involvement. Licenses were required for investment, production, and imports, while foreign exchange, credit allocation, and even prices were controlled. Also, the government reserved the right to enter even those industries which were not explicitly reserved for the public sector (the threat was realized in 1969 when Indira Gandhi nationalized a number of private banks).

(iii) A separate reason to control the private sector was to avoid undue concentration of economic power. Additional mechanisms to enforce this objective included the Monopoly and Restrictive Trade Practices act (MRTP)—which imposed severe constraints on expansion by large firms and groups, and the Foreign Exchange Regulation Act (FERA).

(iv) Geographically balanced development was also an objective, so investment was directed towards underdeveloped areas, even if these areas were not near markets or even if scale was inefficiently small. The rents generated by the controls probably helped paper over inefficiencies.

(v) In order to encourage labor-intensive manufacture in the private sector, significant benefits were given to small-scale firms (these included tax concessions and holidays, preferential access

[2] Recall that Soviet Russia was a successful example of development around the time of India's independence, and many of India's leaders, including Jawaharlal Nehru, were greatly influenced by it. P.C. Mahalanobis, the father of Indian planning viewed the capacity to "make machines that make machines" as crucial to the economy's long-term rate of growth.

to credit, subsidized interest rates, and preferential treatment in procurement by the government). In addition, some goods were exclusively reserved for production by the small-scale sector.[3]

(vi) At the same time, however, significant protections for labor, especially in large firms, were enacted. For example, an amendment to the Industrial Disputes Act (1947) in 1976 made it compulsory for firms with 300 or more workers to seek the permission of the relevant government to dismiss workers. In 1982, the ceiling for seeking permission to dismiss workers was lowered to 100 workers.

(vii) Also, for a variety of reasons (see Wiener (1990) for one view), for a poor country India spent, and still spends, relatively far more resources on higher education than on primary education. For example, India spent 86 percent of per capita GDP on each student in tertiary education in 2000 while it spent 14 percent of per capita GDP per student in primary education. By contrast, China spent 10.7 percent and 12.1 percent, respectively, of per capita GDP per student in tertiary and primary education. Put another way, India spent substantially more in purchasing-power-parity (PPP) adjusted dollars per student in tertiary education than China, and even Korea or Indonesia in 2000.

In the next section , we examine the legacy of this complex web of policies on the pattern of development. But before we do that, a caveat. Historically, India has been gifted with many clever theorists and statisticians. Unfortunately, the quality of Indian data has not matched the quality of its users (see, for example, Srinivasan (2003)). As a result, much extant work focuses on deploring the quality of Indian data, and attempting to correct problems through careful econometrics. Unfortunately again, this focus has also dampened the quantum of empirical work,

[3] See Mohan (2002) for more details.

especially policy relevant empirical work. While acknowledging problems with the data, we will not dwell on their inadequacies. Instead, we will attempt to tease out broad patterns, and in a variety of ways, both of which might make the work less susceptible to concerns about the data. That said, all findings are subject to the caveat that the data are what they are.

2.1 Value-added shares in 1981[4]

Did 30 years of dirigisme post-independence distort manufacturing? In Table 1, we present the share of output in the different sectors in India in 1981 and compare it with that in a number of developing and developed countries. At a little over 16 percent of GDP, India's share in manufacturing seems low, especially when compared with a number of East Asian countries and China. But from the work of Kuznets and Chenery, we know that the manufacturing share varies with the level of development, rising and then falling off once a country approaches a high level of income. So one way to check whether India's share of manufacturing is too low is to see if it is "too low" correcting for its level of income and its square (to account for non-linearities).[5]

In Table 2, we report the results of cross-section regressions of a country's sectoral share in total output on these variables and an indicator for India. We also present a specification which includes, in addition, country size (proxied for by land area). Correcting only for the

[4] That the data are what they are does not mean we ignore problems. For example, there are aberrations in the Indian data for 1980 that do not appear in subsequent years. This is why we use data from 1981.

[5] Of course, other factors also affect sectoral shares (see, for example, Chenery and Taylor (1968)), but our intent here is primarily to see whether India is an outlier after controlling for obvious factors, rather than to do an exhaustive study of the sectoral composition of growth per se. Also, we report results for the largest sample of countries, though the results are qualitatively similar, when not specifically noted, for a smaller cross-section restricted to non-OECD countries.

income terms, India is a *positive* outlier among countries in its share of value added in manufacturing in 1981. Its share significantly exceeds the norm by 4.6 percentage points (see Table 2, column 1). However, after correcting for country size, the coefficient on the India indicator declines to 2.3 percentage points in 1981 which is not statistically significant (column 2).[6] We focus in what follows on estimates from specifications including country size.

Given that India is not an outlier in manufacturing share in 1981, the conventional wisdom that India is underweight in manufacturing could either be because it underperfomed over the next 20 years, or because it is typically compared with China. The coefficient for the China indicator suggests that China's share of manufacturing in 1981 was an astonishing 29 percentage points of GDP greater than that for the average country.[7]

Finally, India is an outlier in services in 1981 (columns 3 and 4), and a *negative* one at that. India's share of services in value added is significantly below that for other countries in 1981 (about 3.6 percentage points lower in column 4).

2.2. Employment shares in 1981 and productivity

When we compare the shares of industrial sector employment in total employment across countries, India is again not an outlier (Table 2, columns 5 and 6).[8] In the case of services

[6] The picture is slightly different when one looks at the share of value added in the industrial sector—which includes manufacturing, mining, construction and core infrastructure industries like electricity, water, and gas. We find that the coefficient on the India indicator is *negative* 3 percentage points, although it is not statistically significant.

[7] By contrast, China was a large negative outlier in services in 1981, with a share in GDP about 15 percentage points less than for the typical country, controlling for income and size.

[8] Comparable cross-country data on employment shares are not available separately for the manufacturing sector, only for industry (manufacturing, mining, and core infrastructure sectors), and services. Thus the analysis of employment shares is conducted for industry and services.

(columns 7 and 8), however, India has a significant 7.5 percentage point lower employment share than other countries, after controlling for income and size.

In estimates that are not reported, we find that India was a significant positive outlier with respect to relative labor productivity in industry and services in the cross-section in 1981, suggesting productivity in agriculture was low.

2.3. Use of factors: labor intensity, skill intensity

What did the policies do in terms of industry specialization? We look at the manufacturing sector where we have comparable cross country data from the UNIDO. The first industry characteristic we examine is labor intensity, for which we use as a proxy the share of wages in value added for the industry in a country, averaged across a broad group of developing countries. Examples of industries that score highest on labor intensity are clothing, printing and publishing, and non-electrical machinery, while those that score lowest are beverages, tobacco, and petroleum refineries (Table 3).

For each country, we calculate the ratio of value added in above-median-labor-intensity industries to the value added in below-median-labor-intensity industries. If Indian manufacturing generated relatively more value added in labor intensive industries in 1981, then in a cross-country regression of this ratio against log per capita GDP, its square, and an indicator for India, the India indicator should be positive and significant (see Table 4, Panel A, column 1). However, the coefficient is insignificant.

The coefficient on the India indicator is moderately negative when the dependent variable is the ratio of employment (see Table 4, Panel B, column 1). Finally, the India indicator is positive and significant when the dependent variable is the ratio of labor productivity in above

median labor-intensive industries to that in below median industries in 1981 (Table 4, Panel C, column 1).[9]

Let us now turn to skill intensity. The input-output matrix for South Africa contains data on 45 sectors and five primary factors of production—capital plus four categories of labor: highly skilled, skilled, unskilled, and informal sector (see Alleyne and Subramanian, 2001). We use the share of remuneration of the highly skilled and skilled categories of workers in total value as a proxy for the skill intensity of an industry.[10] The categorization of industries according to skill is in Table 3. The most skill-intensive industries are printing, other chemicals, and professional and scientific equipment. The least skill intensive include textiles, leather, footwear, and wood products. The correlation between an industry's labor intensity and its skill intensity is positive but small and not statistically significant (see Table 3), suggesting they capture different things.

The dependent variable in Table 4, Panel A, column (2) is the ratio of the total value added by above-median-skill-intensity manufacturing industries to the total value added by below-median-skill-intensity industries. It is striking that even by 1981, India specialized in skill-

[9] In a number of places in this paper, we use the median to divide industries. As a robustness check, we also grouped them into the top and bottom third, excluding the middle third to avoid possible misclassification of industries. Our results remained qualitatively unchanged using this alternative classification.

[10] The choice of South Africa was dictated primarily by data availability. Our results are robust to alternative definitions of skill intensity, including restricting the definition to the highly skilled category and defining skill intensity in terms of share of remuneration in output rather than value added. We also checked the correlation of our measures of skill intensity with that compiled for the U.S. by Rajan and Wulf (2004). It is 0.66, for the highly skilled category, and 0.5 when skill intensity includes highly skilled and skilled workers.

intensive industries. Also, relative labor productivity in skilled industries was higher in India (Panel C, column 2).

2.4. Industry scale and firm size

Next, we establish two facts about the "scale" of Indian enterprise. First, manufacturing was unusually concentrated in industries that typically require large scale. Second, within industries however, the array of policies that discouraged large firms appear to have had their intended effect, with Indian firms unusually small relative to firms in the same industry in other countries.

It is not immediately obvious how we would approximate the typical scale of an industry. If the size of the domestic market matters, a larger country would have larger establishments (see the evidence in Kumar, Rajan, and Zingales (2000), for example). Also, as the coverage of manufacturing data varies across countries, the smallest firms may be covered in some countries but not in others.

For these reasons, we cannot simply take the value added per establishment (or employees per establishment) in an industry averaged across countries to get a measure of scale for the industry.[11] Instead, we focus on relative size, that is, we find the relative size of establishments in an industry in a country by dividing the value added (or employment) per establishment in the industry by the value added (or employment) per establishment in the

[11] We would be mixing industries represented in large countries or countries with extensive coverage with industries represented in small countries or countries with little coverage, reducing comparability.

country. It is this relative size that we average across countries for each industry to find a measure of the scale of establishments in that industry.

The industries with the largest scale across countries are petroleum refineries, tobacco, and iron and steel, while that with the smallest scale is furniture (Table 3). The ranking of industries differs only marginally across our two measures of establishment size, so we will use the measure based on value added per establishment. The results do not differ qualitatively if we use the other measure.

We find that the ratio of value added in above-median-scale industries to below-median-scale industries is significantly higher in India (Table 4, Panel A, column 3). Interestingly, relative employment shares in above-median scale industries is also significantly higher in India relative to other countries (see Panel B, column 3). As a result relative productivity is somewhat lower for above-median-scale industries in India, but not significantly so (Panel C, column 3).

The correlation between scale and labor intensity is strongly negative and significant (-0.59), while the correlation between scale and skill intensity is small (-0.01) and insignificant (see Table 3). This suggests that our measure of scale proxies for capital intensity, which in turn may explain why production is concentrated in the large-scale sectors in India; Indian planners laid emphasis on building capital-intensive, large-scale, heavy industries because of their belief that “machines that made machines” would boost savings and hence long-run growth. They commandeered these sectors for the public sector, and many of the impediments to scale that were faced by the private sector simply did not apply to the public sector. Moreover, employment was an implicit objective in the public sector. As a result, a capital scarce country was overrepresented, both in terms of value added and employment, in the capital-intensive/large-scale segments of industry.

The real impact of the discriminatory policy regime against private sector scale (industrial licensing, forced geographic distribution of production, reservation and other incentives for small-scale sectors, and the anti-monopoly MRTP Act) may then have been felt within industry rather than between industries.[12] With the caveats about cross-country comparisons of establishment size noted above, and some attempt at correcting for them, we find that the average size of firms in India is substantially below that in other countries—this is true in the aggregate and in almost every industry**.** In Figure 1, we compare the average firm size in India with the average firm size in 10 emerging market countries for manufacturing as a whole and for the nine largest industries in India.[13] The contrast is striking: for example, the average firm size in manufacturing in India is about US$300,000 per firm, whereas it is about US$4 million in the comparator countries—a multiple exceeding 10. Parenthetically, note that in the figure, the pattern of size across industries in India matches the pattern in comparator countries (with, for example, iron and steel or industrial chemicals being large and food products small), albeit at a much lower level, verifying that relative size is a distinctive characteristic of an industry that holds across countries.

[12] Even though some industries were reserved for the public sector, firms even there may have been inefficiently small because of the felt need to distribute production across the country. Moreover, our industries are broad enough that they typically include many private firms.

[13] In presenting this stylized fact, we attempt to avoid possible biases. We first compared manufacturing output from UNIDO and the World Bank's World Development Indicators (WDI). The UNIDO database only covers the registered manufacturing sector in India, defined as firms not using power and employing 20 or more people, or firms using power and employing 10 or more people. Hence, the UNIDO data are biased toward larger firms in India. The UNIDO data cover about 60 percent of the data reported in the WDI. For the purposes of comparison with other countries, we eliminated countries where the UNIDO data had a lower share of total value added in manufacturing than in India. This would bias our test towards finding that India had relatively larger firms.

