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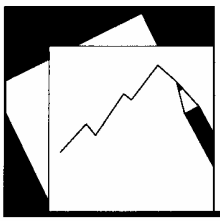

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India's Pattern of Development: What Happened, What Follows?

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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 is widely noted, within manufacturing India has emphasized skill-intensive rather than labor-intensive manufacturing, and industries with higher-than-average scale. 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. Using the growth of fast-moving Indian states as a guide, we conclude that India may not revert to the pattern followed by other countries, despite reforms that have removed some policy impediments that contributed to India's distinctive path.

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Keywords: Manufacturing, Services, Diversification, Decentralization, Liberalization, Labor Intensity, Skill Intensity, Scale

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I. 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, 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 (call-centers versus cow-herds). In particular, can 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 emphasis on tertiary education, combined with a variety of policy distortions, may have channeled the manufacturing sector into more skill-intensive industries. Furthermore, the government's desire to create capital goods production capability, especially through public-sector involvement, implied that India had a greater presence in industries that required scale (and capital) than other developing countries. Regulatory penalties and constraints on large private enterprise implied, however, that within most industries, the average scale of enterprise was relatively small. Finally, rigid labor laws as well as constraints on the scale of private enterprises may well have limited India's presence in labor-intensive manufacture, the usual specialization in a populous developing country. Given these idiosyncratic policies, 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 the beginning of 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, especially in skill-intensive segments like telecommunications (as the private sector has been allowed in) and other business services (activities such as software and business process outsourcing that have benefited from the opening of the economy), but also in finance-intensive segments like construction.

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 countries. There have been changes, no doubt, in patterns of activity. But states are not

increasing their presence in labor-intensive industries, as one might expect if there were a reversion to the presumed typical pattern of growth for a poor country.

Instead, economic reforms combined with growing decentralization of policymaking appear to have allowed states to use the capabilities built up over the period of heavy policy intervention—in other words, freed them to grow at a pace consistent with their built-up skill base and institutional, as well as infrastructural, capability. 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 areas where India has built capabilities serve least well the populous, institution- and infrastructure-poor states of the hinterland. 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.

II. 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.[2] A (perhaps overly) simplified view of the main aspects, however, would include:

(i) A focus on self-sufficiency to avoid dependence on imports, and hence excessive external influence on domestic affairs. This view was understandable in a country emerging from colonialism, and which saw itself as an exemplar for other developing countries. It translated into an emphasis on rapid industrialization, especially the creation of domestic heavy industries—that is, industries producing capital goods. [3] In addition, the pattern of

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

[3] Recall that the most successful example of development around the time of India's independence was Soviet Russia, and many of independent India's early leaders, including Jawaharlal Nehru, were greatly influenced by it. P.C. Mahalanobis, the father of Indian

(continued)

industrialization focused on reducing dependence on foreign exchange through import substitution. Trade restrictions were the inevitable side effect of these policies.

(ii) To ensure that investible resources were channeled to the "right" industries, and given that India was capital-poor, Indian planners devised a combination of heavy public sector involvement (with some industries—the "commanding heights"—being reserved only for the public sector) and controlled private sector involvement.

(iii) Unlike many developing countries, independent India always allowed private sector activity. But to be consistent with the planning strategy, there had to be ways to control the private sector and this was done through investment licensing, import licensing, controls on the use of foreign exchange, controls on credit allocation, and controls on prices. Also, the threat always remained that the government would 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). In addition to maintaining coherence with the planning framework, 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) 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 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.[4]

(v) 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.

(vi) 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

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planning viewed the capacity to "make machines that make machines" as crucial to the economy's long-term rate of growth.

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

more in purchasing-power-parity (PPP) adjusted dollars per student in tertiary education than China, and even Korea or Indonesia in 2000.

So what was the legacy of this complex web of policies in terms of the pattern of development? We turn to this in the next section and examine various aspects of this pattern—sectoral shares of output and employment, factor-use, size, and diversification.

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, 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.

A. Value-Added Shares in 1981[5]

Did 30 years of dirigisme post-independence distort manufacturing? This is the first question we address. 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, the square of the level of income (to correct for non-linearities), and also size.[6]

[5] 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.

[6] Of course, other factors could 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 correcting for obvious factors, rather than to do an exhaustive study of the sectoral composition of growth. We will report results for the largest sample of countries, though the results are qualitatively similar unless specifically noted for a cross-section restricted to non-OECD countries.

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.

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. First, correcting only for the income terms, India is a *positive* outlier among countries in its share of value added in manufacturing in 1981 with its share significantly exceeding the norm by 4.6 percentage points (see Table 2, column 1). However, after correcting for country size (proxied for by land area), the coefficient on the India indicator declines to 2.3 percentage points in 1981 which is not statistically significant (column 2).[7] In what follows, when we refer to a coefficient without qualification, it is to the estimate in the specification including country size.

If anything it is in services that India is an outlier 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 after correcting for income and size, column 4). Again, this seems surprising from today's vantage point.

The robust take-away here is that India was not an outlier on manufacturing in 1981, given its per capita GDP and size. The conventional wisdom that India underperforms in manufacturing could either be because it underperformed over the next 20 years, or because it is compared with China, which is a significant positive outlier in 1981 (the coefficient for the China indicator is highly significant, with the coefficient suggesting that even after controlling for income and size China's manufacturing is an astonishing 29 percentage points of GDP greater than that for the average country).[8]

B. Employment Shares in 1981 and Productivity[9]

When India's share of industrial sector employment in total employment is compared with other countries, India again does not seem to be an outlier (Table 2, columns 5 and 6). In the case of services (columns 7 and 8), however, India seems to have 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 productivity in industry and services in the cross-section in 1981, suggesting productivity in agriculture was low.

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[7] 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.

[8] 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.

[9] 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.

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.

C. Use of Factors: Labor Intensity, Skill Intensity

What did the policies do in terms of industry specialization? The analysis below is limited to the manufacturing sector where we have comparable cross country data from the UNIDO. The first industry characteristic we examine is labor intensity, where the proxy for labor intensity is 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).

We examine the pattern of output within manufacturing to see whether India had a bias in 1981 in favor of labor-intensive activities. We first divide industries into those that are above the median and those below the median in terms of labor-intensity. Then, for each country, we calculate the ratio of the total value added by above-median-labor-intensity industries to the total value added by below-median-labor-intensity industries. If Indian manufacturing generates relatively more value added in labor intensive industries, then in a cross-country

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.

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).[10] However, the coefficient is negative and insignificant. The coefficient on the India indicator is moderately negative again when the dependent variable is the ratio of employment shares (see Table 4, Panel B, column 1). When we regress the ratio of productivity in above median labor-intensive industries to below median industries in 1981 against income and size, we find that the India indicator is positive and significant (Table 4, Panel C, column 1).[11]

Let us now turn to skill intensity.[12] To characterize the skill-intensity of a sector, we use data from the input-output matrix for South Africa, which 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). As a proxy for the skill intensity of an industry we use the share of remuneration of the highly skilled and skilled categories of workers in total value added.[13] 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, suggesting they capture different things.

For each country, we calculate 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, and regress that against income, its square, and size. It is striking that even by

[10] Including country size in the regression does not change the results.

[11] 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.

[12] We are grateful to Aaditya Mattoo for suggesting the idea of exploring skill intensity.

[13] The choice of South Africa was dictated primarily by data availability, although we have checked the robustness of our results 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.

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

PANEL A

	Ratio of value added in above median sectors to below median sectors			*Concentration Index*
	Labor Intensity	Skill Intensity	Size	Based on valued added
	(1)	**(2)**	**(3)**	**(4)**
Log GDP per capita	-0.02	-3.90***	0.19	-0.02***
	(1.61)	(1.19)	(1.16)	(0.01)
Log GDP per capita	0.0002	0.27***	-0.004	0.001**
	(0.10)	(0.07)	(0.07)	(0.0004)
India indicator	-0.11	1.29***	0.52***	-0.07***
	(0.3)	(0.07)	(0.09)	(0.02)
Observations	80	80	80	80

PANEL B

	Ratio of employment in above median sectors to below median sectors			*Concentration Index*
	Labor Intensity	Skill Intensity	Size	Based on employment
	(1)	(2)	(3)	(4)
Log GDP per capita	-0.6	-4.28***	-1.42*	-0.02***
	(1.00)	(1.21)	(0.85)	(0.006)
Log GDP per capita	0.04	0.29***	0.1*	0.001***
	(0.06)	(0.08)	(0.05)	(0.0003)
India indicator	-0.18	0.26***	0.30***	-0.06***
	(0.13)	(0.09)	(0.03)	(0.02)
Observations	81	81	81	81

PANEL C

	Ratio of value added per worker in above median sectors to below median sectors		
	Labor Intensity	Skill Intensity	Size
	(1)	(2)	(3)
Log GDP per capita	-1.51***	0.41	3.84***
	(0.53)	(0.875)	(1.5)
Log GDP per capita	0.09***	-0.03	-0.25***
	(0.03)	(0.05)	(0.09)
India indicator	0.16*	1.11***	-0.18
	(0.1)	(0.12)	(0.23)
Observations	74	74	74

Notes: Column 4 also controls for country size. In column 4, GDP variables and area are not in log terms (consistent with Imbs and Wacziarg (2003))

The Herfindahl index is the measure of concentration.

Robust standard errors are reported in parentheses

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

1981, India was specializing in skill-intensive industries: in Table 4, column 2 in Panels A and B, the India indicator both in terms of output and employment shares is positive and highly significant. India was thus more specialized in skill-intensive products than other countries with similar levels of income and size. Also, relative labor productivity in skilled industries is higher in India (Panel C, column 2).

D. Industry Scale

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

We measure size in two different ways—as value added per establishment and as employment per establishment. It is plausible that the optimal scale of establishments could vary across industries—for example, an integrated steel plant is much larger than a tannery. The average size of establishments in an industry, averaged across countries, could be a proxy for optimal scale. However, at least two factors may affect this. First, to the extent that the size of the domestic market matters, a larger country would be associated with larger establishments (see the evidence in Kumar, Rajan, and Zingales (2000), for example). Second, the coverage of manufacturing data can vary across countries, with the smallest firms being covered in some countries and not in others.

For these reasons, we cannot simply take the average of the value added per establishment (or employees per establishment) in an industry across countries to get a measure of scale for the industry.[14] 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 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.

[14] 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.

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 offers an explanation for 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 also 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, reservation and other incentives for small-scale sectors, and the MRTP Act) may then have been felt within industry rather than between industries. 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 contrast 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.[15] 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.

[15] 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.

Some of the regulations, especially those pertaining to labor, applied only to registered firms that exceeded a certain size. So the effects of the regulatory regime should be seen on another margin – 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.[16] 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 is not 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.[17]

E. Diversification

Before we discuss these findings, let us add one more fact, which follows from the facts on labor-intensity, skill, and size. 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 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 a more skill-based and scale-based (typically more capital-intensive) pattern of production, 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 (Panels A and B, column 4 in Table 4). The coefficient on the India indicator when the dependent variable is the concentration of value-added is -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.

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

[17] 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.

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

F. 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 establishments. Average establishment size 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 captures the strange pattern of India's development. This relates to the high relative labor productivity observed in the labor-intensive sectors in India, which raises the question of why this did 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, the latter itself a result of the fact that these were 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.[18] The reason, simply put, was perverse policy. Unlike the East Asian economies, which drew employment from agriculture into manufacturing at a rapid pace, India did not.

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[18] 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.

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. This then enabled India to generate relatively greater value added and employment in skill-intensive industries as compared to the typical poor country.

As far as services were concerned, India was a significant negative outlier 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.

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.

In this cloud of distortion may well have resided a silver lining—in creating capabilities that did not exist in the typical poor country, India may have created potential sources of growth that would allow it to follow a different growth path from other countries as policy distortions were removed. Put another way, unique distortions may well have created unique sources of comparative advantage that allowed India to follow a different path. It is that path that we now explore.

III. How Has India Changed Since The Early 1980s?

A. Policy Changes Since the 1980s

A number of observers (see, for example, Kohli (2005), Rodrik and Subramanian (2005), Virmani (2005)) have noted the pro-business 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 the early 1990s, in the wake of the external 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) import liberalization—especially of capital goods and intermediate inputs—primarily through the expansion of the range and number of goods on the open general licensing list and through a reduction in canalization; (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) decontrol of administered prices of key intermediate inputs. Kohli (2005) and Rodrik and Subramanian (2005) characterize the reforms of the 1980s as having been “pro-business” in orientation. The reforms of the 1990s—which some have distinguished from the reforms of the 1980s as having been “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) sweeping trade liberalization including the elimination of import licensing and the progressive reduction of nontariff barriers; (iv) major 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 liberalization of investment and trade 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 nonfinancial enterprises and of banks; and further agricultural sector reforms.