We have argued that regulations, especially those pertaining to labor, might partly account for why firms in India are typically small because they applied only to registered firms that exceeded a certain size. If labor laws matter, we should see relatively more activity in labor-intensive industries done by unregistered firms. Using data from unregistered manufacturing, we find the ratio of value added in above-median labor-intensive industries to that in below-median labor-intensive industries in unregistered manufacturing (obtained from the Central Statistical Organization) is significantly higher (by about 2 times in 1980) than in registered manufacturing.[14] By contrast, labor laws were less applicable to non-unionized, highly skilled workers—for example, to professionals. So we should find the ratio of value added in above-median skill- intensive industries to that in below-median skill-intensive industries in unregistered manufacturing should not be significantly higher than in registered manufacturing. It is not—quite the opposite, the ratio of above-to below-median skill-intensive industries in the unregistered sector is about ¼ of that in the registered sector.[15]

2.5. Diversification

Before we discuss these findings, let us add one more fact, which follows from the facts on labor-intensity, skill, and scale. Imbs and Wacziarg (2003) show that in the course of development, countries first diversify within manufacturing, producing many things, and then after a certain level of income, start specializing, producing fewer things. Technically, the

[14] Recall that what we have reported thus far are figures from registered manufacturing using UNIDO data.

[15] The fact that the ratio is so much lower in the unregistered sector suggests that skill-intensive sectors might require a larger scale of operation for technological reasons.

relationship between the concentration of value added across industries (the Gini coefficient or the Herfindahl index), and income is U-shaped, with the turning point occurring at about US$10,000 per capita.

Given that India has more of a presence in skill-intensive and large scale industries, the presumption would be that it has specialized in more areas than the typical developing country, and hence it should exhibit a more diverse pattern of production. When we examine the concentration of Indian industry compared to the average country pattern, we find that India is significantly less concentrated (or more diversified), not just in terms of the distribution of value-added across industries, but also when concentration is measured in terms of employment (Table 4, panels A and B, column 4). The coefficient on the India indicator when the dependent variable is the concentration of value-added is a significant -0.07, and it is -0.06 when the dependent variable is the concentration of employment**.** In other words, India has an output and employment profile across industries that is approximately one standard deviation less concentrated than that for the average country, suggesting a broader array of skills/capabilities in the labor force. [16]

The contrast with China is interesting. At first blush, China's index which is close to that for India would suggest that China too is an outlier in terms of diversification. It turns out,

[16] It is possible that the highly restrictive and distorted trade regime was a key reason that the Indian economy was unusually diversified. To examine this possibility, we included various measures of trade openness in the cross-country comparisons. Although the measures of trade openness have some explanatory power, the finding that India is unusually diversified still stands—the coefficient on the India indicators is smaller in this case, but retains its statistical significance.

however, that after controlling for size, China is not unusually diversified in the cross-section whereas India is.

2.6. The effects of pre-1980s policies: summary and discussion

To summarize, compared with countries at a similar level of development and size, in 1981 India had approximately the normal share of output and employment in manufacturing. Output in services was below the norm, as was employment in services. Manufacturing output and employment appeared to be above the norm in industries that typically are skill intensive or have larger scale. Average establishment size within industries, though, was substantially smaller than in comparable countries. And finally, Indian manufacturing was significantly more diversified both in terms of output and employment than countries of comparable income and size.

One seemingly anomalous finding is the high relative labor productivity observed in the labor-intensive sectors in India. Why did this not, for example, translate into exports of labor-intensive goods? We offer three possible explanations. First, the high relative labor productivity could simply be the converse of the low labor productivity in the large-scale capital-intensive industries, which were probably dominated by state-owned firms where over-staffing was a common phenomenon and even an objective. Second, the stringent labor laws that make it hard to lay off labor and the consequent hesitancy to hire (and to drive down marginal labor productivity to the value maximizing level) could also explain why productivity is moderately higher in labor-intensive industries. Third, the discrimination against size that we have noted above may well have limited the labor-intensive sector’s incentive and ability to exploit economies of scale and generate large volumes of exports.

The paradox of Indian manufacturing in the early 1980s is thus that of a labor-rich, capital-poor economy using too little of the former, and using the latter very inefficiently.[17] The reason, most likely, was perverse policy. Unlike the East Asian economies, which drew employment from agriculture into manufacturing at a rapid pace, India did not.

The one area where Indian manufacturing appears to have thrived is in the industries using highly skilled labor. The far greater investment in tertiary education for a country of its per capita income—of which the Indian Institutes of Technology and the Indian Institutes of Management are just the best-known examples—resulted in the plentiful availability of highly skilled, cheap labor. In addition, labor laws afforded much less protection to skilled labor. These factors are likely to have contributed to India generating relatively greater value added and employment in skill-intensive industries as compared to the typical poor country.

India was a significant negative outlier in services in 1981. In part, this may have been because the slow-moving public sector again dominated areas like telecommunications and business services where India's advantage in skills (as evidenced by the pattern of specialization in manufacturing) might have been used. By contrast, sectors like retail and construction were left to the private sector, where the limited access to finance (both for the service provider and the customer) kept businesses small and growth limited.

[17] It may well be, of course, that India's labor-intensive production was concentrated in the unregistered sector, for which we do not have comparable data from other countries. To the extent that firms in the unregistered sector have inefficiently small scale, total production would still be smaller and less competitive than it could be without the spectrum of regulations. Also, unregistered labor-intensive production has been falling considerably over time, suggesting that this explanation for India's lack of concentration in labor-intensive manufacturing is less applicable today.

Finally, the greater diversification of Indian manufacturing could be explained as a consequence of all the policy distortions. The import substitution strategy, the skewed pattern of education, as well as the encouragement given to the public sector to invest in areas that are typically not a poor country's comparative advantage, may well have driven India into industries that other countries at comparable income levels shy away from.

3. How has India changed since the early 1980s?

3.1. Policy changes since the 1980s

A number of observers (see, for example, Kohli (2005), Rodrik and Subramanian (2005), Virmani (2005)) noted the tilt of the Indian economy, beginning in the early 1980s, away from controls and repression of the domestic private sector. The pace of reforms accelerated in earnest the early 1990s, in the wake of the external payments crisis. The reforms have been attributed to various causes ranging from a realization that the panoply of controls were self-defeating, to a realization by the Congress Party that given the growing challenges to its power, it had to woo business (see Kohli (2005)).

The key features of reforms in the 1980s were (i) the liberalization of imports — especially of capital goods and intermediate inputs; (ii) the extension of export incentives through the tax system, and more liberal access to credit and foreign exchange; (iii) the significant relaxation of industrial licensing requirements through direct "delicensing" of some industries and through "broad banding", which permitted firms in some industries to switch production between similar product lines; (iv) the decontrol of administered prices of key intermediate inputs. Kohli (2005) and Rodrik and Subramanian (2005) characterized the reforms of the 1980s as "pro-business" in orientation.

The reforms of the 1990s—which some have distinguished from the reforms of the 1980s as "pro-market" in orientation—included (i) the abolition of industrial licensing and the narrowing of the scope of public sector monopolies to a much smaller number of industries; (ii) the liberalization of inward foreign direct and portfolio investment; (iii) the sweeping liberalization of trade which included the elimination of import licensing and the progressive reduction of non-tariff barriers; (iv) financial sector liberalization, including the removal of controls on capital issues, freer entry for domestic, and foreign, private banks and the opening up of the insurance sector; (v) and the liberalization of investment in important services, such as telecommunications. Areas that remained largely untouched by reforms in the 1990s were the labor market; small-scale reservations (where there has been some movement only in the last 4-5 years); privatization both of non-financial enterprises and of banks; and further agricultural sector reforms.

How have these twenty years of slow but steady reforms affected the pattern of development, if at all? We first look at the evolution in the variables discussed above—sectoral shares, factor intensities, size and diversification, between the early 1980s and early 2000s. Our prior is that given the distinct turn towards business and markets and away from controls, any anomalies in the pattern of development or in their underlying trend should have been corrected or at least arrested. The data, as we will see, do not support this hypothesis.

3.2. Manufacturing versus services in the cross-section

The traditional perspective of Kuznets or Chenery would predict a rapid increase in the share of manufacturing, a decline in agriculture and an uncertain or modest effect on services. However, between 1980 and 2002, India's share of services in value added exploded from

37 percent to 49 percent. Its share of manufacturing in value added remained broadly unchanged at 16 percent, while the decline in agriculture mirrored the performance of services.[18] The corresponding numbers for employment were 19 percent to 22 percent and 14 percent to 18 percent (Table 1).

Is this evolution in sectoral shares unusual when compared with that of other countries? In the level regressions for 2000 (Table 5, columns 1 and 2, panel A), the coefficient of the India indicator is still positive but smaller than in the corresponding specification for 1981.[19] Furthermore, in the regressions using the change in the share of manufacturing value-added to overall growth (column 1, Panel B), the India indicator is negative. Thus, the data suggest a relative slowing in manufacturing growth.

What is indisputable is the performance of services over this period. India has been unusual in this regard. India's share in services is a significant 3.8 percent higher than in other countries in 2000 (Table 5, panel A, column 4). This is broadly confirmed in the change regressions (panel B), where India records an increase in the size of the services sector that is 10 percentage points of GDP *greater* than that of the average country.

Finally, note in Table 5 (column 8, panel A), that India is again a negative outlier in terms of the employment share in services, falling below other countries by a huge 17 percentage points in 2000. Gordon and Gupta (2004) have also observed that, unlike other countries, Indian

[18] This development contradicts the Kuznets-Chenery hypothesis. Kongsamut, Rebelo, and Xie (2001), however, argued based on an analysis of 123 countries over the period 1970-89 that the share of services rises with development more than anticipated by the Kuznets-Chenery view.
[19] However, we find that industry (that is, manufacturing, mining and core infrastructure industries) was a significant negative outlier in 2000, possibly related to the much worse than average performance of India's infrastructure sector.

labor's share in services employment has been flat rather than growing with income. The huge increase in value added in services without a commensurate increase in employment, must have come from tremendous gains in labor productivity in services.[20]

3.4. Labor and skill intensity in the cross-section

Recall that around 1980 India specialized in skill-intensive industries and in industries where establishments were relatively large in scale. India did not produce an unusually high share of labor-intensive products. What happened to this pattern after the 1980s?

In Figure 2, we plot the evolution in the share of output generated in labor-intensive relative to non labor-intensive industries for India and a selected group of comparator countries. India's share is decreasing, when that of many of the other countries is either increasing, or decreasing but at much higher levels of income. Figure 3 complements this picture by showing that the relative share of output generated in large scale (typically, capital-intensive) industries has been rising sharply in India.

In Figure 4, we plot the evolution in the relative share of output generated in skill-intensive industries for India and a selected group of comparator countries. Again, it is striking that India's share in skill-intensive manufacturing, which was already high in 1980 despite its lower level of per capita income, has been increasing; it is at levels reached by Malaysia or Korea at much higher levels of per capita income. These developments are not affected by the fact that our data so far have been limited to the registered manufacturing sector in India. Indeed,

[20] Gordon and Gupta (2004) argue that the increase in labor productivity in India was caused by a greater emphasis on skill-intensive services, rather than an increase in capital intensity.

when we trace the evolution of labor- and skill-intensive products in the informal sector, we see the same pattern (Figure 5).

These developments are more formally captured in the regressions reported in Table 6 for 2000. They show that India is not an outlier in terms of the share of manufacturing output or employment generated in labor-intensive industries, but continues to be strongly so for the share of value added in skill-intensive industries and large-scale industries.

In terms of labor productivity too, skill-intensive industries stand out while the relative productivity of large-scale industries is strongly negative. Relative labor productivity in labor-intensive industries has remained approximately similar to 1981 (Tables 4 and 6, Panel C).

Finally, we find that India continues to be an outlier in 2000 on both measures of diversification. Indeed, when we compare the change in diversification between 1980 and 2000, we find that India is again an outlier, implying that the pace of diversification in India after 1980 has been greater than that for the average country (see Figure 6).

In sum, the evidence suggests that many of the unique features of India's development that were apparent in 1981 have not changed, despite the reforms. This continuity of trends may be explained partly by the fact that the reforms have not been completed. For example, labor markets remain untouched and education expenditure is still skewed. But part of the explanation may well rest with the fact that in India, the policy distortions created organizational capabilities and human capital that led to hysteresis in growth paths. The growth experience of the Indian states offers some support to this view.

4. The states' story

4.1. Manufacturing versus services at the level of the states

In the fast-growing Indian states, the share of manufacturing has remained constant or declined (Figure 7). Where there has been an increase—in Andhra Pradesh, Gujarat, and Haryana—it has occurred in capital- and skill-intensive industries (In Gujarat, the share of the textiles industry declined a lot, while that of the petrochemical industry rose substantially; similarly, in Andhra Pradesh the decline in the share of food, beverages, tobacco, textiles, and paper related industries was matched by a significant increase in the share of basic metals and alloys). Interestingly, there is little pattern in the change in share of value added in labor intensive industries with growth. Neither are the fast growing states uniformly increasing their share, nor are the slow growing states – on average there seems to be a slight decline in share.

By contrast, nearly all states in India—regardless of their growth performance—have seen a uniform shift toward services (see Figure 8 where the increase in share of all states in services is uniformly high, with the fastest growing states having the highest increase in share). There does seem to be a noteworthy difference between services that are predominantly in the public sector and those that are in the private sector. In Figure 9, we find a negative correlation between the change in share of services that are performed mostly by the public sector (such as electricity, public administration, railways, and other community services) and the average annual state growth.[21] In other words, the share of public sector services including administration

[21] Acharya (2002) argued that the growth of the services sector is artificially inflated by the large wage increase awarded to public sector employees in 1998 by the Fifth Pay Commission. Our (continued)

is growing in the laggard states, while the share of private sector services is growing in the fast-moving states.

4.2. Diversification

Let us now turn to diversification. Figure 10 suggests that there is little relationship between a state's growth in the period 1980-2000 and the increase in its concentration, though if anything, it is mildly positive. The majority of states, however, continue to become more diversified (that is, the change in their Herfindahl index is negative).

Recall that Imbs and Wacziarg (2003) find that the relationship between diversification and income turns negative beyond a threshold level of income. This may well be what has been happening in India. While states in general continue to become more diversified, a number of fast-growing states—Tamil Nadu, Karnataka, West Bengal, Delhi, and Maharashtra—saw stagnation or declines in their share of manufacturing and a sharp rise in the share of services. These states have also been those that have seen no significant increase in diversification. In other words, some of the richer states have started to behave like rich countries in starting to specialize in manufacturing even as, or because, they are doing less manufacturing and more services. But these states are becoming less diversified not because they are reverting to the pattern followed by less developed, labor-abundant countries (hence moving left and up the quadratic relationship documented by Imbs and Wacziarg (2003)) but more likely because they are behaving more like advanced skill intensive countries (hence moving right and up the quadratic relationship).

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findings suggest that the growth in services in the fast moving states has been outside the public sector.

5. Understanding post-1980 performance

Instead of reverting to labor-intensive manufacturing growth, which was the specialization undertaken by many Asian countries at India's stage of development, India and its fast-growing states appear to be skipping a stage–specializing in skill-intensive and large-scale industries, and services. Liberalization has allowed states to achieve their potential, instead of being held down by a centralized "convoy" system that forced each state to move at a common but mediocre growth rate. We now show that the performance of the fastest moving states seems to be driven in part by the *specific* capabilities they acquired by adaptation to the policy environment during the era of controls. In part their performance may have resulted from *general* capabilities they may have acquired or that were latent during that period.

5.1. State capabilities

In the conventional view of the Indian development process, there was a long and dark period—the period of controls and import substitution—followed by a burst of sunlight and reforms since 1991. The boom in the IT-industry first awakened observers to the fact that the dark age was not all dark, that important capabilities such as skilled human capital were being built that yielded rewards with a lag, and that these capabilities were as important as the (largely external) opportunities that sparked the IT boom.

One form of capability is *specialized human or organizational capital* – trained personnel or incumbent firms in specific industries. This kind of capability could have been acquired by the states during the period of controls. For example, engineers who originally were employed by the state-owned Computer Maintenance Corporation or Electronic Corporation of India Ltd (ECIL) provided the backbone for many of the computer firms that started up in Bangalore. Similarly,

many of the key players in the explosive growth of the financial sector in Mumbai were alumni of the State Bank of India. Bharat Heavy Electricals Limited (BHEL) was a substantial supplier of managerial talent for many private sector firms. Even the much-derided Indian Airlines supplied the private sector with highly qualified pilots.

Another form of capability is more *general human capital and entrepreneurial spirit*, or even an entrepreneurial environment. Some states may have trained substantial numbers of skilled personnel who could move into new sunrise industries, regardless of what their initial training was in. Alternatively, they may have had vibrant entrepreneurial communities, that could take advantage of opportunities once the economy opened up. These capabilities may have been acquired during the period of controls, or may have remained latent even as controls crushed initiative.

One proxy for both capabilities could be the extent to which states were diversified across manufacturing. Clearly, states that diversified the most were more likely to have a presence in the industries that subsequently grew the most, and thus could have possessed the relevant specific human capital. Also, one could argue that those states with a vibrant entrepreneurial community should have diversified the most in response to the pre-1980 distortions (for example, into areas that were not dominated by the public sector).

In Figure 11, we plot the Herfindahl coefficient of concentration within manufacturing in the different states in the early 1980s against the subsequent overall growth rates. The figure

shows a very strong correlation between the initial level of diversification of manufacturing in a state and the state's subsequent economic performance.[22]

Using state-level data for the period 1960-2000 compiled and recently released by the Economic and Political Weekly Research Foundation, we put the correlation observed in Figure 11 on firmer ground. We create a panel dataset with variables defined for four decades—1960s, 1970s, 1980s and 1990s. We run standard growth regressions with a measure of each state's economic performance in each decade as the left hand side variable. Since we are interested in the differential effect of manufacturing concentration across decades, we interact the explanatory variables with the appropriate decadal dummies. We include state fixed effects. In the first six columns of Table 7, the left hand side variable is measured over decades, while in the last six it is an average over 20 years. In all cases, we find that the initial level of concentration in manufacturing is strongly negatively correlated with subsequent economic performance especially in 1990 but not in 1980 or the decades prior to the onset of reforms. This suggests that the capabilities proxied for by diversification came into their own when the shackles on state growth were removed, but did not matter before.

Which capability mattered? Perhaps both kinds. In Figure 12, we plot the correlation between each state's 1980 share of the five manufacturing sectors that grew fastest during the period 1980-2000 against subsequent overall state GDP growth. The correlation is strongly

[22] This is consistent with the findings in Aghion et al. (2005) who show that states that were closest to the technological frontier were the ones that benefited most from the reforms of the early 1990s. It is also consistent with Rodrik and Subramanian (2005) who show that states with the greatest manufacturing capability pre-1980s were the ones that benefited most post-1980s.

positive, suggesting that part of the explanation is that initial manufacturing patterns, and specific human capital thus acquired, did matter for subsequent growth.

However, general human capital may also have mattered. Figure 13 suggests that initial diversification in manufacturing is also strongly correlated with subsequent growth in services, suggesting that the capabilities had broader uses and were not just confined to the sectors in which they were developed. Moreover, if we plot the share of value added in above-median skilled manufacturing industries in a state in 1980 against the subsequent change in the share of private services in GDP, we find again a strong positive correlation (Figure 14). The underlying general capabilities – such as the presence of skilled labor – that fed skilled manufacturing prior to the reforms were also available to feed the skill-reliant private services when they took off post-reforms.

Finally, there is evidence of a dynamic entrepreneurial process at work in the fast moving states. We determine the correlations, state by state, of the value added in each industry in 1982 with the value added in 1997. If fast- moving states were simply doing what they did before, the correlation should be strongest for those states. In fact, as Figure 15 suggests, the faster-growing states show lower correlation, or greater dynamism, across time.

Data on number of establishments in each industry provides additional evidence of dynamism. We rank manufacturing industries by their value-added growth rates over the period 1980-2000 and determine industries that fall in the fastest and slowest growing quartiles. For each state, we determine the number of industries in the fastest growing quartile in which there was a net *addition* of establishments as well the number of industries in the slowest growing quartile in which there was a net *reduction* in establishments. (Figure 16). We find that the fastest growing states did have larger numbers of high growth manufacturing industries with

net growth in number of firms as well as larger numbers of slow growth manufacturing sectors with net reduction in number of firms, suggesting that the process was not just passive growth by incumbents and purely history dependent.[23]

5.2. Decentralization, infrastructure, and institutions

While the formal reforms at the center received tremendous publicity, perhaps less noticed was the growing decentralization of policy. The Congress party had held power without a break at the center since independence, but the aura of invincibility surrounding it started waning soon after Indira Gandhi lost the post-Emergency election in 1977. Also, even though the Congress party was returned to power at the center through much of the 1980s, a number of states were captured by the opposition, often by regional or even single-state parties.

No longer could a regional leader be confident that the center—especially if the party in power was different from that running the state—would dole out its bounty fairly across states, and over time. Also, the parties in power could change, so that implicit agreements reached by prior governments might not be honored by subsequent governments. Simply put, the centrifugal forces created by the dispersion of political power in India did not sit well with the enormous centralization of economic power, and the inter-state cross-subsidies the center effected through its investment strategy. Something had to give, and it was the centralization of economic power.

Greater economic decentralization meant states could differentiate themselves, not least in their ability to attract private sector investment. This was, of course, facilitated by the gradual dismantling of the industrial licensing system that used regional equity as one of the primary

[23] By contrast, Topalova (2004) suggests that Indian manufacturing has witnessed little exit, although there have been improvements in the more recent past.

criterion guiding industrial investments. Further contributing to differentiation over this period was the rising trend in private investment, as well as the falling trend in public investment, with private investment likely to be more sensitive to differences in policies across states.

To see the decentralization dynamic at work, let us examine the comparative growth performance across states. In Table 8, column 1, we regress state growth against beginning-of-period per capita GDP interacted with decadal dummies. Since there are no other covariates, this specification addresses the question of unconditional convergence. In columns 2-4, we add time and state fixed effects to answer the question of whether there is conditional convergence. In columns 1 and 2, the ordinary least squares estimator is used, while the estimation in columns 3 and 4 are based on the GMM procedure.[24] For our purposes, the important point is not whether there is convergence or divergence on average (which seems to depend on the procedure used) but that regardless of estimation procedure, divergences accelerated in the 1990s (also see Aiyar, 2001). The coefficient on the beginning-of-period state income term interacted with an indicator for the 1990s is positive and significant, suggesting richer states grew faster in the 1990s (and the coefficient of the interaction term is greater in magnitude than in previous decades).

We can see the decentralization dynamic in yet another way: if decentralization was indeed important, then states' economic performance should be more closely tied to state-level policies and institutions in the post-1980s period than before. After all, if the pre-1980s era was

[24] The ordinary least squares estimation is inconsistent in the presence of a lagged dependent variable and fixed effects, but the GMM procedures do not suffer from this shortcoming.

about the center deciding, for example, where and how much electricity capacity to install, there is little that the states could have done to affect economic performance within their borders.

In terms of analysis, this suggests that state level explanatory variables should be more meaningful in state level growth regressions for the post-1980s period than before. The explanatory variables we focus on are measures of state-level infrastructure and institutions. We could hope to pick up their effects in two kinds of regressions. In the first, we use the Rajan-Zingales (1998) methodology to ascertain the specific impact of infrastructure development: if the quality of infrastructure were a constraint, in states that have better infrastructure, industries that are more infrastructure-intensive should grow faster. Moreover, to the extent that state policies began to matter with some lag, after initial reforms in the 1980s and accelerating decentralization in the coalition governments of the 1990s, we should see the effects most pronounced in the later decade.

For the 1980s and 1990s, we have 2-digit industry growth data. Next, we need a measure of state-level infrastructure development. Such measures of infrastructure development could include electricity generation capacity per capita or the extent of road and rail networks. There are three problems with these measures. First, they were largely central government determined, often a legacy of the pre-reform era. Second, capacity creation could have been related to prospects of growth. Third, infrastructure capacity could be quite different from infrastructure quality.

Instead, as a joint measure of infrastructure capability as well as state policies affecting the quality of infrastructure and the business environment, we use the transmission and distribution losses (T&D losses) of state level electricity boards (as a fraction of generating capacity). Transmission and distribution losses refer to power that is generated but not paid for—

in part because some of it is lost naturally along power lines in the process of transmission and distribution, but also in part because it is stolen. In areas where T&D losses are high, the quality of power, as reflected in the voltage as well as reliability, is low. Thus T&D losses are not directly related to capacity, but are determined by state-level political decisions. They broadly reflect the quality of both infrastructure and institutions (politicians turning a blind eye to power theft by their constituencies, or politicians' unwillingness to enforce laws, as well as viability and level of corruption in state electricity boards).

As a measure of infrastructure intensity of an industry, we use the amount of electricity consumed per unit of value added in that industry, obtained from Indian input-output tables In Panel A of Table 9, we report regressions in which the growth rate of industry i in state s is regressed on industry and state fixed effects and interactions between our infrastructure development and infrastructure intensity measures. In column 1 we present the results for the 1980s and in column 2 for 1990s;[25] We find that the coefficient on the interaction is negative and significant for the 1990s but not for the 1980s. That is, for the 1990s, we find that in states that have more T&D losses (worse infrastructure and institutions), industries that are intensive in the use of electricity grow slower. These results suggest that decentralization is affecting the growth dynamic because a state-level policy variable has started influencing a state-level outcome.

More generally, state level institutions do appear to have had a greater impact on state growth, not just on infrastructure intensive industries. As Figure 17 shows, there is a negative

[25] We cannot run these regressions for the 1970s because we do not have state and sector level manufacturing data.

correlation between the average T&D losses in 1980-2000 in a state and its growth during that period.

In Table 9, Panel B, we explore this further. We estimate regressions where the dependent variable is the decadal average of annual state growth rates. All regressions include state and period fixed effects, initial income interacted with time effects (not reported), and a measure of state-level institution (I) interacted with time effects as explanatory variables. Institutions should not yield significant coefficients for the pre-1990s period if decentralization really took hold in the latter period of reforms.[26] In columns 1-3 we report the coefficient estimates for different combinations of the controls when the measure of institutions is T&D losses. In columns 4-8, we vary the measure of state-level institutions (including, successively, measures of investment climate, infrastructure penetration, financial sector, mass media, and primary school education). In all cases, we find that the interaction coefficient for the 1970s and (in seven out of eight cases for the) 1980s are insignificant while the coefficient for the 1990s is significant and has the expected sign. This suggests a tighter relationship between state level institutions and state level performance in the 1990s.[27]

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[26] In these regressions, the measure of institutions is time-invariant, measured either as the average for the 1980-2000 period or for 2000. This raises concerns about endogeneity. Our assumption, however, is that institutional quality is fairly persistent. This is consistent with the high correlation between the historically determined Banerjee and Iyer (2005) measure of the non-landlord holdings in colonial India, which could be interpreted as a measure of the historical determinants of current institutions, and contemporary institutions. For example, the correlation between the Banerjee-Iyer measure and the measure of current investment climate is 0.77.