The reforms are reflected in the sharp acceleration in all underlying measures of growth: for example, the annual average rate of growth of GDP per worker increased from 0.7 percent in the 1970s to 3.9 and 3.3 percent, respectively, in the 1980s and 1990s, while total factor productivity (TFP) growth increased from -0.5 percent to 2.5 and 1.6 percent over the same time. (Ahluwalia, 1991 and 1995, Unel, 2003). That there was a decisive break in India’s growth pattern is documented in De Long (2003), Rodrik and Subramanian (2005), and Williamson and Zagha (2002).

How have these twenty years of reform, slow and sluggish yet consistent, 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 was 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, did not support this prior.

B. Manufacturing versus Services in the Cross-Section

The traditional view proposed by Kuznets and Chenery would suggest a rapid increase in the share of manufacturing with 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 went up from 37 percent to 49 percent, while its share of manufacturing in value added remained broadly unchanged at 16 percent, with the decline in agriculture mirroring the performance of

services.[19] The corresponding numbers for employment were 19 percent to 22 percent and 14 percent to 18 percent.

Is this evolution in sectoral shares unusual when compared with other countries? We can check this in a number of ways. We can re-do the analysis that we did for 1980 for the latest period, 2002 (i.e. running cross-country *level* regressions). We can also see if the *change* in share of a country's activity in manufacturing or services is unusual after controlling for per capita income and the overall growth rate. We report the results of these exercises in Table 5.

We find manufacturing over this time period tended to perform less well than in other countries after controlling for the other variables but not significantly so.[20] 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. Similarly, in the level regressions for 2000 (column 1, panel A), the coefficient of the India indicator is smaller than in the corresponding specification for 1981. Thus, a pattern of a relative slowing in manufacturing growth is suggested by the data, ironically when reforms were removing the shackles on manufacturing.

Of course, what is indisputable is the performance of services over this period. India has been unusual in this regard. For example, in the 2000 level regressions, the India indicator is positive and significant (Table 5, panel A, column 4): the coefficient suggests that India's share is significantly higher (3.8 percentage points) than in other countries. This is broadly confirmed in the change regressions, with the India indicator significant and the coefficient suggesting that India posted an increase in the size of the services sector that was 10 percentage points of GDP *greater* than for the average country, after controlling for the level of income and growth.

Finally, 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) note that unlike other countries, Indian labor's share in services employment has been flat rather than growing with income. To generate the huge increase in value added in services without

[19] This development appears to contradict the Kuznets-Chenery hypothesis. Kongsamut, Rebelo, and Xie (2001), however, argue based on an analysis of 123 countries over the period 1970-89 that the share of services rises more with development than anticipated in the Kuznets-Chenery view.

[20] 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.

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.								

a commensurate increase in employment, labor productivity must have gone up tremendously in services.[21] We will shortly explore why.

In sum then, Indian manufacturing showed signs over the post-1980s period of not keeping up with the average performance in other, similar, countries. The services sector has indeed boomed, but the share of employment in services is significantly below that of countries with similar size and similar per capita income. Let us now delve deeper into the details of India's growth to understand what might explain these trends.

C. 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 products for India and a selected group of comparator countries. India's share is declining, whereas that of many of the others is either increasing, or decreasing but at much higher levels of income. Note that China's share is also declining but from much higher initial levels. Figure 3 supports this view as it shows 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 and is at levels reached by Malaysia or Korea at much higher levels of per capita income. There is also a striking contrast with China. China's share of output in skill-intensive industries is lower than India's and has been virtually flat whereas India's level has been higher and rising. The move toward skill-intensive goods is also reflected in India's exports: the share of exports in skill-intensive goods has risen sharply from about 25 percent in 1970 to about 65 percent in 2004. It is worth noting that these developments are not affected by the fact that our data so far have been limited to the registered manufacturing sector in India. Indeed, 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

[21] Gordon and Gupta (2004) argue that the increase in labor productivity in India is not because of an increase in capital intensity. Instead, they argue it is because there has been greater emphasis in India on skill-intensive services.

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

Panel A

Ratio of value added in above median sectors to below median sectors				*Concentration Index*
	Labor Intensity	Skill Intensity	Size	Based on valued added
	(1)	(2)	(3)	(4)
Log GDP per capita	-1.92	-1.13	0.79	-0.003
	(1.4)	(1.84)	(0.83)	(0.003)
Log GDP per capita	0.13	0.11	-0.04	0.0001
	(0.09)	(0.11)	(0.05)	(0.0001)
India indicator	0.11	1.09***	0.43***	-0.05***
	(0.11)	(0.15)	(0.1)	(0.01)
Observations	47	47	47	47

Panel B

Ratio of Employment in Above Median Sectors to Below Median Sectors				Concentration Index
	Labor Intensity	Skill Intensity	Size	Based on employment
	(1)	(2)	(3)	(4)
Log GDP per capita	2.72	-1.29	-0.19	-0.01***
	(4.84)	(1.02)	(0.43)	(0.004)
Log GDP per capita	-0.15	0.11*	0.02	0.0003***
	(0.3)	(0.06)	(0.03)	(0.0001)
India indicator	-0.79	0.26***	0.27***	-0.08***
	(0.79)	(0.1)	(0.04)	(0.02)
Observations	61	60	60	61

Panel C

Ratio of value added per worker in above median sectors to below median sectors			
	Labor Intensity	Skill Intensity	Size
	(1)	(2)	(3)
Log GDP per capita	-1.05*	1.11	2.70*
	(0.58)	(0.74)	(1.37)
Log GDP per capita	0.07*	-0.06	-0.17**
	(0.03)	(0.04)	(0.08)
India indicator	0.19***	0.88***	-0.65***
	(0.06)	(0.12)	(0.19)
Observations	47	47	47

Notes: Column 4 also controls for size. In column 4, GDP variables and area are not in log terms (consistent with Imbs and Wacziarg (2003))

The Herfindahl index is the measure of concentration.

Robust standard errors are reported in parentheses

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

employment generated in labor-intensive industries, but continues to be strongly so for the share of value added and employment in skill-intensive industries and large-scale industries: the coefficient on the India indicator remains broadly unchanged between 1981 and 2000.

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

In other words, the evidence suggests that many of the unique features of India's development that were apparent in 1981 have not changed, despite reforms. The evolution in diversification since the unleashing of liberalization in 1980 also supports this interpretation.

In the cross-section 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, suggesting that the pace of diversification in India after 1980 has been greater than that for the average country (see Figures 6 and 7).

Part of the explanation for this continuity of trends may be 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 be that there is hysteresis in growth paths, perhaps as a result of the acquisition of organizational capabilities and specific human capital. So the specializations induced by distortions may indeed be accentuated as reforms progress, rather than reversed. Some evidence of this possibility comes from examining the growth of the Indian states.

IV. THE STATES' STORY

A. Manufacturing versus Services at the Level of the States

The aggregate developments (i.e. for India in the cross-section) are mirrored at the development of the states. In Figure 8, we plot the change in share of manufacturing between 1980 and 2000 at the level of the Indian states against their aggregate growth. Interestingly, the relationship is flat. Looking at the fast growing states, we see that a number of them—Tamil Nadu, West Bengal, Delhi, Maharashtra, and Karnataka—have seen no change or a negative change in the share of manufacturing despite rapid growth rates.

The performance of the labor-intensive industries in the cross-section is again reflected at the level of the states. Figure 9 suggests there is no relationship between states' growth and the change in the relative share of labor-intensive industries.[22] A number of fast-growing

[22] For the analysis at the level of the states, we use the inverse of labor productivity (at the all-India level) to rank industries by labor intensity.

states—Andhra Pradesh, Gujarat and Maharashtra—witnessed a decline in the share of labor-intensive industries, but so did a number of slow moving states like Madhya Pradesh and Uttar Pradesh.

In sum, either the fast-growing states have seen constancy or decline in their share of manufacturing, or where they has been an increase—Andhra Pradesh, Gujarat, and Haryana—it has occurred in capital- and skill-intensive industries (in the case of Gujarat, there has been a huge decline in the textiles industry with a corresponding increase in the petrochemical industry; similarly, Andhra Pradesh saw a decline in the share of food, beverages, tobacco, textiles, and paper related industries and a large increase in the basic metals and alloys industries).

Similarly, the reason that India is such a positive outlier in the cross-section in terms of the share of services is that nearly all states in India—regardless of their growth performance—have seen a uniform shift toward services (see Figure 10 where the increase in share of all states in services is uniformly high, with the fastest growing states having the highest increase in share).

While services in the aggregate have grown in all states, there seems to have been a noteworthy difference between services that are predominantly in the public sector and those that are in the private sector. In Figure 11, we plot the change in share of services that are predominantly performed by the public sector (such as electricity, public administration, railways, and other community services) against average annual state growth, and find a negative correlation. By contrast, Figure 12 suggests that the increase in the share of services that are predominantly in the private sector (such as business services (including software), real estate, and retail trade) is strongly positively correlated with state growth.[23] In short, the share of public sector services including administration is growing in the laggard states, while the share of private sector services is growing in the fast-moving states.

The important conclusion that emerges therefore from analyzing the performance of the Indian states is that since 1980, despite the liberalization policies, India is actually veering *further away* from labor-intensive industries. Furthermore, there is no clear pattern of movement amongst fast-growing states towards these industries—instead, they seem to be moving into skill-intensive services.

[23] Acharya (2002) has argued that services sector growth is artificially inflated by the large wage increase awarded to public sector employees in 1998 by the Fifth Pay Commission. Our findings suggest service growth in the fast moving states has been outside the public sector.

B. Diversification

Let us now turn to diversification. Figure 13 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 (Figure 13). 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).

V. Understanding Post-1980 Performance

We have argued that some of the degree to which India was diversified in the past was a result of past policies. One might expect that as controls came off, some of this diversification would be reversed. Yet instead of reverting to labor-intensive manufacturing growth—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. We will show that the performance of the fastest moving states seems to be driven both by the capabilities they possessed at the dawn of liberalization and the business environment they created. What is indisputable is that liberalization allowed states to stretch 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.

A. Pre-Existing Capabilities

Economic development results from the interaction of growth opportunities with the right fundamentals (the pre-existing capabilities) that allow these opportunities to be exploited. 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 cumulative capabilities 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. In the case of India, one key capability was institutions: democracy, rule of law, free press, universities, and technocratic bureaucracy that recent research shows are crucial to economic development. Another key capability that has been extensively remarked upon in the context of the IT boom is the pool of skilled human capital, built through the technology, management, and research institutes, as well as through the public sector, a kind of import substitution effort in skilled human capital development, which was integral to the Nehruvian vision.

One proxy for this latter capability could be the extent to which states were diversified across manufacturing. There are two arguments why the extent of diversification may capture state-level capabilities. One simply is that those states that had a vibrant and entrepreneurial private sector should have diversified the most in response to the pre-1980 distortions (for example, into areas that were not dominated by the public sector). Thus the extent of diversification in the early 1980s captures the vibrancy of entrepreneurship in the state.

Another is to see the diversification as driven by a broader set of forces than only the private sector, and including the public sector. In this view, India's pre-1980s development strategy, which led to unusually (compared with other countries) large diversification also created within India a pattern of capability in the different states that played a key role in economic performance when the constraints placed on the states were lifted in the post-1980s period.[24] For instance, 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 plied the private sector with highly qualified pilots.

Both arguments suggest that the degree of diversification in the early 1980s proxies for some capability that led to the stronger growth of diversified states, they differ only insofar as whether the capability was latent (that is, diversification simply proxies for the state's private sector entrepreneurial zeal), or created through diversification itself.

Whatever the source of this capability, did it matter for growth? Figure 14 sheds light on this question. In the figure, we plot the Herfindahl coefficient of concentration within manufacturing in the different states in the early 1980s against the subsequent overall growth

[24] 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.

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.

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 14 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. The inclusion of state fixed effects makes the specification very general. Since we are interested in the differential effect of manufacturing concentration across decades, we interact the explanatory variables with the appropriate decadal dummies. In the first five columns of Table 7, the left hand side variable is measured over decades, while in the last five 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 the capability proxied for by diversification came into its own when the shackles on state growth were removed, but did not matter before.

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 these attributes of states.

Of course, an immediate question is whether fast-growing states simply continued doing what they were doing, only with more resources. In other words, were the capabilities specific to the industries that existed in the state? We determine the correlations, state by state, of the value added in each industry in 1980 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 churning, across time. This is one piece of evidence that the capabilities that diversification proxies for were general.