[27] These results on the impact of institutions (in Table 9) broadly hold even after controlling for the initial level of capability, for which we use the initial value of the Herfindahl index as a proxy.

Finally, we check whether diversification (our measure of state level capabilities) and institutional quality proxy for the same thing. In columns 5-6 and 11-12 of Table 7, the coefficient on diversification interacted with the 1990s dummy is significant even after controlling for the quality of the institutions in the states (columns 5 and 11) and for literacy levels (columns 6 and 12). Thus, the diversification measure is picking up something beyond the institutional quality in these states.

In sum, both state level capabilities and state level policies and institutions seem to start mattering in the 1990s. With the center no longer enforcing inter-state equity, divergences in growth rates between states increased. These divergences raise a number of questions that we now turn to.

6. Looking ahead

Where is India headed? Comparing the level of income at which the average country in the cross-section exhibits a declining share of manufacturing and increasing diversification, with that at which the fast-growing states exhibit the same characteristic or "pathology" shows that the Indian states have started behaving like industrial countries at nearly a quarter or one-fifth of their income levels. For example, manufacturing should normally start declining at about US$14,700 per capita: yet, Karnataka and Maharashtra have seen a decline in the share of manufacturing at an income per capita of about US$2,700 and US$3,400, respectively. A similar pattern is evident with respect to diversification.

With the caveat that Indian states are vast entities, internally very diverse, it would appear that the fast growing peninsular states are starting to resemble more developed

countries in their specialization, while the slow growing hinterland states, with their still rapidly growing, less well-educated, populations are falling behind.

Indeed, there are additional reasons for concern. Visaria and Visaria (2003), projecting on current fertility rates in different states, suggest that 60 percent of the expected 620 million addition to the Indian population between now and 2051 will be in Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh; only 22 percent will be in the fast growing states of Kerala, Tamil Nadu, Andhra Pradesh, Karnataka, and Maharashtra. With populous laggard states like Uttar Pradesh and Bihar having substantial political power because of their numbers, the demands for redistribution will increase, as will migration. Such trends will create immense political strains between Indian states and the potential for serious differences.

It may well be that these hinterland states (as well as backward areas in the fast-growing states) will have to follow a more traditional path of growth, focusing on labor-intensive manufacturing. But they have not thus far.[28] That they have not may be because further reform is needed—in particular, more flexible labor laws and an improvement of infrastructure, especially vis-à-vis the states in the hinterland so that these industries can be internationally cost-competitive—to revitalize labor-intensive manufacturing.

Here again the weight of history may be telling. The archaic labor laws have strong organized constituencies, in particular, labor unions tied to political parties, backing them. Given the way Indian industry has specialized, the costs of these laws are not experienced by

[28] For example, Figure 9 illustrates that, between 1980 and 2000, the share of labor-intensive industries in total value added declined in Uttar Pradesh and Madhya Pradesh, and remained unchanged in Orissa and Bihar.

incumbents, and the political leadership, or will, to amend them has not emerged.[29] Furthermore, given that poor governance, which tends to be persistent (see footnote 28), in part, explains the slow growth of the hinterland states**,** the needed changes will be more difficult there.

Even if serious reforms were undertaken in the laggard states, competition from the more advanced states will not make it easy for them to grow. First, consider the output side. The laggard states are typically distant from ports and airports. Transportation costs will come down as infrastructure is built up, but it is unclear whether the improvements will help them out-compete the fast-growing peninsular states where many of the initial large-scale infrastructure projects are being undertaken, and where ancillary infrastructure exists. Even if India moves to using its unskilled labor, one might expect the effects to be seen first in the fast-growing states (which have their own share of surplus labor in agriculture) before trickling down to the laggard states.

On the input side, even labor-intensive unskilled manufacturing requires a skilled supervisory and managerial force. Despite the large numbers of graduates emerging from universities in India, the number of graduates with the skills to work in industry or the service sector is relatively limited. With the immense demand for skilled workers in the export-oriented

[29] In other words, most commentators look to existing firms to see if labor laws are a problem. But existing firms have adapted to these laws, as suggested both by their pattern of specialization and their scale. The more pertinent question is whether new firms are kept from entering because of the laws. The pattern of specialization in India suggest they are.

services industry, wages of skilled workers have been going up very fast.[30] Given the extremely competitive situation in (typically tradable) labor-intensive industries, highly paid supervisory skilled workers are affordable only if they are used very economically relative to the use of unskilled labor – if, for example, firms have scale.[31] Here again, the fast moving states where the business and political climate is more conducive to scale have an advantage. In sum, the fast-growing states could absorb the more mobile skilled labor from the slow moving states leading to a further hollowing out of prospects there.

The obvious solution is not to impede the growth of the fast-movers but to enhance the availability of the resource in scarce supply. While the earlier emphasis on funding tertiary education at the expense of primary education may well have been an aberration, India may now have too little tertiary education of the right kind at this juncture. India does produce an immense number of degree holders, but there are serious doubts about the quality of education many of them receive. The number of high-quality institutions is still very small, witness the extraordinary competition to get into them. In the same way as industry was delicensed, India needs to "delicense" higher education, remove the barriers to starting new institutions, as well as

[30] A recent issue of Business Week notes that: "As India's domestic economy expands, the shortfalls are spreading beyond tech. Wages for semi-skilled workers in the textile factories of Coimbatore, for example, are up 10 percent this year, while supervisors' salaries have risen by 20 percent. Pay in the banking industry is up 25 percent in the past year and has more than doubled in hot areas such as private equity. Airline pilots have seen wages rise 25 percent. Overall, Indian salaries will rise by 12.8 percent, compared with inflation of 5.5 percent, according to human resources consultancy Mercer, which warns that continued increases could hurt India's economic revival."

[31] Alternatively, the wages on unskilled labor may fall, but wages in agriculture may place a floor here.

encourage foreign direct investment here.[32] In short, from a policy perspective, the irony is that in order to promote unskilled labor-intensive activities in the future, a great deal of attention may need to be paid in fostering the supply of skilled labor. [33]

It may well be that new institutions of higher education are easier to start in the fast-growing states. If so, limits on access to out-of-state students (or a refusal to recognize results from other state examinations) need to be reduced, and educational standards harmonized across states, so that a truly all-India market for higher education can be created. This will then create a pool of skilled workers who will be essential to enhance the growth of the now-laggard states. In summary, then, changes since the early 1980s—the move toward pro-business and pro-market economic policies and economic and political decentralization have unleashed tremendous economic opportunities, but also—thanks to pre-existing patterns of specialization in favor of skill-based production—have unleashed the gale winds of divergence, big time. A unitary India, centralized politically and uniformly mediocre in economic performance has given way to multiple Indias with performance more related to the capabilities of individual states and the opportunities they create.

Ideally, of course, the laggard states would reform on their own—push for scrapping archaic labor laws, improve infrastructure and the business climate —and utilize their vast pools

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[32] Here the government has an obvious role in setting standards and assessing quality, but there is also the danger that the public sector education constituency will turn this function into barriers to entry.

[33] To some extent, there has been an encouraging endogenous response in terms of the increased demand for education throughout India triggered by the prospect of better income opportunities (see Rodrik and Subramanian, 2004). In fact, using Mincerian wage regressions, Desai et al. (2005) show that the returns to education have increased substantially for the two highest levels of educational attainment between 1994 and 1999.

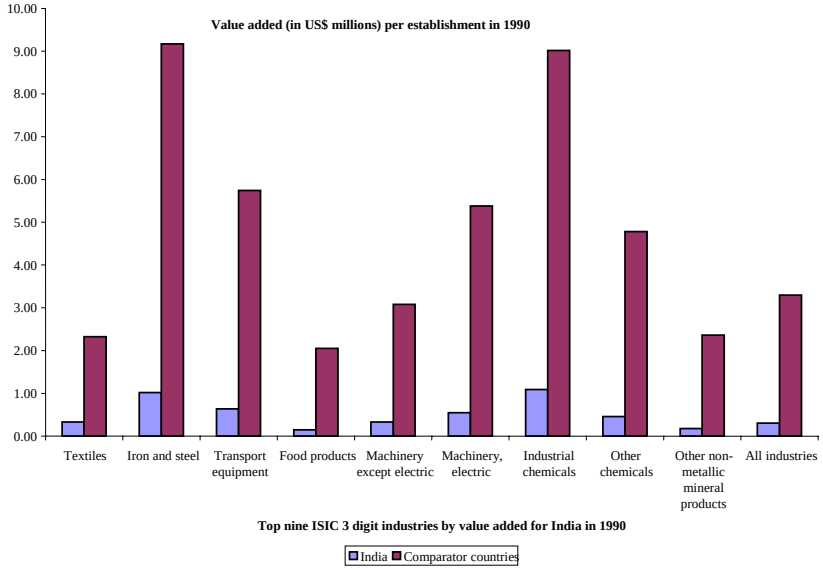
of underemployed low-cost labor to attract investment in labor-intensive manufacturing and agri-business. They would thereby catch up with the leading states in India.[34]

In this scenario, the pattern of convergence that we observed in the post-war period between industrial countries and the East Asian economies would play itself out within India in the future. The recent revival of manufacturing growth (we do not have complete data on the most recent years, hence this revival is not captured by our study), albeit seemingly heavily concentrated in skill-intensive and capital-intensive industries, offers some hope for this scenario.

However, even if the needed reforms were to occur, there is a possibility that powerful forces emanating from the common market for resources could slow convergence. If they were to do so, India will have to brace itself for a lot of social churning as people move not just in search of jobs but also in search of acquiring the human capital to become employable. How India reacts to, and shapes, these forces may well be the biggest economic question India faces over the next few decade.

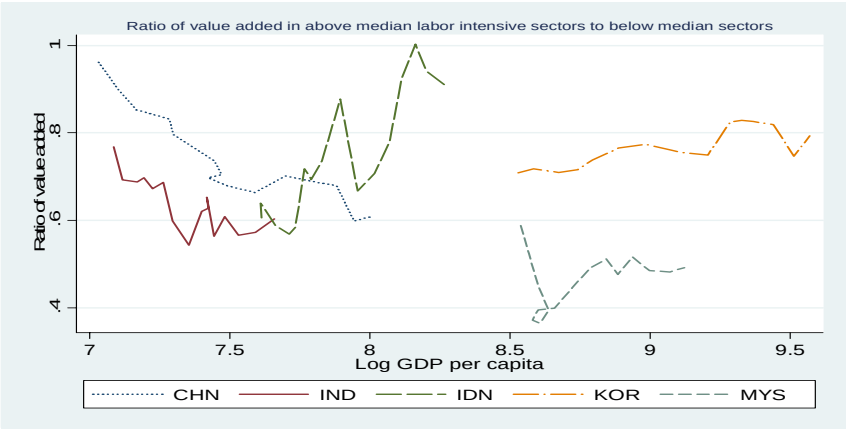
[34] Convergence could also come about if labor moves across states but labor mobility, especially for the low-skilled, seems limited in India; low mobility stems from the lack of a portable safety net as well as antiquated land laws that reduce the availability of low-cost housing for migrants.

Figure 1. Average Firm Size in India and Comparator Countries in 1990



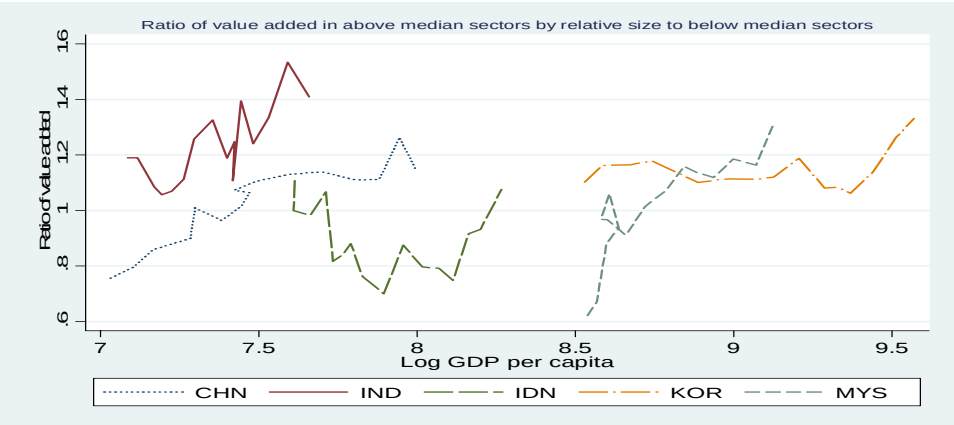
Sources: Authors' calculations; UNIDO 3-digit industrial statistics database (2003).
Notes: The nine industries shown here account for 76 percent of value added of the manufacturing sector in 1990 for India. The group of comparator economies includes Brazil, Chile, China, Hong Kong SAR, Indonesia, Korea, Malaysia, Singapore and Turkey. For this group the ratio of total value added in manufacturing from UNIDO to the total value added in manufacturing from WDI is greater than that for India in 1990.