A second piece of evidence is in Figure 16, which shows 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 manufacturing.

In sum, regardless of how the capabilities came about, they helped foster state growth, especially when the economy started liberalizing.

B. Decentralization

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

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)

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

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 regional or even single-state parties.

No longer could a regional leader be confident that the center—where the party in power might be 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 latter. This trend is summarized by Echeverri-Gent (2001) as follows: "The rise of single-state parties has contributed to important changes in national politics. It is an important factor in the declining salience of national issues and the growing importance of state-level issues in coalitional strategies."

But this change was about more than the identity and ideology of political actors: it was fundamentally about greater devolution in political and economic power toward the states. Greater political decentralization meant greater decision-making at the level of the states, including on economic issues, not least the 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 criterion guiding industrial investments.

The rising trend in private investment, as well as the falling trend in public investment, over this period (Figure 17) would have contributed to differentiating outcomes between states, with private investment more sensitive to differences in policies across states.

We now turn to show that decentralization was a key dynamic that affected post-1980s growth performance. Of course, a simple clue to evaluating whether the decentralization dynamic at work is to look at 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 column 2, the ordinary least squares estimator is used, while the estimation in columns 3 and 4 are based on the GMM procedure.[25] 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 remains unchanged (see also Aiyar, 2001). The coefficients on the income term interacted with an indicator for the 1990s is positive and significant. And the coefficient on the 1990s term is always greater than that for the previous periods.

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

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

We can test 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 about the center deciding where industrial investments should be located, 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 running state level growth regressions with state level variables on the right hand side variables should be more meaningful for the post-1980s period than before. We focus on state-level infrastructure and institutions and their impact on state-level performance. If the state-level business environment were indeed an important determinant, we could hope to pick up its effects in two kinds of regressions. In the first, we

use the Rajan-Zingales (1998) methodology to ascertain the impact of infrastructure: in particular, if infrastructure were important, it should be the case that in states that have better infrastructure, industries that are more infrastructure-intensive should grow faster. Moreover, to the extent that differences became more pronounced in the 1990s when state policies began to matter as a result of growing decentralization, we should see the effects most pronounced in the 1990s.

To estimate these regressions, we need industry growth by states. For the 1980s and 1990s, we have 2-digit industry level manufacturing data from the EPW Foundation.

Next, we need a measure of state-level infrastructure development and policy. 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 along power lines naturally in the process of transmission and distribution, but in greater 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 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).

We construct infrastructure intensity measures for particular industries from the India input-output tables. Specifically, we construct a measure of the amount of electricity used per unit of value added of each industry.

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;[26] 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

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

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 18 shows, there is a negative correlation between the average T&D losses in 1980-2000 in a state and its growth during that period.

In order to explore this further, we turn to whether state-level institutions have an effect on state-level growth, and whether that effect is more pronounced recently (see Table 9, Panel B).

We then run regressions where the left hand side variable is some measure of decadal state level performance (as in Table 7), and on the right hand side we include state fixed effects, time/decadal) effects, initial income interacted with the time effects, and the measure of state-level institutions interacted with time effects. A test of the decentralization hypothesis is that the institutions measure should not yield significant coefficients for the pre-1980s period but should do so, especially for the 1990s (we should not expect very strong results for the 1980s given the time it takes for political structures to get embedded and for agents to internalize the change).[27]

[27] 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 which 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.

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	-0.02	-0.01	-0.002	-0.49	-0.2	-0.11	-0.35	0.11**
	(0.03)	(0.03)	(0.02)	(0.41)	(0.33)	(0.27)	(0.33)	(0.04)
I* Dummy for 1980s	-0.05	-0.07	-0.08**	-0.47	-0.07	0.01	-0.09	0.08
	(0.04)	(0.04)	(0.03)	(0.37)	(0.38)	(0.42)	(0.39)	(0.05)

Table 9. Decentralization: State Characteristics and Growth (concluded)

	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 1990s	-0.08***	-0.08**	-0.08**	1.18**	1.24***	1.19**	1.39***	0.26***
	(0.02)	(0.03)	(0.04)	(0.54)	(0.44)	(0.51)	(0.43)	(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, initial 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 attractiveness 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 percent, **represents significance at 5 percent, *represents significance at 10 percent

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.[28]

In sum, both state level capabilities and state level policies and institutions seemed 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.

VI. LOOKING AHEAD

Where is India headed? We have argued that India's pattern of diversification and growth over the last two decades might reflect the consequences of the peculiar specializations created by the pre-1980 policies. Instead of India's fast growing states reverting to a more traditional pattern of specialization in labor-intensive industries, commensurate with India's income levels, they appear to have skipped directly to specialization in skill-intensive industries (within manufacturing) or to services where they appear to have a comparative advantage (at least vis-à-vis other poor countries).[29]

In Table 10, we illustrate how unusual the behavior of some of the fast-growing states is. In column 1, we compute the level of income at which the average country in the cross-section exhibits a declining share of manufacturing and increasing diversification. In column 2, we compute the comparable level of income at which the fast-growing states exhibit the same characteristic or "pathology." The table 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

[28] 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.

[29] For example, with substantial trained personnel in drugs and pharmaceuticals, as well as a large, poor, population in need of treatment, the cost of drug trials in India is low, in contrast to most other countries where one or the other ingredient is missing.

Table 10. How Unique are the Fast-Growing States?

Criterion	Income level (in US$ PPP per capita) at turning point in the cross-section 1/	State income level (in US$ PPP per capita) at turning point 2/	
	(1)	(2)	
Manufacturing to GDP	14728	Delhi	5438
		Karnataka	2649
		Maharashtra	3375
		West Bengal	2175
		Tamil Nadu	2842
Diversification	18216	Andhra Pradesh	2220
		Delhi	5438
		Gujarat	2886
		Haryana	3187
		Karnataka	2649
		Maharashtra	3375
		Tamil Nadu	2842

Source: Authors' calculations

1/ The turning point represents the income level at which the ratio of manufacturing to GDP (or the index of diversification) starts declining for the average country in the cross-section and is computed from a regression of the relevant variable on income, income square, and size.

2/ The states included are those for which the ratio of manufacturing to GDP (or the diversification) has started to decline or remained roughly constant over the period 1980-2000. Income level is for the year 2000.

The impact of the pre-1980s policies combined with decentralization has meant that Indian states are more responsible for their economic fortunes, which in turn has led to sharp divergences in their growth rates. With the caveat that Indian states are enormously large entities and are 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 still rapidly growing, less well-educated, populations (Table 11) may not have the capability to emulate them. 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.[30] 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 incumbents, and the political leadership, or will, to amend them has not emerged.[31] Furthermore, given that poor governance, which tends to be persistent, in part, explains the slow growth of the hinterland states (see Figure 18)**,** the needed improvement in governance, business climate as well as physical infrastructure will be more difficult in the laggard states. In this regard, the high correlation between the historically determined Banerjee and Iyer measure (see footnote 26) and current institutions is telling evidence of the yoke of history and the difficulty of change.

[30] 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.

[31] 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.

Table 11. The State of India's States

	Investment Climate 2/ (1)	Infrastructure Penetration 3/ (2)	Financial Sector Strength 4/ (3)	Mass Media Penetration 5/ (4)	Primary Schooling in English /6 (5)	Adult Literacy Rate /7 (6)	Colonial Land Tenure Index /8 (7)
				Index Rating			
Leading States /1							
Delhi	3.1	3.7	3.9	3.5		81.8	0.88
Tamil Nadu	3.1	2.6	2.4	2.6	12.9	73.7	0.71
Kerala	2.8	2.5	2.1	2.5	6.0	90.9	1.00
Maharashtra	2.3	2.8	3.5	2.5	2.5	77.3	0.72
Gujarat	2.4	2.3	2.2	2.5	0.2	70.0	1.00
Punjab	2.9	2.5	2.2	2.1		70.0	0.85
Karnataka	2.7	2.4	2	2.3	6.6	67.0	1.00
Group Average	2.8	2.7	2.6	2.6	5.7	75.8	0.88
Middle States /1							
Andhra Pradesh	2.3	2.1	1.6	2.1	12.5	61.1	0.67
Himachal Pradesh	2.3	1.6	1.8	2.4	4.6	77.1	
Haryana	2.5	2	1.7	1.4	1.2	68.6	0.81
Uttaranchal	2	2	1.4	1.9	0.9	72.3	
West Bengal	1.2	2	2	1.5	19.9	69.2	0.00
Jammu & Kashmir		1.5	1.8	1.4		54.5	
Rajasthan	1.6	1.3	1.2	1.5	0.5	61.0	0.00
Group Average	2.0	1.8	1.6	1.7	6.6	66.3	0.37

Table 11. The State of India's States (concluded)

	Investment Climate 2/ (1)	Infrastructure Penetration 3/ (2)	Financial Sector Strength 4/ (3)	Mass Media Penetration 5/ (4)	Primary Schooling in English /6 (5)	Adult Literacy Rate /7 (6)	Colonial Land Tenure Index /8 (7)
				Index Rating			
Lagging States /1							
Madhya Pradesh	1.8	1.2	1.1	1.1	1.4	64.1	0.02
Assam	1.5	1.1	1.1	0.8	1.7	64.3	0.89
Chhattisgarh	1.9	1.1	0.6	1	1.2	65.2	
Uttar Pradesh	1.4	1	0.9	1.2	0.9	57.4	0.45
Orissa	1.7	0.8	1	0.8	2.7	63.6	0.35
Jharkhand	1	0.6	1	1	1.4	54.1	
Bihar	0.4	0	0.3	0.1	1.1	47.5	0.00
Group Average	1.4	0.8	0.9	0.9	1.5	59.5	0.34

Sources: "How are the States Doing? 2002" Indicus Analytics for the Confederation of Indian Industry.
Primary schooling in English is from "Elementary Education in India: Analytical Report 2003"; Banerjee and Iyer (2005) for land tenure data.
Notes:
1/ Leading, Middle or Lagging states were grouped depending on whether they are at the top, middle or bottom third respectively, of the sum of the relative ranking on investment climate, infrastructure penetration, financial sector strength and mass media penetration.
2/ Reflects the climate of the state in terms of its overall investment attractiveness.
3/ Measures the spread of infrastructure within a state.
4/ Measures the strength of the financial sector of the state.
5/ Measures the outreach of media to the masses within each state.
6/ Enrollment in classes instructed in English as a percent of total enrollment at the primary and upper primary level, 2001-2002.
7/ Combined male and female adult literacy rate.
8/ State average is weighted over district level data, using district area as percent of state area as a weight.
The index is 0 if the colonial land tenure system is entirely landlord based and 1 if it is entirely individual based. See Banerjee and Iyer (2005)
The value for Delhi is borrowed from Besley and Burgess (2004), who use an aggregation at the state level similar to ours.

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 first be seen 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 services industry, wages of skilled workers have been going up very fast.[32] 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.[33] Here again, the fast moving states where the business and political climate is more conducive to scale have an advantage. That the advanced skill-intensive part of the Indian economy may be bidding up scarce skills in such a way as to slow the growth of labor-intensive manufacture, and the exit of surplus labor from agriculture, need not imply that the economy is using resources inefficiently (at least in a static sense). The immediate adverse consequences of this peculiarly Indian externality are, however, more likely to be political.

For if this process continues, the fast-growing states will not only suck the more mobile skilled labor from the slow moving states leading to a further hollowing out of prospects, but also the divergence in growth rates will increase further. Indeed, there are additional reasons for concern. Visaria and Visaria (2003) suggest that based on current fertility rates in different states, of the expected 620 million addition to the Indian population between now and 2051, 60 percent will be in Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh, and

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[32] 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.”

[33] An alternative possibility is that the wages on unskilled labor fall, but wages in agriculture may place a floor here.

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. These will create immense political strains between Indian states and the potential for serious differences.

Put another way, the convergence phenomenon that typically takes place across countries may be impeded in the India of the future by one big difference—the common and mobile pool of skilled labor. The very fact of skill-based development in the fast growing states may impede labor-intensive development because of the rise in the price of skilled labor. This could induce an Indian variant of Dutch disease (Bangalore Bug so to speak) that would reduce the profitability of labor-intensive and tradable manufacturing. In an era of global supply chains with wafer-thin profit margins, this might be a substantial impediment to the growth of labor-intensive manufacturing in the lagging states.

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 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 encourage foreign direct investment here. 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 to fostering the supply of skilled labor. [34]

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

[34] 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.

specialization in favor of skill-based production—have unleashed the gale winds of divergence, big time.[35] 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. The fast-growing states have fallen into patterns of production that are more similar to the industrial countries than to the fast growing East Asian economies.

Ideally, of course, the laggard states would reform on their own—push for scrapping archaic labor laws (few realize how pernicious these are because their effects, in terms of the labor-intensive firms that are unborn, cannot easily be seen), improve infrastructure and the business climate —and utilize their vast pools 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.

There is a precedent—Europe had similar disparities but through various initiatives, prosperous Western Europe offered incentives for laggard European countries to reform. The external pull set reforms into motion, so much so that some of the former laggards like Ireland and Spain are now Europe's locomotives. If a loosely knit community of nations could do it, why can't a united nation of states? A reformist center—and India cannot afford to not have one—could play the role of the European Commission (expanding what the center is already doing on the fiscal side) and offer laggard states more incentives to reform.

In this scenario, the pattern of convergence that we saw 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.

[35] It is one of the abiding ironies that the pre-1980s policies, championed on grounds of equity and socialism, might be the cause of the divergences in incomes and other disparities in more recent years.

Appendix: Data Sources and Description

1. Industrial Statistics Database (2003) of the United Nations Industrial Development Organization (UNIDO).
Data are at 3-digit level of the International Standard Industrial Classification of All Economic Activities (ISIC, Revision 2).
2. World Development Indicators (WDI, World Bank)
3. Domestic Product of States of India: 1960-61 to 2000-01, CD-ROM of Economic and Political Weekly Research Foundation (EPWRF).
4. Annual Survey of Industries (ASI), 1973-74 to 1997-98, CD-ROM of Economic and Political Weekly Research Foundation.
Data are at 2-digit level of the National Industrial Classification (1987) for India.
Data at 3-digit level of the National Industrial Classification (1987) for India are from Circon India Data Center
5. OECD, Structural Analysis Database (SAD)

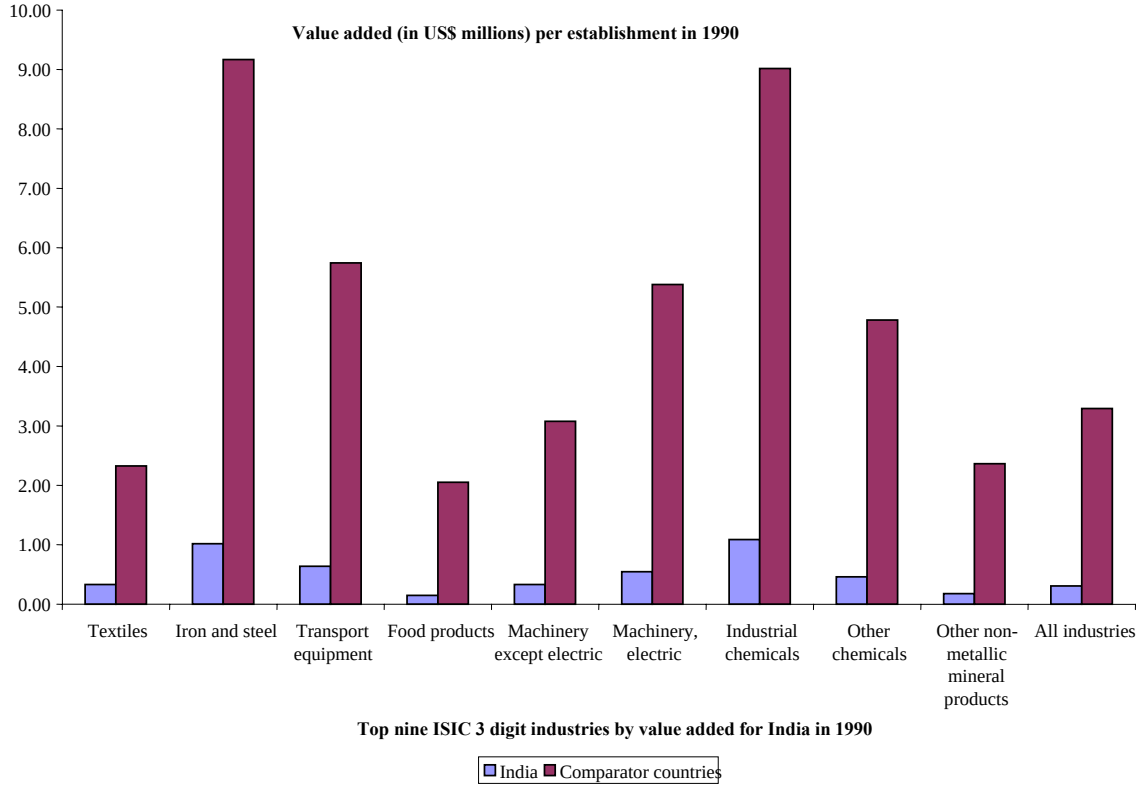
Appendix Table 1. List of Variables and Data Sources

Value Added Share	Value added in Agriculture, Manufacturing, Industry and Services in percent of GDP, in 1981 and 2000.	World Bank, 2005, WDI OECD, SAD
Employment Share	Employment in Agriculture, Industry and Services in percent of total employment, in 1983 and 2000.	World Bank, 2005, WDI OECD, SAD Indiastat.com for India
Log GDP per Capita	Natural log of GDP per capita, which is measured in constant 2000 international $ for tables 2 and 5. Natural log of GDP per capita, which is measured in constant 1996 international $ for tables 4 and 6.	World Bank, 2005, WDI Penn World Tables version 6.1 October, 2002
Country Size	Country area in square kilometers	World Bank, 2005, WDI
Labor Intensity in sector i	Ratio of wages to value added in that sector; for each sector and decade, it is the average across Years and countries.	UNIDO, 2003
Labor Intensity in sector i, states	Ratio of value added to number of workers at the 2-digit National Industrial Classification, 1987 (NIC 1987)	EPWRF, ASI
Skill Intensity in sector i	Ratio of remuneration of highly skilled and skilled labor in sector j to the value added of that Sector	South Africa, National Accounts Statistics 1989
Relative Firm Size	The ratio of the value added (or employment) per establishment in an industry over the value Added (or employment) per establishment in that country.	UNIDO, 2003
Change in Share of Output	Change between 1981 and 2000 in the value added share of manufacturing or services as a percent of GDP.	World Bank, 2005, WDI
Change in Share of Employment	Change between 1981 and 2000 in the employment share of manufacturing or services as a percent of total employment.	World Bank, 2005, WDI Indiastat.com for India
Ratio of Value Added	Ratio of the sum of value added in all sectors above median to the sum of value added of all sectors below median, where the median is that of labor intensity, or skill intensity or	UNIDO, 2003

	relative firm size. Complete classification of industries along each of these dimensions is provided in Table 3.	
Ratio of Value Added in Unregistered Manufacturing in India	Ratio of the sum of value added in all unregistered manufacturing sectors above median, to the sum of value added in all unregistered manufacturing sectors below median, where the Median is that of labor intensity or skill intensity.	Central Statistical Organization (CSO), Government of India (GOI)
Ratio of Employment	Ratio of the sum of employment in all sectors above median to the sum of employment in all sectors below median, where the median is that of labor intensity or skill intensity or relative firm size. Complete classification of industries along each of these dimensions is in Table 3.	UNIDO, 2003
Ratio of Value Added Per Worker	Ratio of the value added per worker in all sectors above median to the value added per worker in all sectors below median, where the median is that of labor intensity or skill intensity or relative firm size. Complete classification of these industries along each of these three dimensions is provided in table 3.	UNIDO, 2003
Decadal Average Growth Rate of states	Average annual growth rate of net state domestic product (NSDP) per capita for the periods 1960-1970, 1970-1980, 1980-1990, and 1990-2000.	EPWRF, Domestic Product of States of India: 1960-61 to 2000-01
20-year Average Growth Rate of states	Average annual growth rate of net state domestic product (NSDP) per capita for the periods 1960-1980 and 1980-2000.	EPWRF, Domestic Product of States of India: 1960-61 to 2000-01
Change in ratio of value added sector i states	Change in the ratio of value added is the difference in the ratio of value added in above median labor intensive sectors to below median sectors between 1980 and 1997. Classification of sectors is available from authors.	EPWRF, ASI
Besley- Burgess Index	Index comes from state-specific amendments to the Industrial Disputes Act of 1947. Besley and Burgess code changes in the following way: 1 for a change that is pro-worker, 0 for a change that is judged not to affect the bargaining power of either workers or employers, and -1 for a change which is regarded as pro-employer. Using these changes a cumulative index is constructed to map the entire history of the state.	Besley and Burgess (2004)
Herfindahl Index of Value Added	Concentration across 3-digit ISIC(Rev. 2) sectors, measured by the Herfindahl index of value added. For Indian states, this is the concentration across 3-digit (NIC-1987) sectors measured by the Herfindahl Index of value added	UNIDO, 2003 Circon India Data Center
Herfindahl Index of Employment	Concentration across 3-digit ISIC (Rev. 2) sectors, measured by the Herfindahl index of employment.	UNIDO, 2003
Sectoral Growth Rate	Growth rate of real gross value added of sector *i* (2-digit National Industrial Classification (NIC-1987)) in states.	EPWRF, Annual Survey of Industries.
Electricity Intensity of sector i	The share of electricity input in the value added of sector i, in percent.	CSO, GOI Input-Output Transactions Table 1989 and 1999.
Overall Infrastructure Intensity of sector i	The share of the sum of electricity, transportation and communications inputs in the value added of sector i, in percent.	CSO, GOI Input-Output Transactions Table

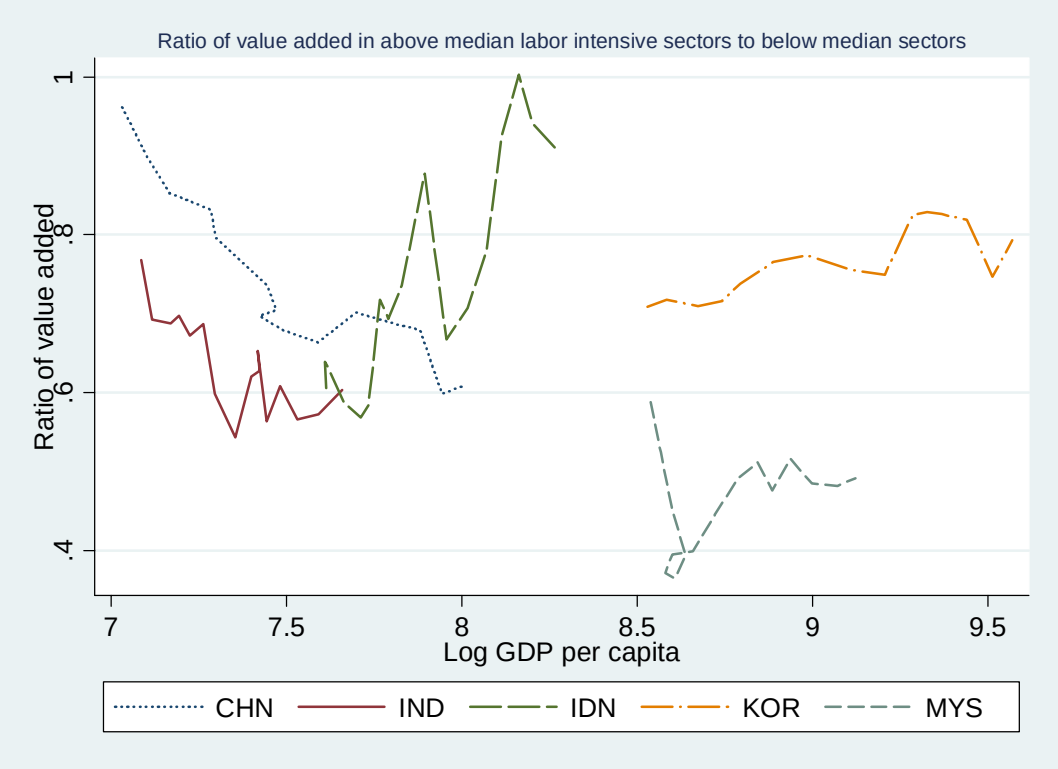
		1989 and 1999.
Transmission and Distribution Losses (TD) at states	The fraction of electrical power generated but not paid for, measured as a percent of availability in 1980.	Planning Commission Government of India
Investment Climate at states	Overall investment attractiveness of the state, that takes into account the ratio of actual inflow of private and government investment to gross state domestic product (GSDP) the ratio of FDI approved to NSDP, the ratio of total industrial workers to the number of employees in firms registered at BIFR, the ratio of small-scale industries to sick small-scale industries, the ratio of proposed investment to NSDP, the ratio of commercial bank credit to GSDP, the percent of working age population and per capita GSDP. .	Indicus Analytics, How are the States Doing, 2002
Infrastructure Penetration at states	Spread of infrastructure within a state, that accounts for the inverse of estimated villages not connected with paved roads, the fraction of villages with electricity, the fraction of habitats with drinking water, the ratio of the length of roads to the geographical area of that state, the ratio of the length of railways to the geographical area of the state, the fraction of the population to the internet and the per capita GSDP.	Indicus Analytics, How are the States Doing, 2002
Financial Sector Strength at states	The strength of the financial sector of the state, accounting for small savings per capita, the ratio of GSDP from finance to small savings, the number of bank branches per capita, the ratio of commercial bank credit to GSDP from manufacturing and per capita GSDP from finance.	Indicus Analytics, How are the States Doing, 2002
Mass Media Penetration at states	Media outreach within each state that accounts for the ratio of daily newspapers sold to population, the number of cable TV connections per thousand households, the number of TV sets owned per thousand households, the number of radios owned per thousand households, and the literacy rate of all persons.	Indicus Analytics, How are the States Doing, 2002
Primary Schooling in English at states	Enrollment in classes instructed in English, as a percent of total enrollment at the primary and upper primary level in 2001-2002.	Elementary Education in India: Analytical Report 2003, Department of Education, GOI)
Adult Literacy Rate	Combined male and female adult literacy rate.	Census of India, 2001
Colonial Land Tenure System at states	Average per state, over district level data, weighted using district area as percent of state area as a weight. The measure varies between 0, for entirely landlord based colonial land tenure system, and 1, for entirely individual based tenure system.	Banerjee and Iyer (2005)