Figure 2. Value-Added Share of Labor Intensive Industries



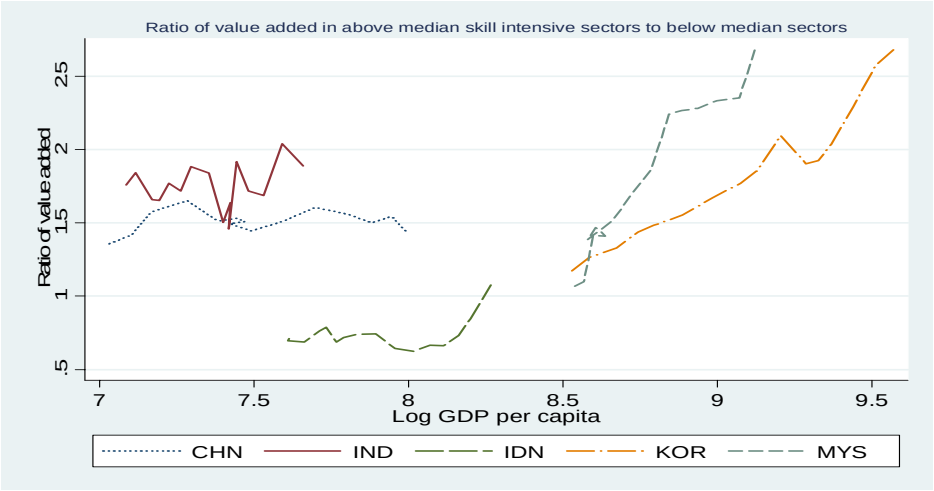
Sources: Authors' calculations; UNIDO 3-digit industrial statistics database (2003).
Notes: The sample for all countries includes observations from 1981 to 1996. The classification of above and below median labor-intensive sectors is given in Table 3. CHN stands for China, IND for India, IDN for Indonesia, KOR for Korea, and MYS for Malaysia.

Figure 3. Value-Added Share of Industries with Large Scale



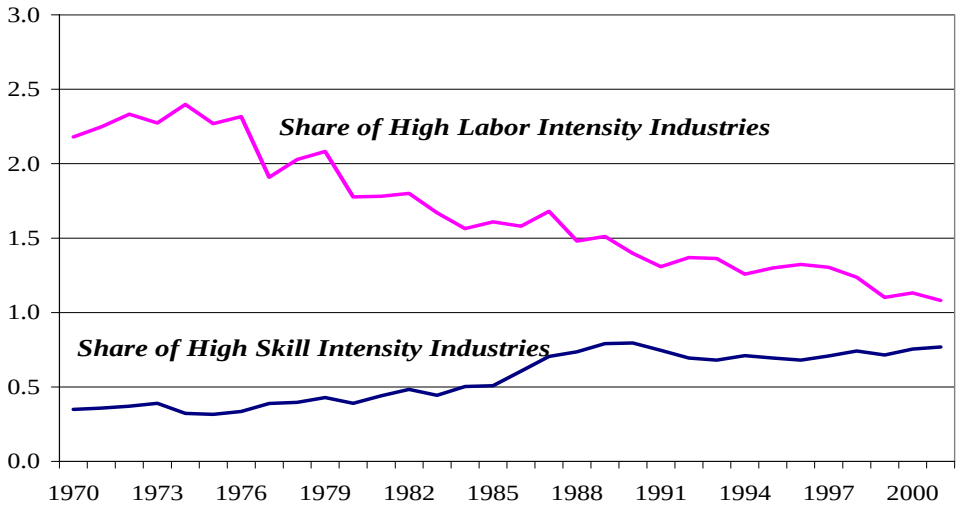
Sources: Authors' calculations; UNIDO 3-digit industrial statistics database (2003).
Notes: The sample for all countries includes observations from 1981 to 1996. Relative size is as defined in the text. The classification of above and below median sectors by relative size is given in Table 3. CHN stands for China, IND for India, IDN for Indonesia, KOR for Korea, and MYS for Malaysia.

Figure 4. Value-Added Share of Skill Intensive Industries



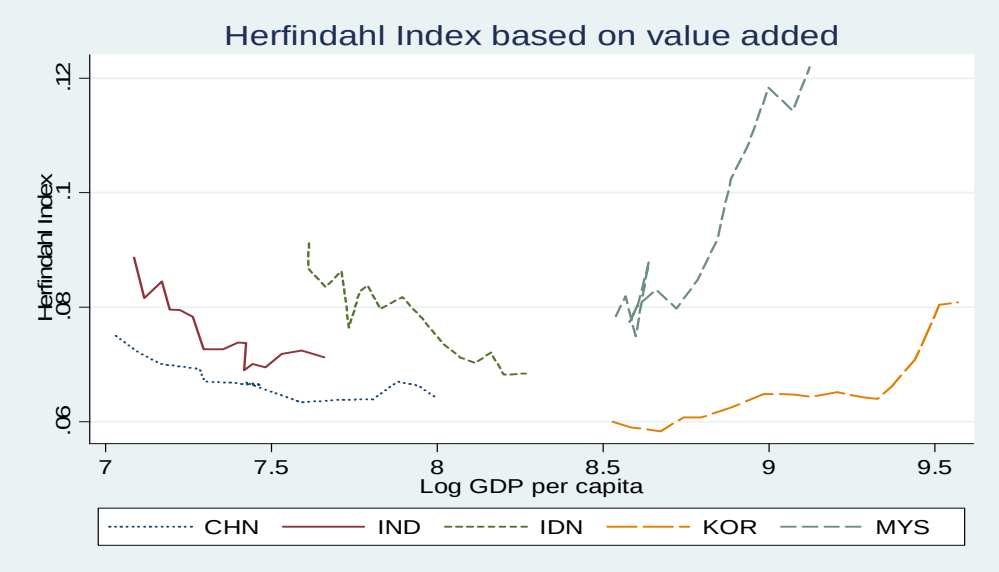
Sources: Authors' calculations; UNIDO 3-digit industrial statistics database (2003).
Notes: The sample for all countries includes observations from 1981 to 1996. The classification of above and below median skill intensive sectors is given in Table 3. CHN stands for China, IND for India, IDN for Indonesia, KOR for Korea, and MYS for Malaysia.

Figure 5. Value-Added Shares in Unregistered Manufacturing



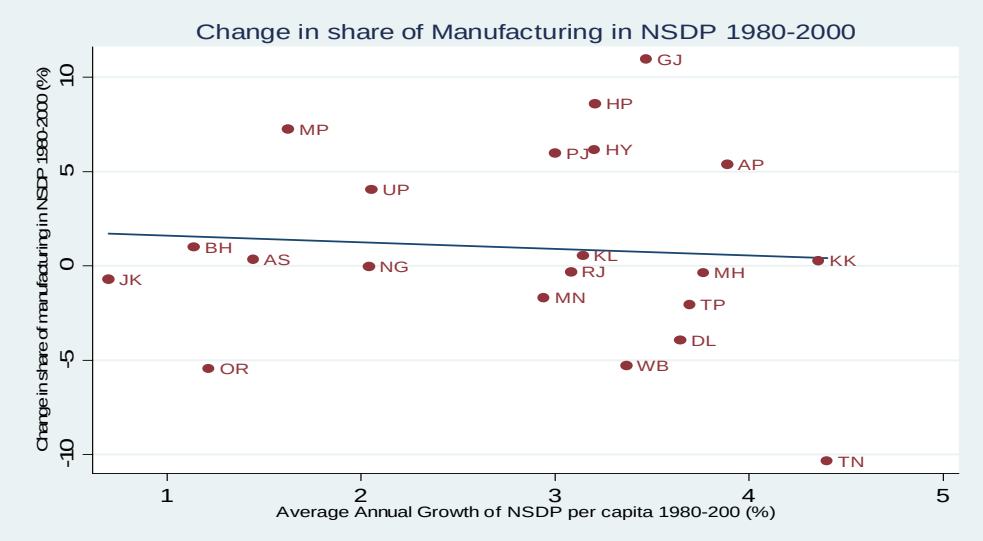
Source: Authors' calculations; data on unregistered manufacturing are from the Central Statistical Organization, Government of India.
Notes: The share of high labor (skill) intensity industries is the ratio of value added in sectors with above-median labor (skill) intensity to that in sectors with below-median labor (skill) intensity. The relevant sector classification is given in Table 3.

Figure 6. Diversification in Indian Manufacturing



Sources: Authors' calculations; UNIDO 3-digit industrial statistics database (2003).
Notes: The sample for all countries includes observations from 1981 to 1996. CHN stands for China, IND for India, IDN for Indonesia, KOR for Korea, and MYS for Malaysia. For each country, the Herfindahl Index measures concentration in the value added across sectors; the lower the index, the lower the concentration, or the higher the diversification.

Figure 7. Manufacturing and States' Growth

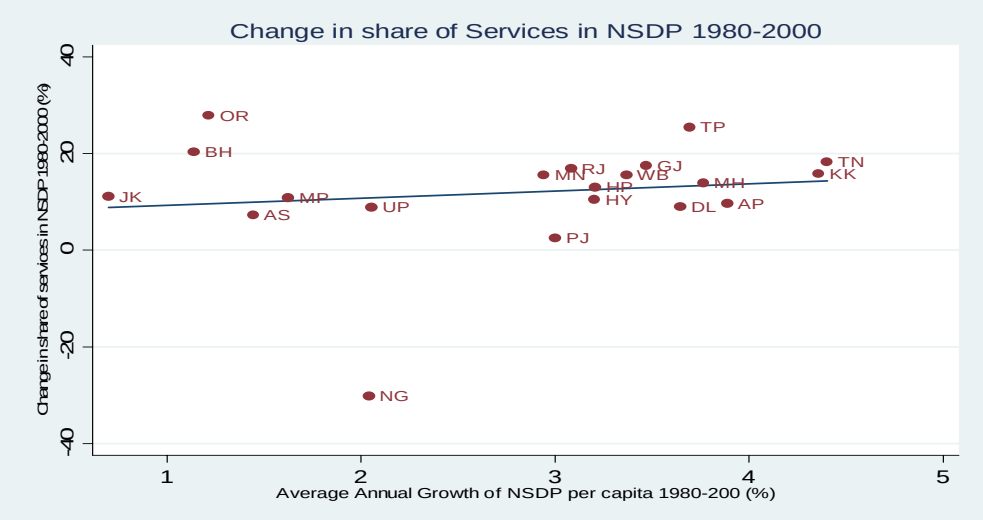


Sources: Authors' calculations; EPW Research Foundation, Domestic Product of States of India: 1960-61 to 2000-01. Notes: NSDP is net state domestic product.

.

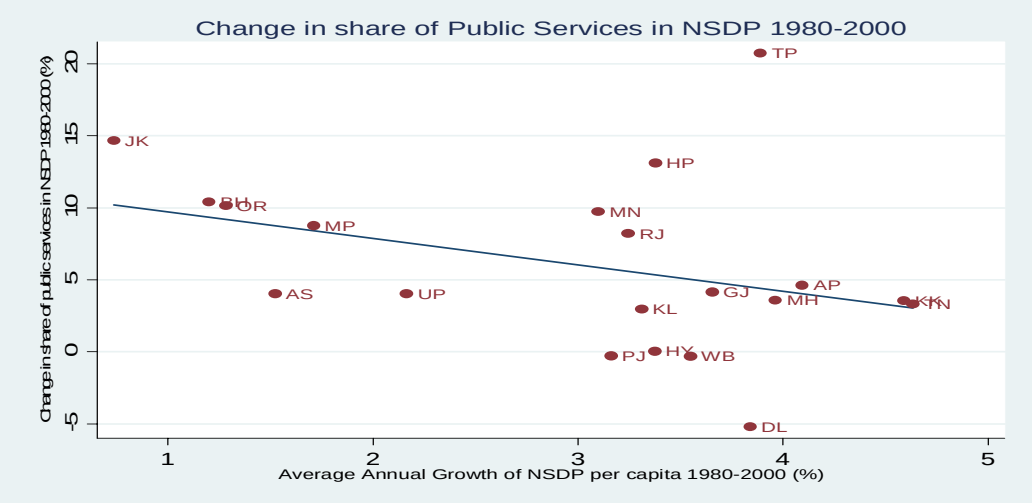
Code	State	Code	State	Code	State
AP	Andhra Pradesh	JK	Jammu & Kashmir	OR	Orissa
AS	Assam	KK	Karnataka	PJ	Punjab
BH	Bihar	KL	Kerala	RJ	Rajasthan
DL	Delhi	MH	Maharashtra	TN	Tamil Nadu
GJ	Gujarat	MN	Manipur	TP	Tripura
HP	Himachal Pradesh	MP	Madhya Pradesh	UP	Uttar Pradesh
HY	Haryana	NG	Nagaland	WB	West Bengal

Figure 8. Services and States' Growth



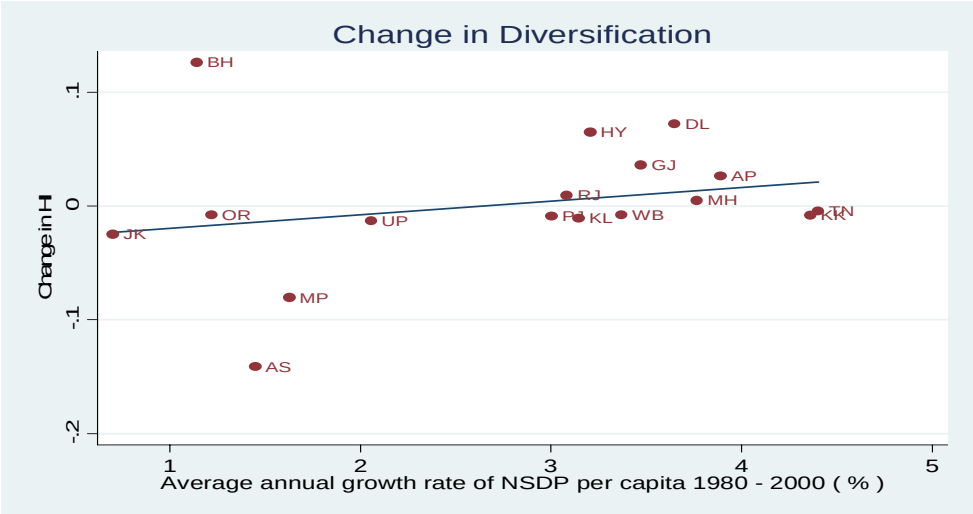
Sources: Authors' calculations; EPW Research Foundation, Domestic Product of States of India: 1960-61 to 2000-01. Notes: NSDP is net state domestic product.