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



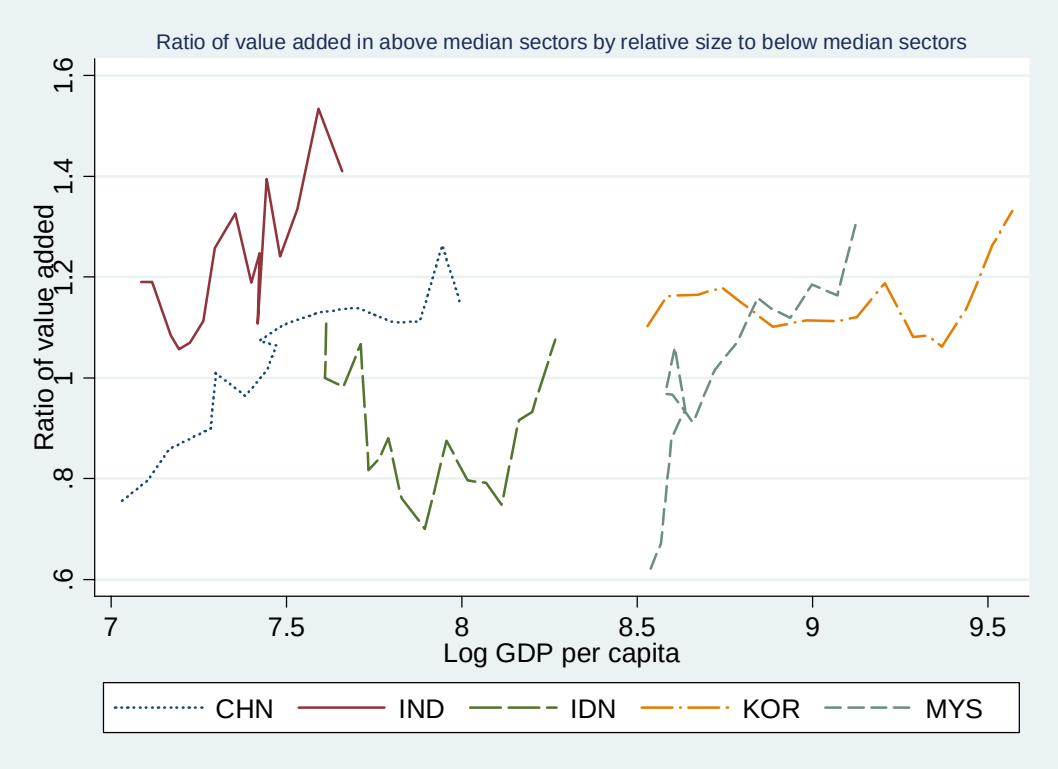
Sources: Based on authors' calculations. Data used is from UNIDO 3-digit industrial statistics database (2003).
Notes: The nine industries shown here account for 76 percent of value added in manufacturing sector in 1990 for India. Comparator economies comprise: Brazil, Chile, China, Hong Kong SAR, Indonesia, Korea, Malaysia, Singapore and Turkey. For these set of comparator countries ratio of total value added in manufacturing from UNIDO to total value added in manufacturing from WDI is greater than in India in 1990.

Figure 2. Value-Added Share by Labor Intensity



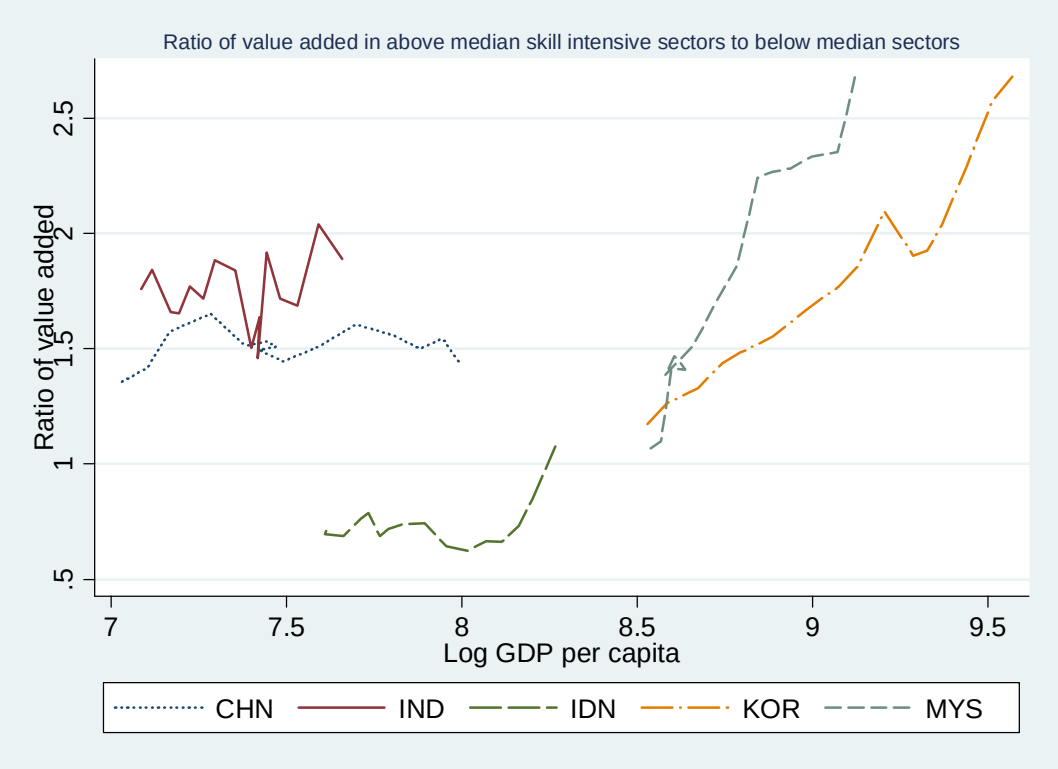
Sources: Based on authors' calculations. Data used is from UNIDO 3-digit industrial statistics database (2003).
Notes: Starting point for all countries is 1981 and the last period is 1996. For classification of above and below median labor-intensive sectors refer to Table 3.
CHN stands for China, IND for India, IDN for Indonesia, KOR for Korea, MYS for Malaysia.

Figure 3. Value-Added Share by Relative Size



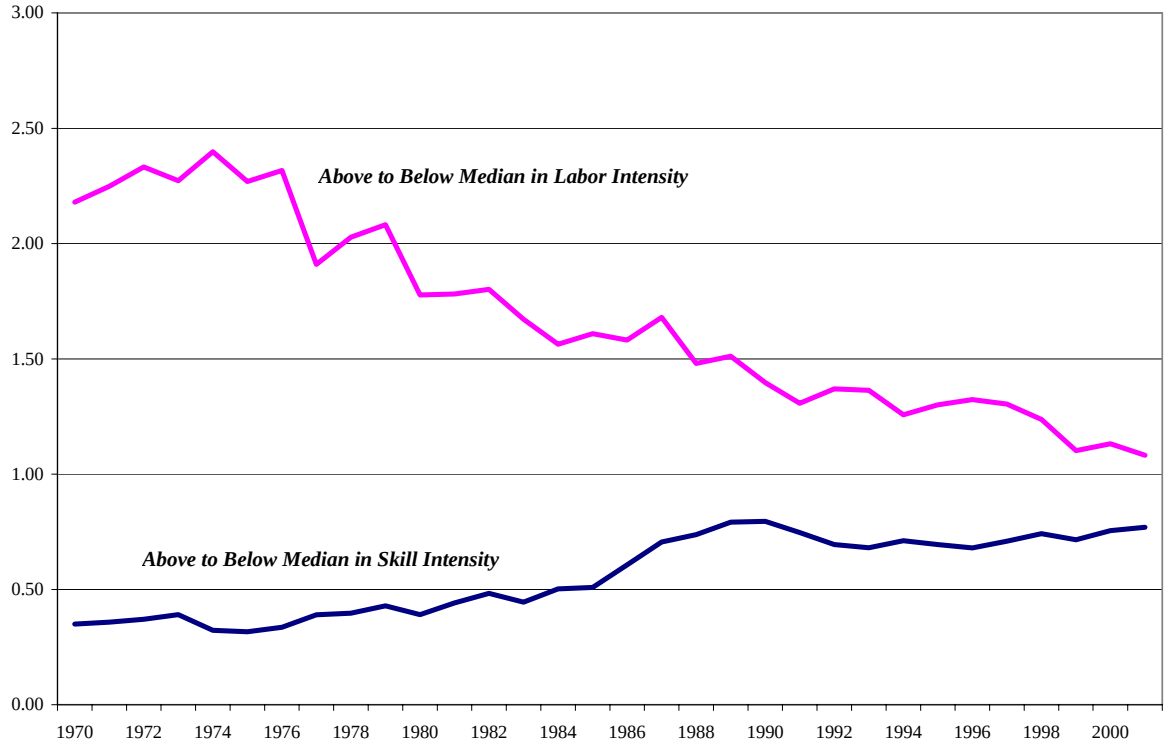
Sources: Based on authors' calculations. Data used is from UNIDO 3-digit industrial statistics database (2003).
Notes: Starting point for all countries is 1981 and the last period is 1996. Relative size is as defined in the text.
For classification of above and below median sectors by relative size refer to Table 3.
CHN stands for China, IND for India, IDN for Indonesia, KOR for Korea, MYS for Malaysia.