Figure 9. Public Services and States' Growth



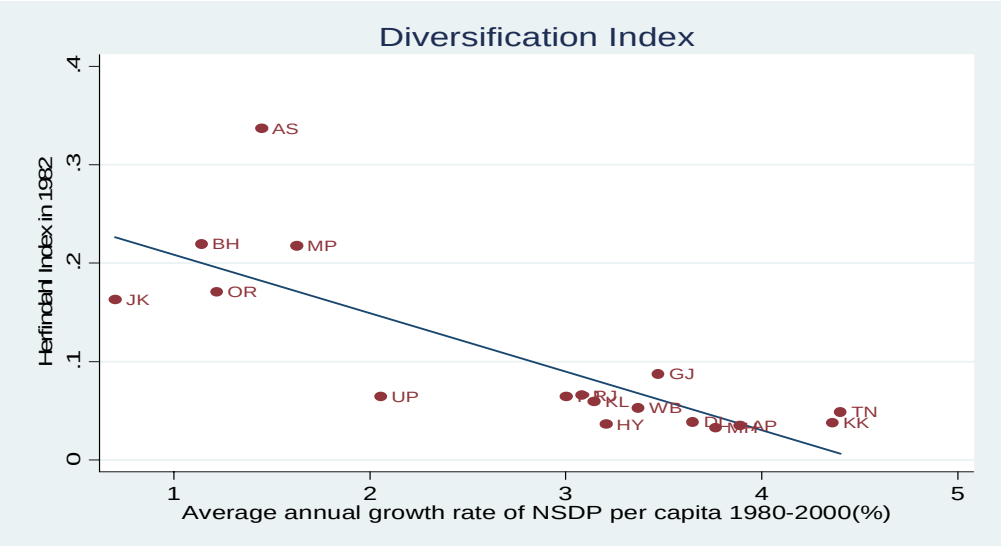
Sources: Authors' calculations; EPW Research Foundation, Domestic Product of States of India: 1960-61 to 2000-01. Notes: NSDP is the net state domestic product; selected public sector services include electricity, public administration, railways and other public sector services.

Figure 10. Change in Diversification and States' Growth



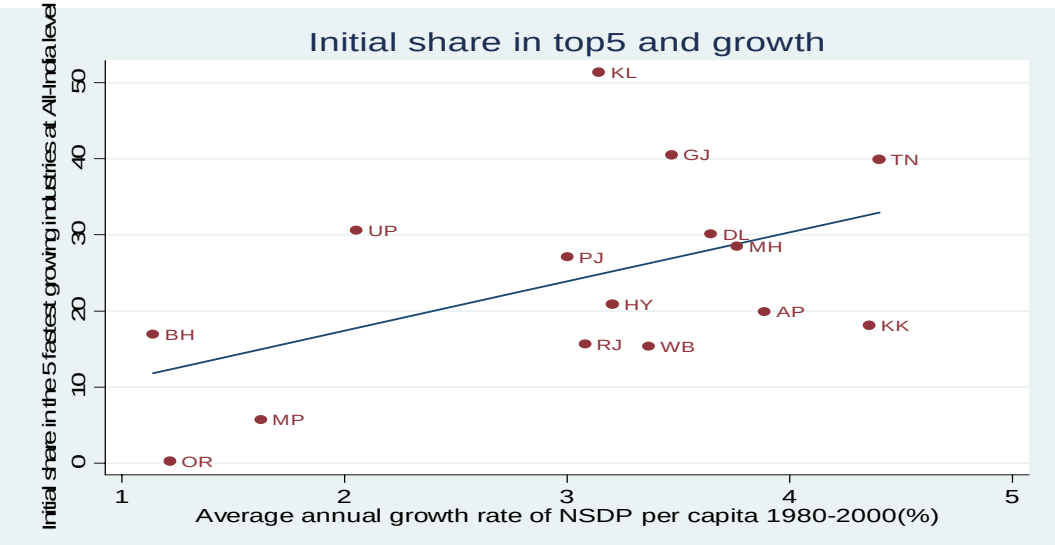
Sources: Authors' calculations; EPW Research Foundation , Domestic Product of States of India: 1960-61 to 2000-01; 3-digit industry level data at the state level from Circon India Data Center.
Notes: NSDP is the net state domestic product. For each state, the Herfindahl Index (HI) measures the concentration of value added across 3-digit industries; the change in the Index is the difference between its average value for 1982, 1984, and 1985, and its average value for 1995-1997.

Figure 11. Initial Diversification and States' Growth



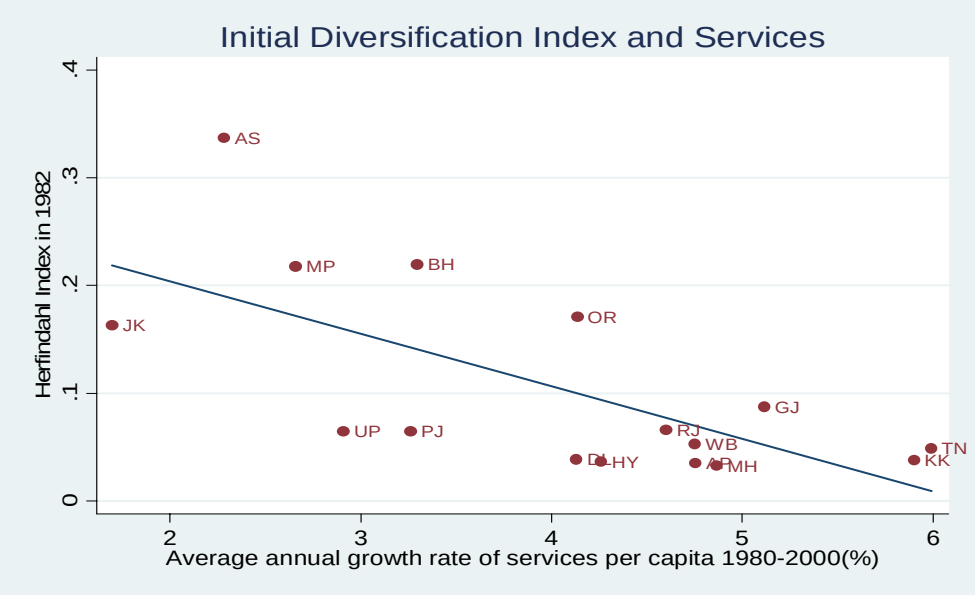
Sources: Authors' calculations; EPW Research Foundation, Domestic Product of States of India: 1960-61 to 2000-01; 3-digit industry level data at the state level from Circon India Data Center.
Notes: NSDP is the net state domestic product. For each state, the Herfindahl Index measures concentration of value added across 3-digit industries in 1982; the lower the index, the lower the concentration, or the higher the diversification.

Figure 12. Initial Shares in Manufacturing and States' Growth



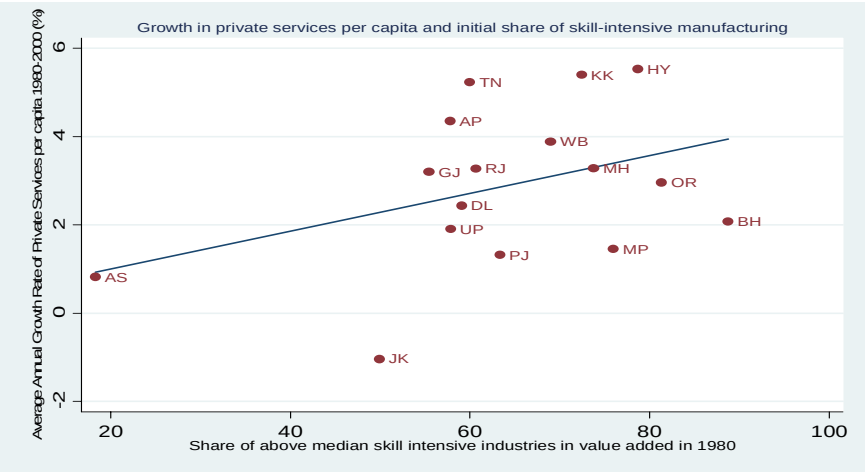
Sources: Authors' calculations; EPW Research Foundation CD-ROMs, Domestic Product of States of India: 1960-61 to 2000-01 and Annual Survey of Industries for 2-digit industry level.
Notes: NSDP is the net state domestic product. The vertical axis measures the share of the 5 fastest growing industries (in India) in total value added for the state in 1982. The 5 fastest growing industries are: Manufacture of textile products (26), Other Manufacturing Industries (including Manufacture of Scientific Equipment, Photographic / Cinematographic Equipment and Watches & Clocks) (38), Manufacture of Leather and Leather Products, Fur & Leather Substitutes (29), Manufacture of Basic Chemicals and Chemical Products (Except Products of Petroleum and Coal) (30), Manufacture of Rubber, Plastic, Petroleum and Coal Products; Processing of Nuclear Fuels (31).

Figure 13. Initial Diversification and Services



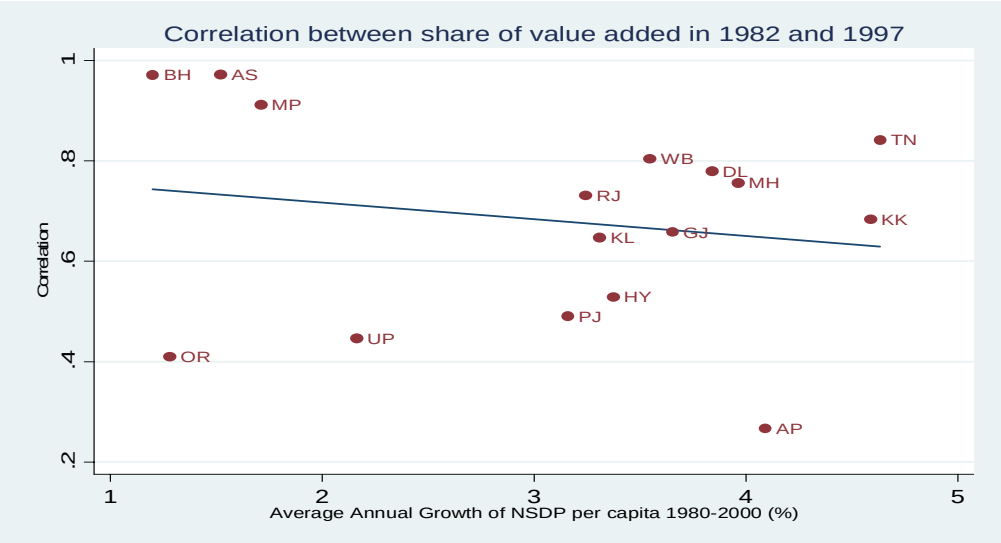
Sources: Authors' calculations; EPW Research Foundation CD-ROMs, Domestic Product of States of India: 1960-61 to 2000-01; 3-digit industry level data at the state level from Circon India Data Center.
Notes: For each state, the Herfindahl Index measures concentration of value added across 3-digit industries in 1982; the lower the index the lower the concentration, or the higher the diversification.

Figure 14: Initial Share in Skill-Intensive Manufacturing and Private Services Growth



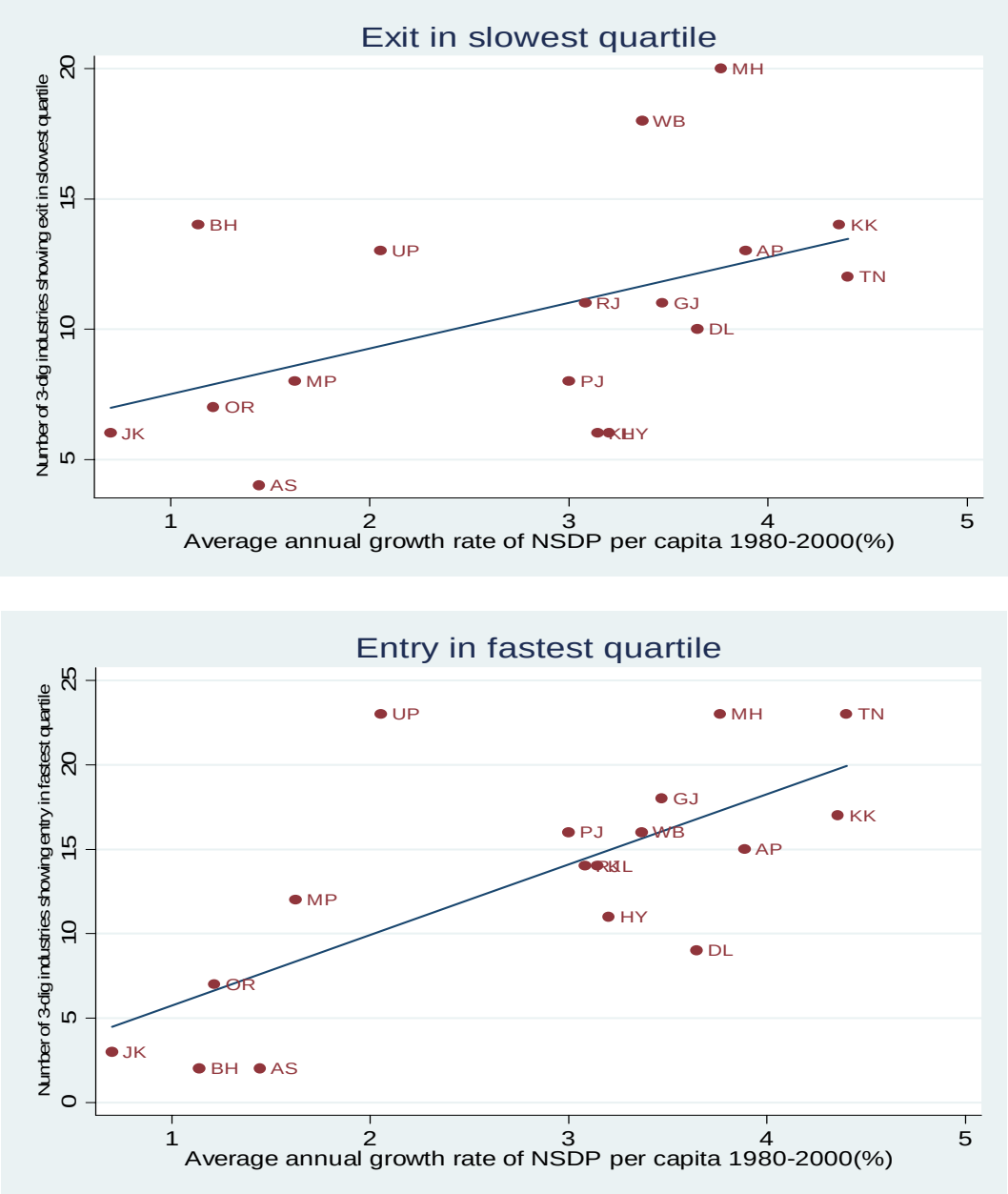
Sources: Authors' calculations; EPW Research Foundation CD-ROMs, Domestic Product of States of India: 1960-61 to 2000-01 and Annual Survey of Industries for 2-digit industry level.
Notes: Selected private sector services include business services, real estate and retail trade. The vertical axis depicts the average annual growth of private services per capita over the period 1980-2000. On the horizontal axis is the share of the value added by the above median skill intensive industries in 1980 in each state at 2-digit industry level.

Figure 15. Persistence in Industry Share and States' Growth



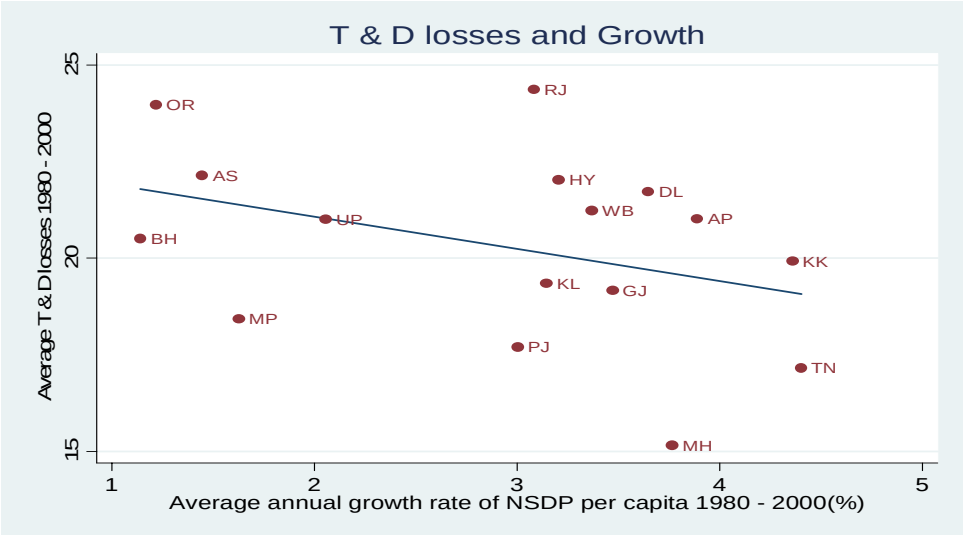
Sources: Authors' calculations; EPW Research Foundation , Domestic Product of States of India: 1960-61 to 2000-01; 3-digit industry level data (NIC-1987) at the state level from Circon India Data Center.
Notes: NSDP is the net state domestic product. The vertical axis depicts the correlation between the share of value added in 1982 and 1997 at the 3-digit industry level data (NIC-1987).

Figure 16. Manufacturing Sector Growth and Entry and Exit



Sources: Authors' calculations; EPW Research Foundation , Domestic Product of States of India: 1960-61 to 2000-01; 3-digit industry level data at the state level from Circon India Data Center.
Notes: NSDP is the net state domestic product. In the top panel, the vertical axis depicts, for each state, the number of industries at the 3-digit level, with an average value added growth between 1980-2000 in the slowest quartile, that record a net reduction in the number of establishments. In the bottom panel, the vertical axis depicts, for each state, the number of industries at the 3-digit level, with an average value added growth in the fastest quartile, that record a net addition in the number of establishments.

Figure 17. Transmission and Distribution Losses and States' Growth



Sources: Authors' calculations; EPW Research Foundation, Domestic Product of States of India: 1960-61 to 2000-01.

Notes: NSDP is the net state domestic product. Transmission and distribution losses (T&D) is the fraction of electrical power generated but not paid for, measured as a percent of availability.

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Table 1. Sectoral Shares in Value-Added and Employment

	Value Added as Percent of GDP				Employment in Sector as Percent of Total Employment		
	(1) Agriculture	**(2)** Manufacturing	**(3)** Industry	**(4)** Services	**(5)** Agriculture	**(6)** Industry	**(7)** Services
				1980			
India	38.9	16.3	24.5	36.6	68.1	13.9	18.6
Brazil	11.0	33.5	43.8	45.2	29.3	24.7	46.1
China	30.1	40.5	48.5	21.4	68.7	18.2	11.7
Indonesia	24.0	13.0	41.7	34.3	55.9	13.2	30.2
Korea	15.1	28.6	40.5	44.4	34.0	29.0	37.0
Malaysia	22.6	21.6	41.0	36.3	37.2	24.1	38.7
Mexico	9.0	22.3	33.6	57.4	23.5	26.5	49.0
Thailand	23.2	21.5	28.7	48.1	70.8	10.3	18.9
Turkey	26.4	14.3	22.2	51.4	43.0	34.9	22.1
Low income	36.4	14.8	24.4	39.2	74.6	8.7	16.5
Lower middle income	21.5	29.1	41.7	36.8	64.0	18.5	16.4
				2000			
India	24.6	15.9	26.6	48.8	59.3	18.2	22.4
Brazil	7.3	17.1	28.0	64.7	24.2	19.3	56.5
China	16.4	34.7	50.2	33.4	46.9	23.0	29.9
Indonesia	17.2	24.9	46.1	36.7	45.3	17.3	37.3
Korea	4.3	26.1	36.2	59.5	10.9	28.0	61.0
Malaysia	8.8	32.6	50.7	40.5	18.4	32.2	49.5
Mexico	4.2	20.3	28.0	67.8	17.5	26.9	55.2
Thailand	9.0	33.6	42.0	49.0	48.8	19.0	32.2
Turkey	15.4	15.7	25.3	59.4	34.5	24.5	40.9
Low Income	27.3	14.1	26.6	46.1	64.5	12.3	23.2
Lower Middle Income	12.5	24.2	38.3	49.1	43.2	18.5	38.3

Sources: World Bank, World Development Indicators 2005, except Korea, OECD-Structural Analysis Database, and India, National Accounts Statistics, Indiastat.com.
Notes: For the low income, and lower middle income groups as classified by the World Bank, we report the respective averages. Employment shares are reported for the years indicated, except India (1983), Brazil (1981 and 1999), and Turkey (1982). Employment shares for the low-income group for 2000 are estimates.

Table 2. India in the Cross Section: Share of Manufacturing and Services, Early 1980s

	Share of Output (1981)				Share of Employment (1983)			
	Manufacturing		Services		Industry		Services	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Log GDP per capita	15.37	21.58	36.27**	27.81	26.76	22.09	66.5**	67.20**
	(14.58)	(13.75)	(17.01)	(17.79)	(20.8)	(20.8)	(29.07)	(30.07)
Log GDP per capita	-0.73	-1.09	-1.95*	-1.46	-1.17	-0.92	-3.15*	-3.19*
	(0.88)	(0.83)	(1.03)	(1.08)	(1.2)	(1.2)	(1.71)	(1.76)
India indicator	4.58***	2.33	-6.50***	-3.55**	-0.260	0.560	-7.41**	-7.53**
	(1.25)	(1.76)	(1.3)	(1.61)	(2.52)	(2.82)	(3.27)	(3.63)
Control for country size	No	Yes	No	Yes	No	Yes	No	Yes
Observations	101	101	122	122	44	44	43	43

Notes: Robust standard errors are reported in parentheses.

***represents significance at 1 percent, **represents significance at 5 percent, *represents significance at 10 percent levels.

Country size is measured by area in square kilometers.

Table 3. Classification of Industries by Labor Intensity, Size and Skill Intensity

	BY LABOR INTENSITY		BY RELATIVE SIZE		BY SKILL INTENSITY	
	ISIC Code	INDUSTRY DESCRIPTION	ISIC Code	INDUSTRY DESCRIPTION	ISIC Code	INDUSTRY DESCRIPTION
	322	Wearing apparel	353	Petroleum Refineries	353	Petroleum Refineries
A	342	Printing & Publishing	314	Tobacco	342	Printing & Publishing
B	382	Machinery except electric	371	Iron & steel	352	Other chemicals
O	332	Furniture, except metal	351	Industrial chemicals	385	Professional and scientific equipment
V	324	Footwear, except rubber or plastic	313	Beverages	383	Machinery, electric
E	321	Textiles	372	Non-ferrous metals	384	Transport Equipment
	331	Wood products, except furniture	352	Other chemicals	382	Machinery except electric
M	384	Transport Equipment	354	Misc Petroleum and coal pdts	351	Industrial chemicals
E	361	Pottery, China, earthenware	341	Paper and products	332	Furniture, except metal
D	323	Leather products	383	Machinery, electric	381	Fabricated Metal products
I	381	Fabricated Metal products	384	Transport Equipment	371	Iron & steel
A	362	Glass and products	362	Glass and products	390	Other manufacturing products
N	385	Professional and scientific equipment	361	Pottery, China, earthenware	356	Plastic products
	390	Other manufacturing products	385	Professional and scientific equipment	355	Rubber products
	355	Rubber products	355	Rubber products	314	Tobacco
B	341	Paper and products	324	Footwear, except rubber or plastic	354	Misc. Petroleum and coal products
E	371	Iron & steel	356	Plastic products	313	Beverages
L	383	Machinery, electric	311	Food products	311	Food products
O	369	Other non-metallic mineral products	321	Textiles	369	Other non-metallic mineral products
W	311	Food products	369	Other non-metallic mineral pdts	322	Wearing apparel
	352	Other chemicals	382	Machinery except electric	372	Non-ferrous metals
M	356	Plastic products	342	Printing & Publishing	321	Textiles
E	351	Industrial chemicals	323	Leather products	341	Paper and products
D	372	Non-ferrous metals	322	Wearing apparel	324	Footwear, except rubber or plastic
I	354	Misc. Petroleum and coal products	381	Fabricated Metal products	362	Glass and products
A	313	Beverages	390	Other manufacturing products	323	Leather products
N	314	Tobacco	331	Wood products, except furniture	331	Wood products, except furniture
	353	Petroleum Refineries	332	Furniture, except metal	361	Pottery, China, earthenware

	Correlation		Rank Correlation	
	Labor Intensity	Skill Intensity	Labor Intensity	Skill Intensity
Skill Intensity	0.10		0.01	
p-value	(0.63)		(0.97)	
observations	26		26	
Relative size	-0.59***	-0.01	-0.74***	0.13
p-value	(0.00)	(0.94)	(0.00)	(0.53)
observations	28	26	28	26

Sources: Labor intensity, Rajan and Subramanian, (2005), Relative Size (as defined in text), UNIDO, 2003, Skill intensity, South Africa's National Accounts.
Notes: In each subgroup, the industries are ranked by descending order of the corresponding measure of intensity or size. Labor intensity is measured by the share of wages in value added for the industry in a country, averaged across a broad group of developing countries, as in Rajan and Subramanian (2005).
Relative size is the ratio of value added per establishment within the industry over the value added per establishment within the country, averaged across countries for each industry.
Skill is measured by the ratio of the remuneration of highly skilled and skilled labor over the total value added of the industry.