Figure 4. Value added Share by Skill Intensity



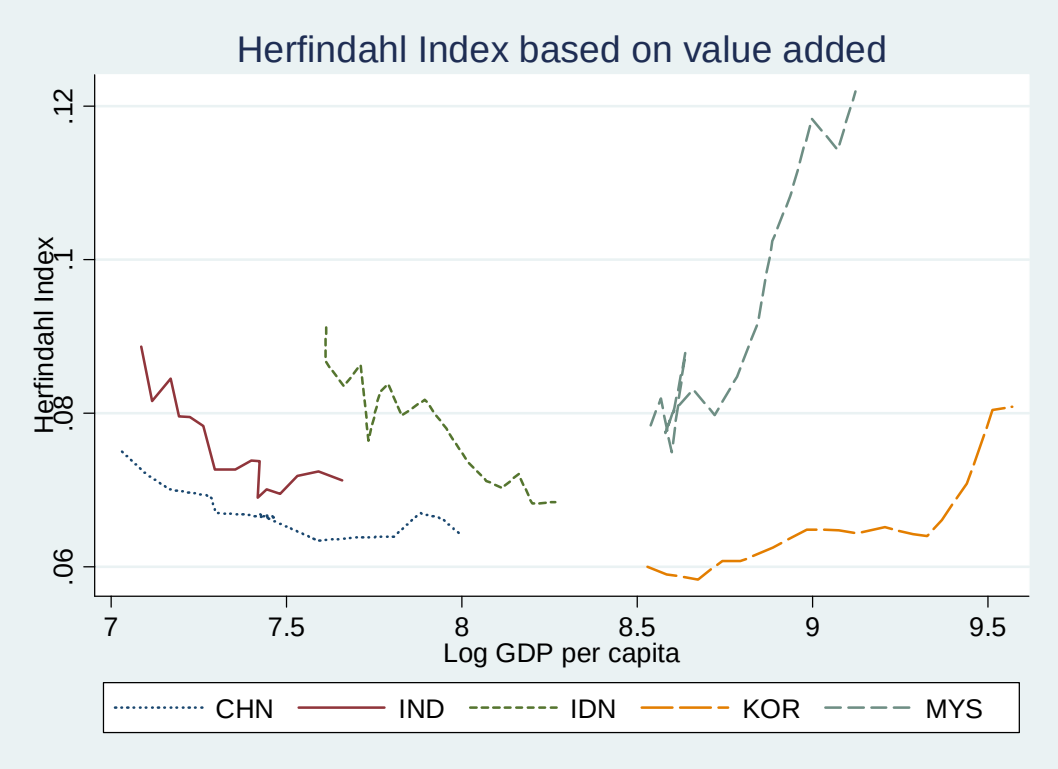
Sources: Based on authors' calculations. Data used is from UNIDO 3-digit industrial statistics database (2003).
Notes: Starting point for all countries is 1981 and the last period is 1996. For classification of above and below median skill intensive sectors refer to Table 3.
CHN stands for China, IND for India, IDN for Indonesia, KOR for Korea, MYS for Malaysia

Figure 5. Ratio of Value Added in Sector Above to Sectors Below Median Labor Intensity And Skill Intensity in Unregistered Manufacturing



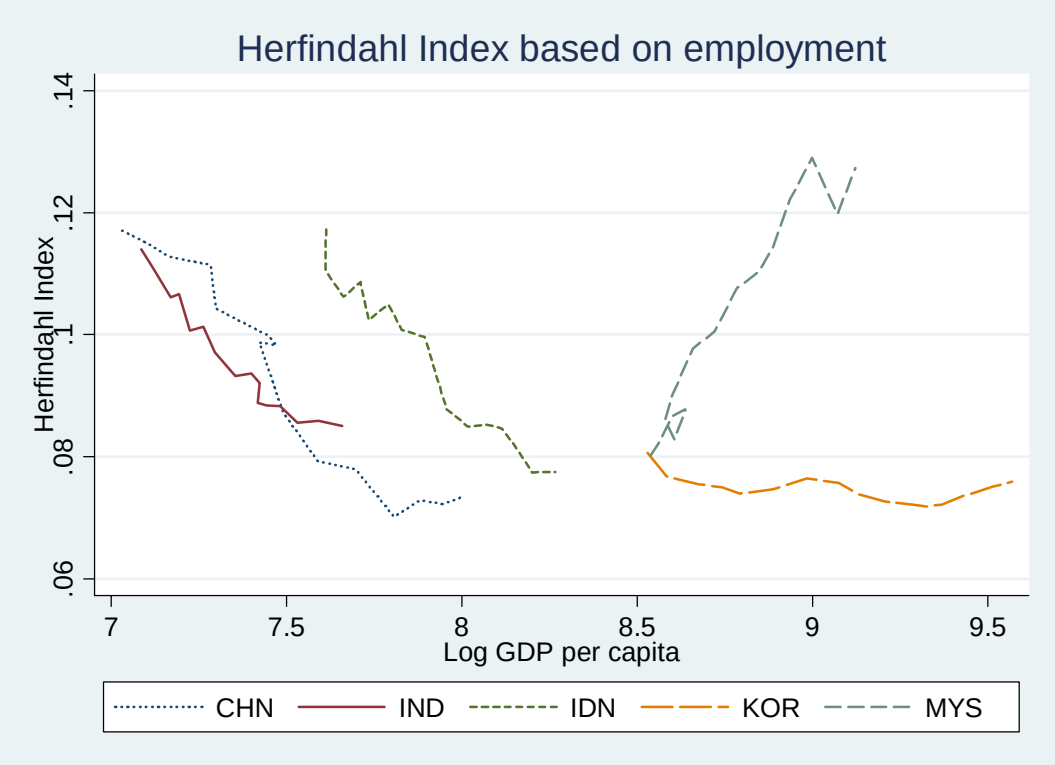
Source: Based on authors' calculations. Data on unregistered manufacturing are from the Central Statistical Organization, Government of India.

Figure 6. Diversification in Indian Manufacturing



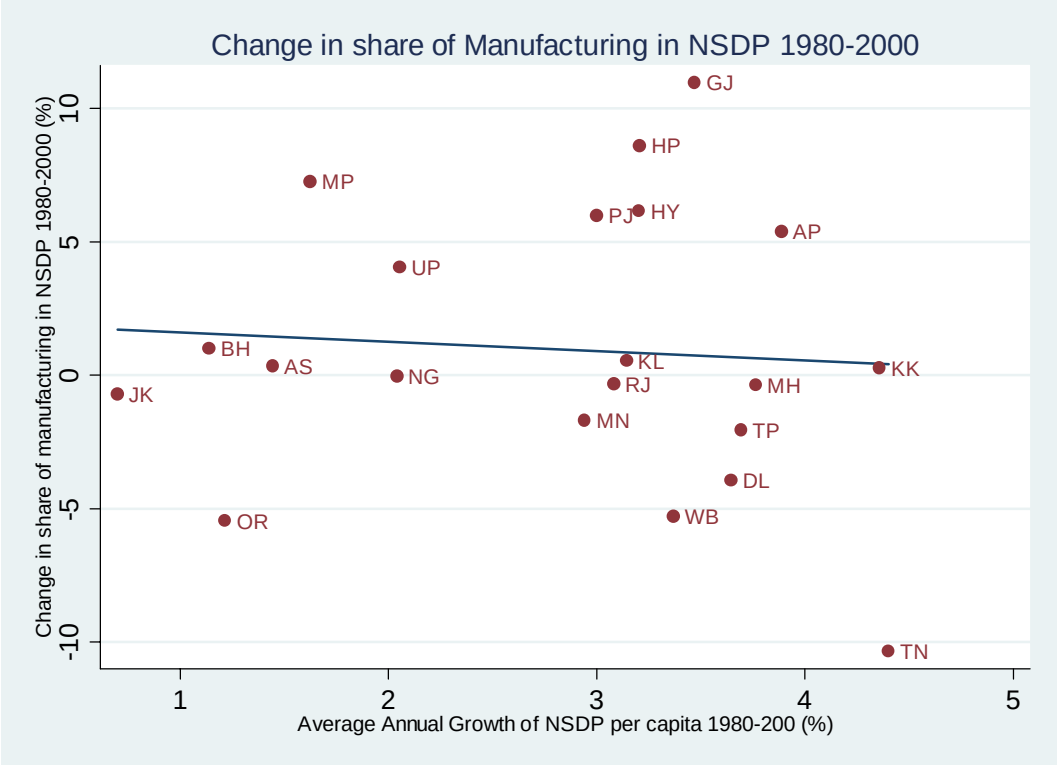
Sources: Based on authors' calculations. Data used is from UNIDO 3-digit industrial statistics database (2003).
Notes: Starting point for all countries is 1981 and the last period is 1996.
CHN stands for China, IND for India, IDN for Indonesia, KOR for Korea, MYS for Malaysia.
Herfindahl Index is a measure of concentration. The lower the index the lower is concentration and the higher is diversification.

Figure 7. Diversification in Indian Manufacturing



Sources: Based on authors' calculations. Data used is from UNIDO 3-digit industrial statistics database (2003).
Notes: Starting point for all countries is 1981 and the last period is 1996.
CHN stands for China, IND for India, IDN for Indonesia, KOR for Korea, MYS for Malaysia.
Herfindahl Index is a measure of concentration. The lower the index the lower is concentration and the higher is diversification.

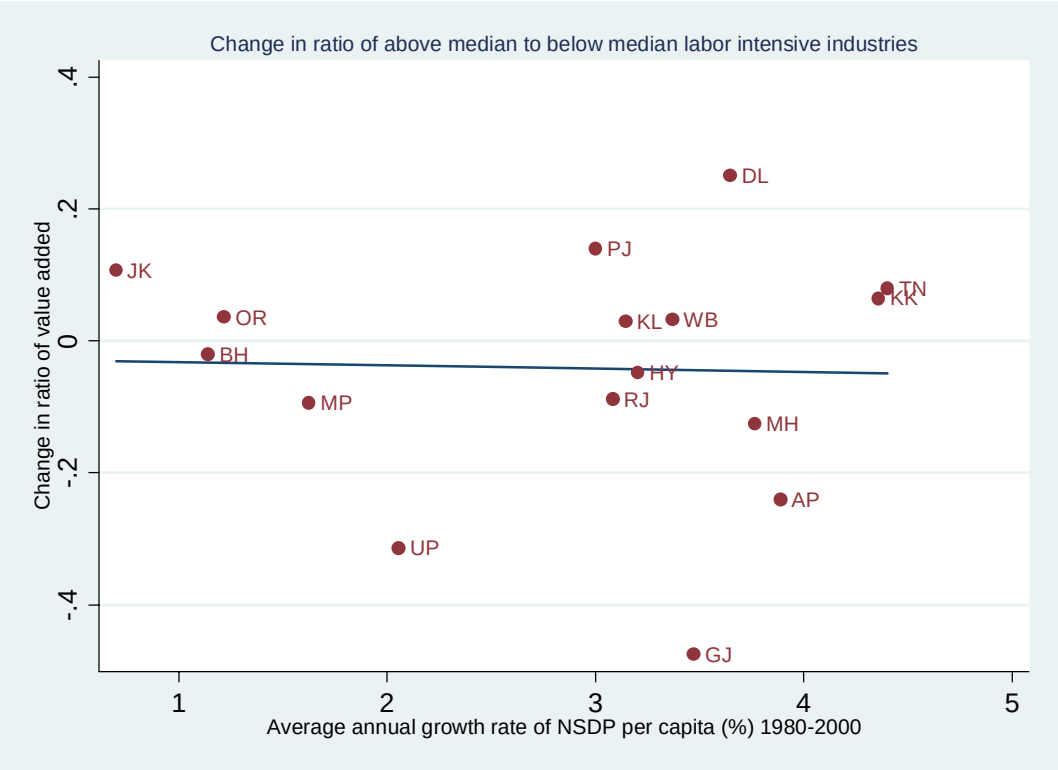
Figure 8. Manufacturing and States' NSDP Growth



Sources: Based on authors' calculations. Data used is from EPW Research Foundation CD-ROM, Domestic Product of States of India: 1960-61 to 2000-01.
Notes: NSDP is the net state domestic product.

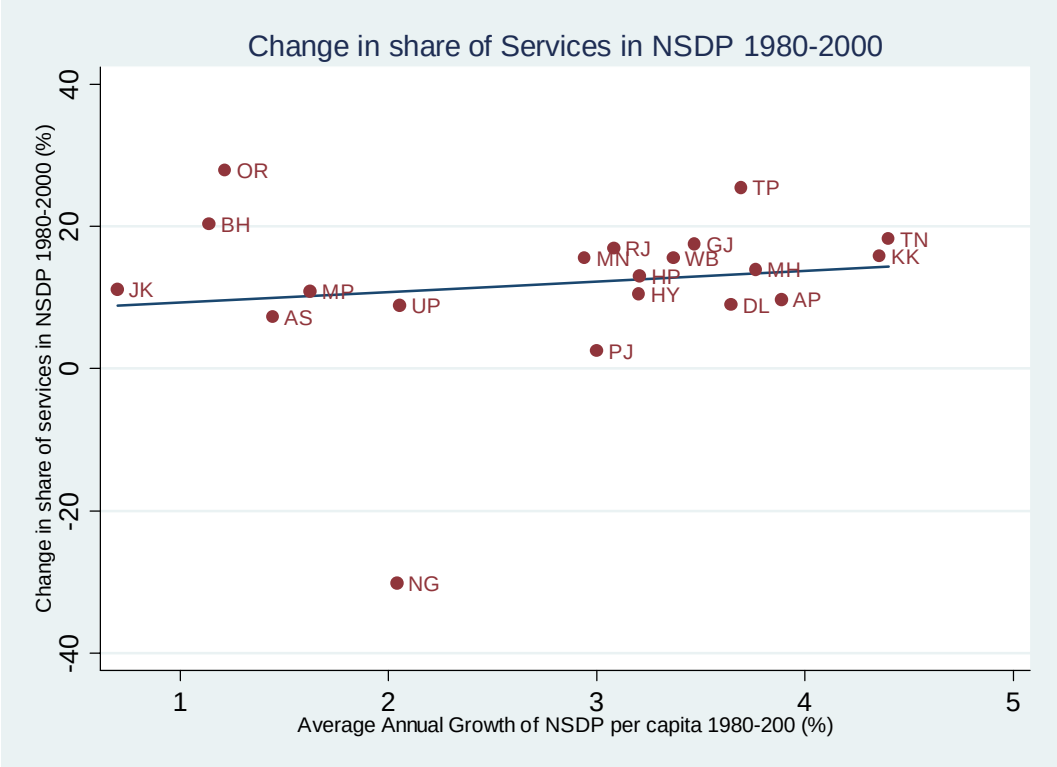
Code	State	Code	State	Code	State
AP	Andhra Pradesh	JK	Jammu & Kashmir	OR	Orissa
AS	Assam	KK	Karnataka	PJ	Punjab
BH	Bihar	KL	Kerala	RJ	Rajasthan
DL	Delhi	MH	Maharashtra	TN	Tamil Nadu
GJ	Gujarat	MN	Manipur	TP	Tripura
HP	Himachal Pradesh	MP	Madhya Pradesh	UP	Uttar Pradesh
HY	Haryana	NG	Nagaland	WB	West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

Figure 9. Share in Labor Intensive Industries and States' NSDP Growth



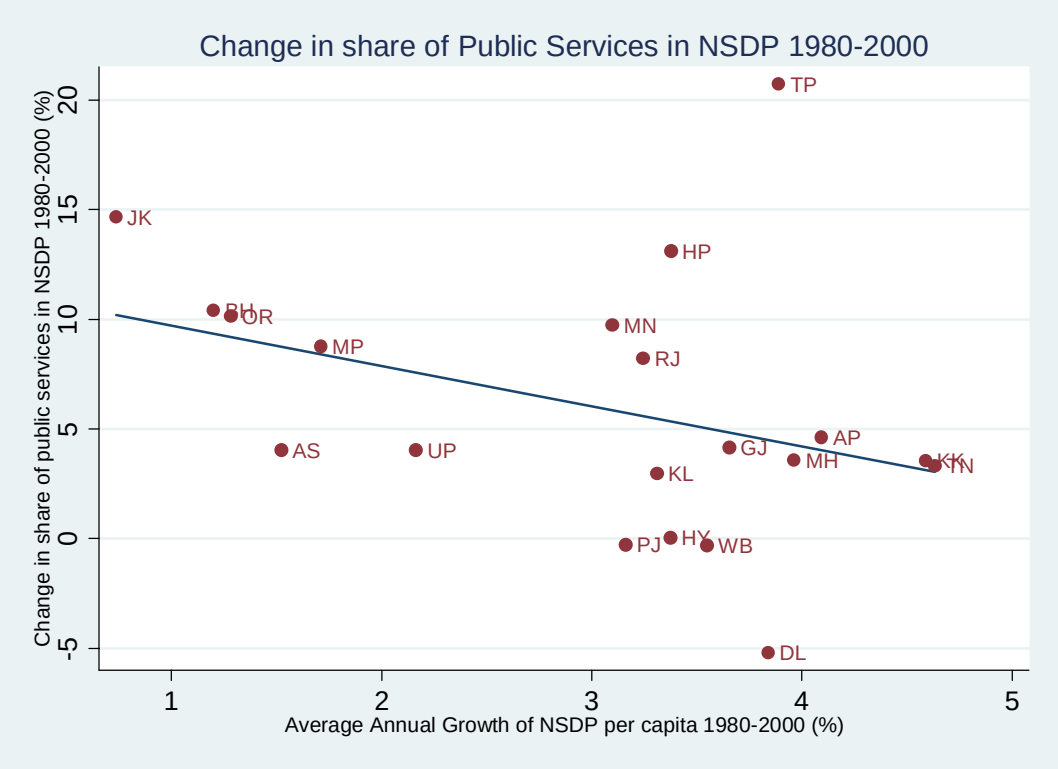
Sources: Based on authors' calculations. Data is used from EPW Research Foundation CD-ROMs, Domestic Product of States of India: 1960-61 to 2000-01 and Annual Survey of Industries.
Notes: NSDP is the net state domestic product. On vertical axis is the change in ratio of valued added in above median labor-intensive sectors to value added in below median sectors.

Figure 10. Services and States' NSDP Growth



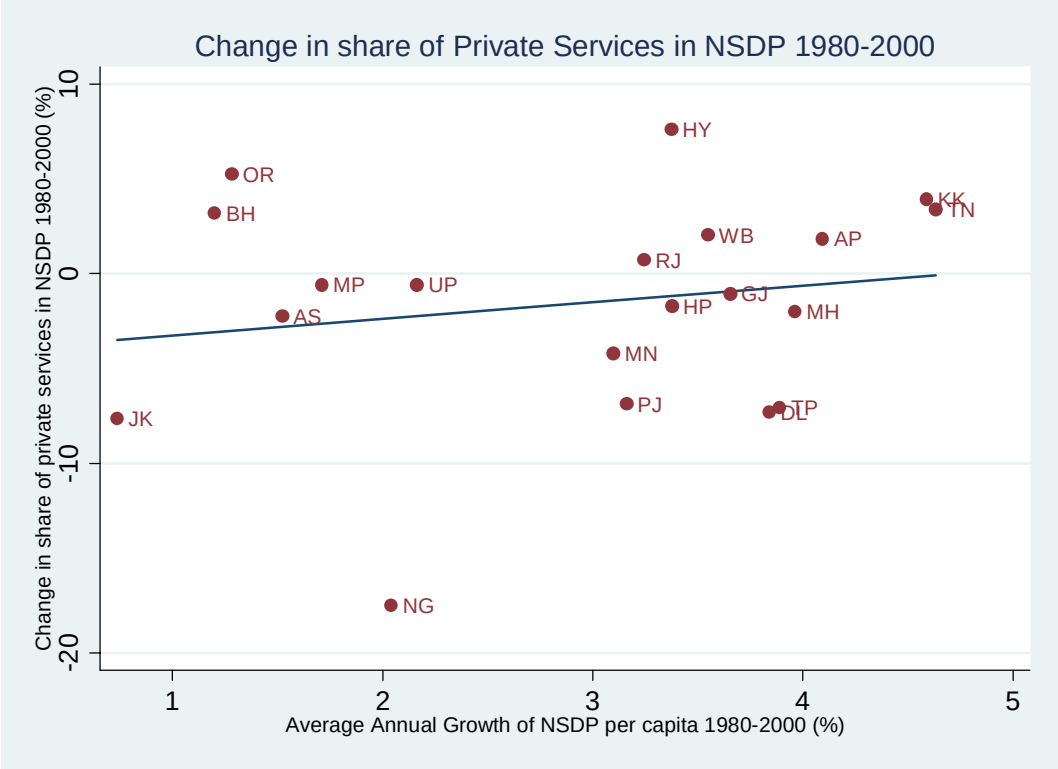
Sources: Based on authors' calculations. Data used is from EPW Research Foundation CD-ROM, Domestic Product of States of India: 1960-61 to 2000-01.
Notes: NSDP is the net state domestic product.

Figure 11. Public Services and States' NSDP Growth



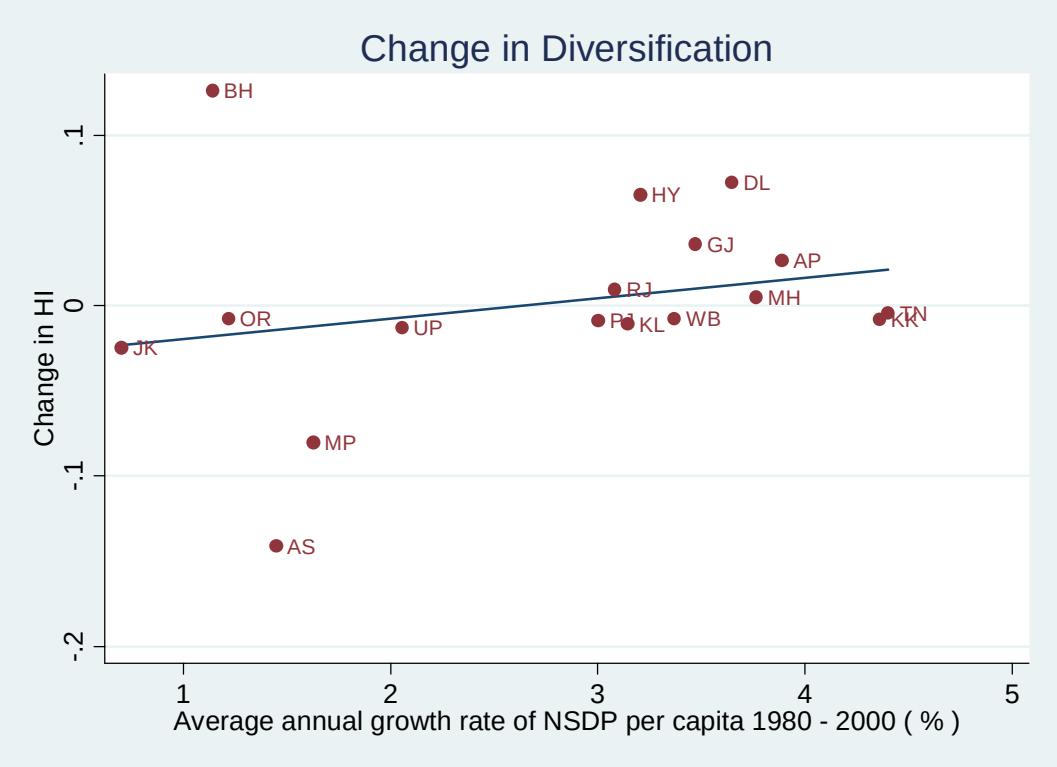
Sources: Based on authors' calculations from EPW Research Foundation CD-ROM, Domestic Product of States of India: 1960-61 to 2000-01.
Notes: NSDP is the net state domestic product. Selected public sector services include electricity, public administration, railways and other public sector services.

Figure 12. Private Sector Services and States' NSDP Growth



Sources: Based on authors' calculations from EPW Research Foundation CD-ROM, Domestic Product of States of India: 1960-61 to 2000-01.
Notes: NSDP is the net state domestic product. Selected private sector services include business services, real estate and retail trade.

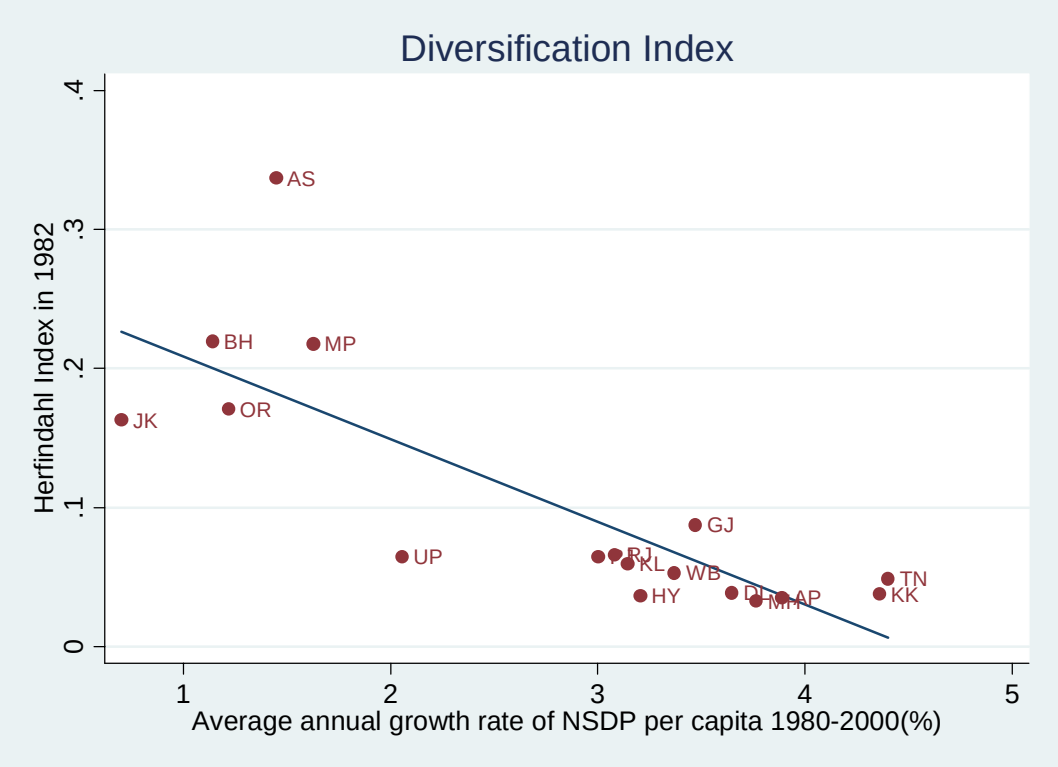
Figure 13. Change in Diversification and States' NSDP Growth



Sources: Based on authors' calculations. Data used is from EPW Research Foundation CD-ROM, Domestic Product of States of India: 1960-61 to 2000-01 and 3-digit industry level data at the state level is from Circon India Data Center.