Table 4: India in the Cross Section, Labor Intensity, Skill Intensity, Scale and Diversification, 1981

	A. Ratio of value added in above median sectors to below median sectors			*Concentration Index*
	Labor Intensity	**Skill Intensity**	**Scale**	**Based on valued added**
Log GDP per capita	-0.77	-3.89***	0.33	-0.02***
	(1.13)	(1.35)	(1.39)	(0.01)
Log GDP per capita^2	0.04	0.26***	-0.01	0.001**
	(0.07)	(0.08)	(0.08)	(0.0004)
India Dummy	0.17	1.28***	0.47***	-0.07***
	(0.13)	(0.2)	(0.14)	(0.02)
Control for size	Yes	Yes	Yes	Yes
Observations	80	80	80	80
	B. Ratio of employment in above median sectors to below median sectors			*Concentration Index*
	Labor Intensity	**Skill Intensity**	**Scale**	**Based on employment**
Log GDP per capita	-0.60	-4.27***	-1.44	-0.02***
	(1.03)	(1.30)	(0.96)	(0.006)
Log GDP per capita^2	0.04	0.28***	0.1*	0.001***
	(0.06)	(0.08)	(0.06)	(0.0003)
India Dummy	-0.18	0.25	0.31***	-0.06***
	(0.13)	(0.16)	(0.09)	(0.02)
Control for size	Yes	Yes	Yes	Yes
Observations	81	81	81	81
	C. Ratio of value added per worker in above median sectors to below median sectors			
	Labor Intensity	**Skill Intensity**	**Scale**	
Log GDP per capita	-1.53***	0.48	4.06***	
	(0.59)	(0.91)	(1.49)	
Log GDP per capita^2	0.09***	-0.04	-0.26***	
	(0.03)	(0.05)	(0.09)	
India Dummy	0.17**	1.08***	-0.26	
	(0.08)	(0.12)	(0.23)	
Control for size	Yes	Yes	Yes	
Observations	74	74	74	

Notes: For the concentration indices, GDP per capita and area are not in log terms and GDP per capita^2 is the square of GDP per capita
Area measured in sq km is used as measure of size
Concentration Index is measured by Herfindahl Index
Robust standard errors are reported in parentheses
***represents significance at 1%, **represents significance at 5%, *represents significance at 10%

Table 5. India in the Cross Section: Shares of Manufacturing and Services, 2000

Panel A

	Share of output				*Share of employment*			
	Manufacturing		Services		Industry		Services	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log GDP per capita	13.18**	15.41**	10.88	8.01	51.79***	52.4***	38.99	39.69*
	(6.41)	(6.38)	(10.34)	(10.3)	(11.28)	(11.23)	(23.91)	(23.83)
Log GDP per capita	-0.610	-0.72*	-0.19	-0.040	-2.67***	-2.71***	-1.49	-1.54
	(0.12)	(0.38)	(0.6)	(0.6)	(0.62)	(0.63)	(1.31)	(1.3)
India indicator	2.4***	0.26	-0.05	3.77**	0.56	1.13	-17.22***	-16.57***
	(0.73)	(1.11)	(1.17)	(1.46)	(1.17)	(1.36)	(3.03)	(3.78)
Control for size	No	Yes	No	Yes	No	Yes	No	Yes
Observations	149	149	156	156	76	76	74	74

Panel B

	Change in share of output (1981-2000)		*Change in share of employment (1983-2000)*	
	Manufacturing	Services	Industry	Services
	(1)	(2)	(3)	(4)
Log initial GDP per capita	-1.91***	3.96***	-3.37***	2.91**
	(0.66)	(0.77)	(0.92)	(1.39)
Average annual growth rate	0.7**	0.41	0.47	-0.18
	(0.33)	(0.53)	(0.6)	(0.64)
India indicator	-2.57*	9.87***	1.70	0.94
	(1.37)	(1.63)	(2.05)	(3.59)
Observations	93	116	39	38

Notes: Robust standard errors are reported in parentheses

***represents significance at 1 percent, **represents significance at 5 percent, *represents significance at 10 percent

Country size is measured by area in square killometers.

Table 6: India in the Cross Section, Labor Intensity, Skill Intensity, Scale and Diversification, 2000

	A. Ratio of value added in above median sectors to below median sectors			*Concentration Index*
	Labor Intensity	**Skill Intensity**	**Scale**	**Based on valued added**
Log GDP per capita	-1.87	-1.14	0.79	-0.003
	(1.60)	(1.70)	(0.84)	(0.003)
Log GDP per capita^2	0.12	0.11	-0.04	0.0001
	(0.09)	(0.10)	(0.05)	(0.0001)
India Dummy	0.69	0.88***	0.32***	-0.05***
	(0.46)	(0.21)	(0.11)	(0.01)
Control for size	Yes	Yes	Yes	Yes
Observations	47	47	47	47
	B. Ratio of employment in above median sectors to below median sectors			***Concentration Index***
	Labor Intensity	**Skill Intensity**	**Scale**	**Based on employment**
Log GDP per capita	2.49	-1.22	-0.17	-0.01**
	(4.99)	(0.85)	(0.47)	(0.004)
Log GDP per capita^2	-0.14	0.10**	0.02	0.0003**
	(0.30)	(0.05)	(0.03)	(0.001)
India Dummy	-0.06	-0.01	0.21***	-0.09***
	(1.04)	(0.12)	(0.07)	(0.02)
Control for size	Yes	Yes	Yes	Yes
Observations	61	60	60	61
	C. Ratio of value added per worker in above median sectors to below median sectors			
	Labor Intensity	**Skill Intensity**	**Scale**	
Log GDP per capita	-1.05*	1.12	2.70*	
	(0.58)	(0.77)	(1.40)	
Log GDP per capita^2	0.07**	-0.07	-0.17**	
	(0.03)	(0.05)	(0.08)	
India Dummy	0.21***	0.95***	-0.62***	
	(0.07)	(0.13)	(0.19)	
Control for size	Yes	Yes	Yes	
Observations	47	47	47	

Notes: For the concentration indices, GDP per capita and area are not in log terms and GDP per capita^2 is the square of GDP per capita
Area measured in sq km is used as measure of size
Concentration Index is measured by Herfindahl Index
Robust standard errors are reported in parentheses
***represents significance at 1%, **represents significance at 5%, *represents significance at 10%

Table 7. Indian States: Diversification and Growth

	10 year state growth rates (1960-2000)						*20 year state growth rates (1960-2000)*					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
HI* Dummy for 1970s	4.77*	5.31*	4.01	0.83	0.80	0.79						
	(2.57)	(2.77)	(2.56)	(2.98)	(2.39)	(2.20)						
HI* Dummy for 1980s	-2.14	-2.17	-0.42	-4.59	-3.28	-2.49						
	(2.96)	(3.10)	(3.07)	(3.09)	(2.68)	(2.27)						
HI* Dummy for 1990s	-8.73**	-8.26**	-7.3*	-16.29***	-14.65***	-11.29**						
	(3.44)	(3.69)	(4.10)	(5.63)	(5.04)	(4.76)						
HI* Dummy for 1980-2000							-7.81***	-7.97**	-5.47*	-8.72**	-6.75***	-5.77**
							(2.41)	(2.65)	(2.57)	(3.48)	(2.55)	(2.38)
Observations	67	63	63	63	63	59	33	31	31	31	31	29

Notes: In columns (1) to (5), the dependent variable is average per capita state growth calculated over the four ten-year periods, 1960-1970, 1970-1980, 1980-1990, 1990-2000. In columns (6) to (10), the average per capita state growth is calculated over the two twenty-year periods, 1960-1980, and 1980-2000.

All regressions include state and period effects.

The Herfindahl index (HI) of value added is the measure of concentration.

Columns (2) and (8) include the Besley Burgess Index (2004). The index codes states as pro-worker, pro-employer or neutral based on state-level amendments to the Industrial Disputes Act of 1947.

Columns (3) and (9) include the Besley Burgess Index (2004), and its interaction with the decadal dummies and twenty year period dummies respectively.

Columns (4) and (10) include the Besley Burgess Index (2004),its interaction with the decadal dummies and twenty year period dummies respectively, and the log of initial per capita income.

Columns (5) and (11) include the Besley Burgess Index (2004),its interaction with the decadal dummies and twenty year period dummies respectively, log of initial per capita income and a measure of institutions (transmission and distribution losses) interacted with decadal dummies and twenty year period dummies respectively and initial literacy (in 1980) interacted with decadal dummies and twenty year period dummies respectively

Robust standard errors are reported in parentheses

***represents significance at 1 percent, **represents significance at 5 percent, *represents significance at 10 percent

Table 8. Indian States: Convergence and Divergence, 1960-2000

	Unconditional	Conditional		
	1960-2000	1960-2000	1960-2000	1960-2000
	(1)	(2)	(3)	(4)
Estimation procedure	OLS	OLS	System GMM	Difference GMM
Log Initial NSDP per capita	0.94**	-6.99***	0.51	-8.37
	(0.37)	(2.22)	(0.76)	(6.42)
Log Initial NSDP per capita*1970s dummy	-0.03	-0.16	-0.03	0.11
	(0.04)	(0.71)	(0.04)	(0.09)
Log Initial NSDP per capita*1980s dummy	0.16***	0.43	0.17***	0.4**
	(0.04)	(0.78)	(0.04)	(0.17)
Log Initial NSDP per capita*1990s dummy	0.17***	2.3**	0.19***	0.69**
	(0.06)	(1.05)	(0.07)	(0.34)
Observations	79	79	79	58

Notes: The dependent variable in all regressions is the annual average decadal rate of growth in per capita state domestic product.
The regressions for conditional convergence in columns 2-4 include state and time fixed effects. The system GMM estimator is based on Blundell and Bond (1998) and the difference estimator is based on Arellano and Bond (1991).
The Hansen test of overidentification and the test of no second order autocorrelation are satisfied for the system and difference GMM estimations.
Robust standard errors are reported in parentheses
***represents significance at 1 percent, **represents significance at 5 percent, *represents significance at 10 percent

Table 9: Decentralization: State Characteristics and Growth

Panel A: Sectoral growth rates

	(1)	(2)
	Electricity Intensity	
	1982-1990	1990-1997
TD*Intensity	0.06	-0.19**
	(0.13)	(0.09)
Initial share of sector *i* in state *s*	-0.9	-1.23
	(0.59)	(0.84)
Observations	269	266

Panel B: 10 year state growth rates (1960-2000)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Transmission and distribution losses			Investment climate	Infrastructure penetration	Financial sector strength	Mass media penetration	Primary schooling in English
I* Dummy for 1970s	-0.01	0.0002	0.01	-0.11	0.43	0.41	-0.1	0.05
	(0.03)	(0.03)	(0.01)	(0.69)	(0.77)	(0.6)	(0.69)	(0.04)
I* Dummy for 1980s	-0.05*	-0.06*	-0.06**	-0.1	1.08	0.87	0.52	0.04
	(0.03)	(0.03)	(0.03)	(0.57)	(0.68)	(0.65)	(0.64)	(0.05)
I* Dummy for 1990s	-0.08***	-0.11***	-0.11***	3.52***	3.85***	2.63***	2.75***	0.21***
	(0.03)	(0.02)	(0.02)	(0.83)	(0.69)	(0.93)	(0.76)	(0.06)
Observations	67	63	63	59	63	63	63	55

Notes:
Panel A: The dependent variable is the annual average rate of growth of industry (i) in state (s). All regressions include state and industry effects.
Transmission and distribution losses (TD) is the fraction of electrical power generated but not paid for, measured as a percent of availability in 1980.
Electricity intensity is the share of electricity input in the value added of the sector. Overall infrastructure intensity is the share of the sum of electricity, transportations and communications inputs in the value added of the sector. Both these indices are measured in percent.
Panel B: The dependent variable is the decadal average of annual state growth rates. All regressions include state and period fixed effects, initital income interacted with time effects (not reported), and a measure of state-level institution (I) interacted with time effects as follows:
(I) as defined at the top of each column, is transmission and distribution losses in columns (1) to (3); investment climate, reflecting the overall investment attracti of the state, in column (4); a measure of the spread of infrastructure throughout the state in column (5); a measure of the strength of the financial sector in column (6); a measure of the outreach of mass media within each state in column (7); and the enrollment in classes instructed in English as a percent of total enrollment at the primary and upper primary level in column (8).
Column (2) includes the Besley Burgess Index (2004). Columns(3) to (8) include the Besley Burgess Index (2004), and its interaction with the decadal dummies
Robust standard errors are reported in parentheses
***represents significance at 1%, **represents significance at 5%, *represents significance at 10%