Notes: NSDP is the net state domestic product. HI is the Herfindahl Index based on value added. Herfindahl Index is the measure of diversification used. Change in Herfindahl Index is calculated as the difference between Herfindahl Index averaged for 1982, 1984, 1985 and Herfindahl Index averaged for 1995-1997.

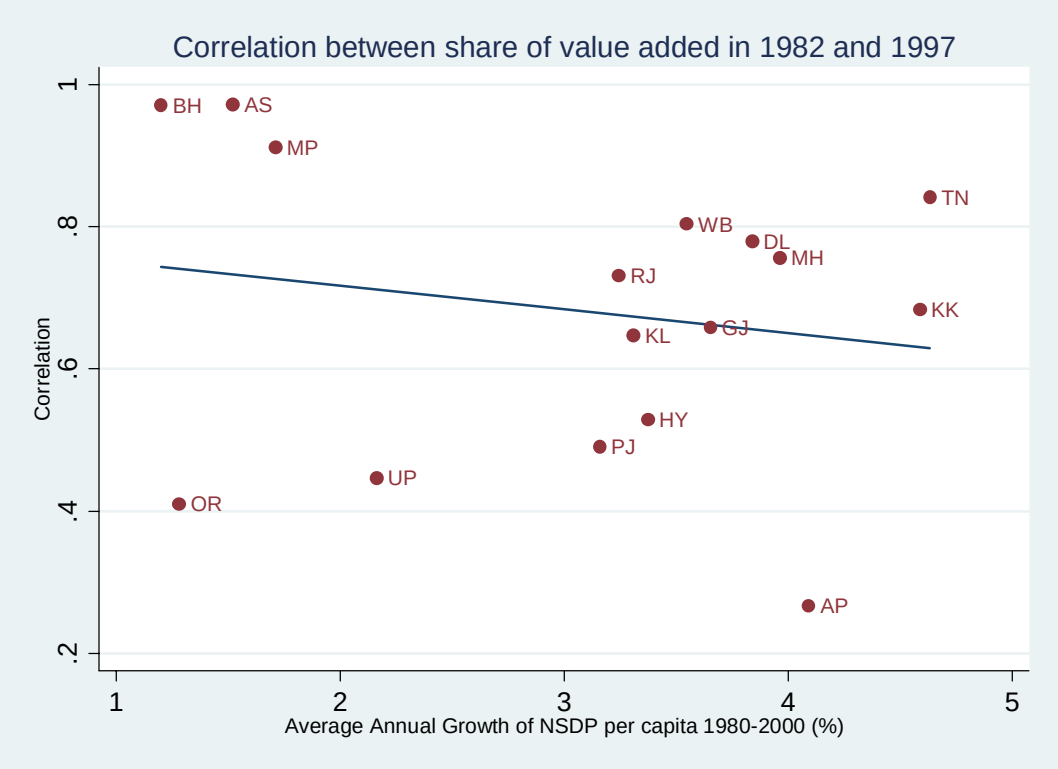
Figure 14. Initial Diversification and States' NSDP Growth



Sources: Based on authors' calculations. Data used is from EPW Research Foundation CD-ROMs, Domestic Product of States of India: 1960-61 to 2000-01 and 3-digit industry level data at the state level is from Circon India Data Center.

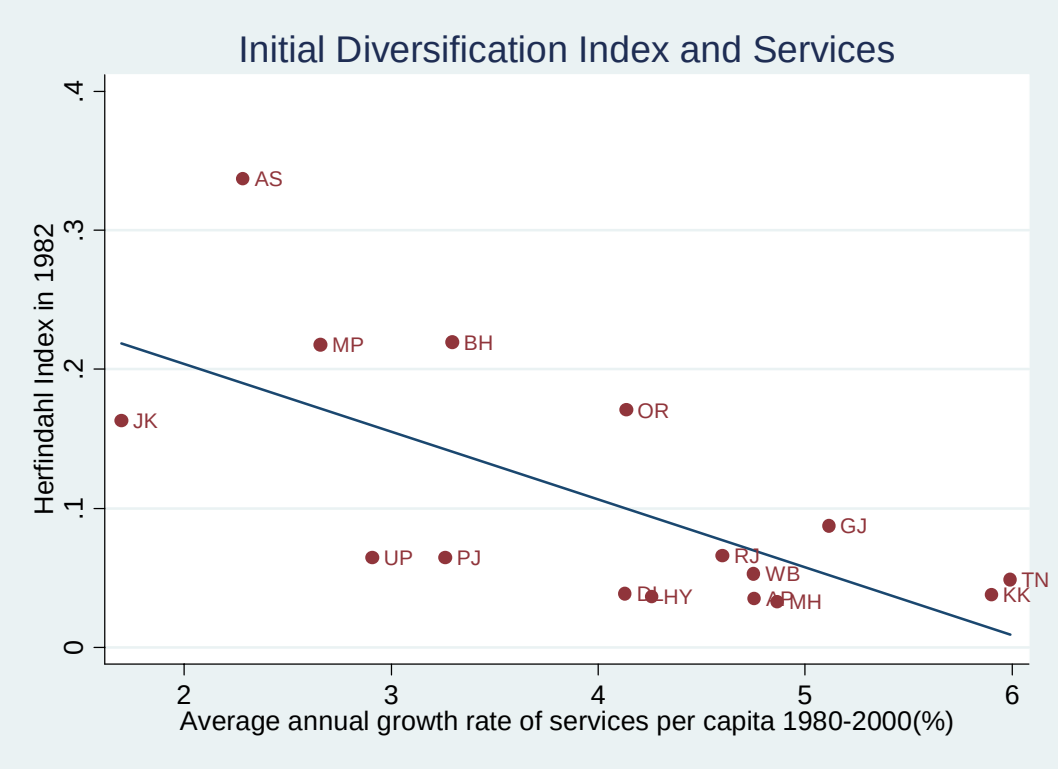
Notes: NSDP is the net state domestic product. HI is the Herfindahl Index based on value added. Herfindahl Index is the measure of diversification used. Herfindahl Index is a measure of concentration. The lower the index the lower is concentration and the higher is diversification.

Figure 15. Diversification and States' NSDP Growth



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

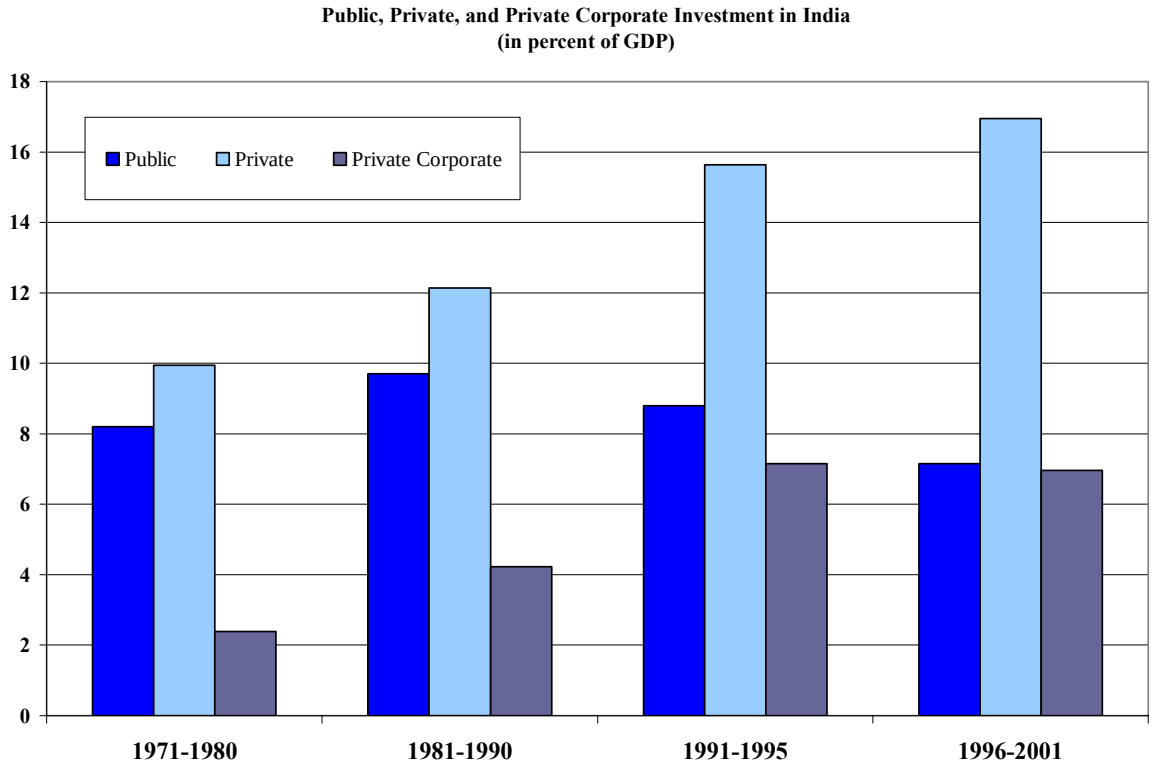
Figure 16. Initial Diversification Index and Services



Sources: Based on authors' calculations. Data used is from EPW Research Foundation CD-ROMs, Domestic Product of States of India: 1960-61 to 2000-01 and 3-digit industry level data at the state level is from Circon India Data Center.

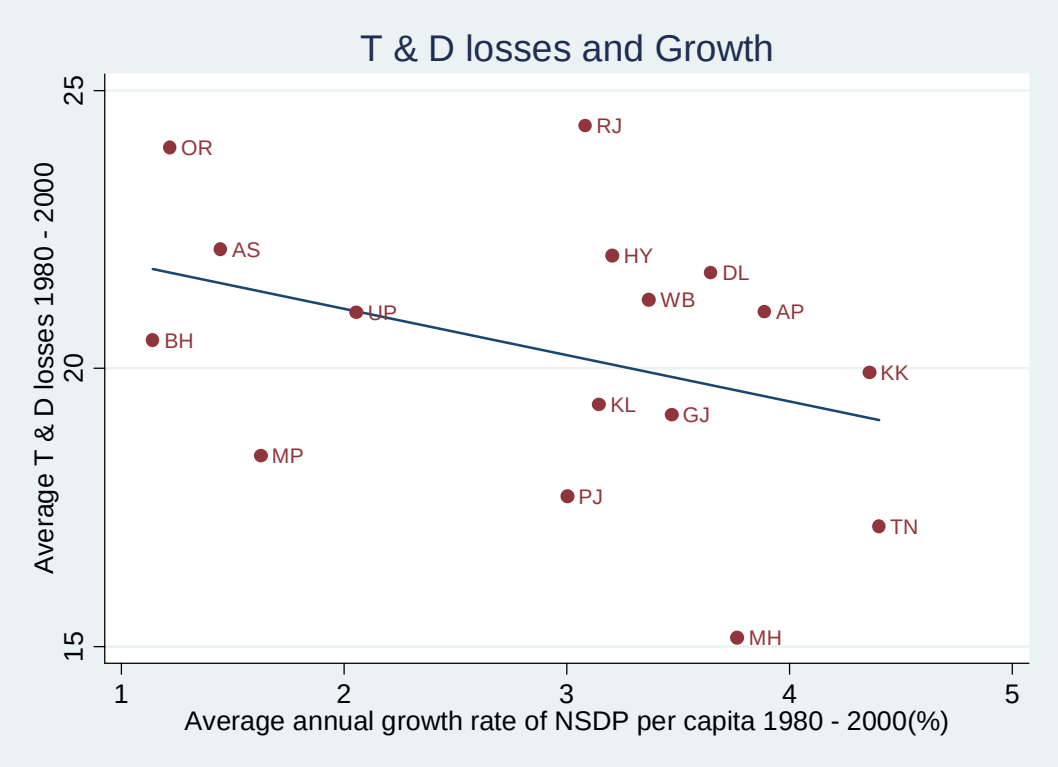
Notes: HI is the Herfindahl Index based on value added. Herfindahl Index is the measure of diversification used. Herfindahl Index is a measure of concentration. The lower the index the lower is concentration and the higher is diversification.

Figure 17. Public and Private Investment



Source: Authors' calculations based on national accounts data from CSO.

Figure 18. T&D Losses and States' Growth



Sources: Based on authors' calculations. Data used is from EPW Research Foundation CD-ROM, 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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