

INTER-REGIONAL DISPARITIES IN INDUSTRIAL GROWTH AND STRUCTURE

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IN THE INDIAN ECONOMY**
Macro-economic Implications of Emerging Pattern

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Preface

Institute for Studies in Industrial Development (ISID) has been carrying out a 3-year Research Programme on “Structural Changes, Industry and Employment in Indian Economy: Macro-economic Implications of Emerging Pattern” with the sponsorship of the Indian Council of Social Science Research (ICSSR) since March 2009. The Programme envisages undertaking studies on various aspects of the structural changes in the Indian economy under the following six major themes:

- i) Growth and Structural Changes in Indian Economy
- ii) Employment Implications of Structural Changes
- iii) Growth and Structure of Industry
- iv) Structure of Services Sector
- v) Income Distribution, Demand Supply Balances and Price Stability
- vi) Trade

The Programme team which consists of several faculty members of the Institute has identified over a dozen different sub-themes within the above major themes for study. The present study on “Inter-regional Disparities in Industrial Growth and Structure” is one of those identified under the broad theme of Growth and Structure of Industry.

An earlier draft of the paper was presented at a national workshop, organised to discuss 10 studies at different stages of progress under the Programme, during 7–8 July 2011. We have immensely benefited from the comments and suggestions made by participants, especially by Professor A.K. Singh, who chaired the discussion on it and also made detailed written comments and Dr Dinesh N. Awasthi, who acted as the main discussant on the paper.

We are grateful to other members of the Programme Team for their comments, cooperation and help. We are especially thankful to Dr Partha Pratim Sahu for his valuable guidance on data selection and statistical analysis.

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I. Introduction

Inter-regional disparity in levels of development and incomes is a major issue of economic, social and political significance in India. That there are wide disparities across the states is well known and is also recognized as a concern to be addressed through public policy. Several mechanisms and instruments have been in use to reduce these disparities since independence. Some of them like the Finance Commission, a constitutionally provided mechanism and the Planning Commission are of a standing nature while several others, in the form of policies and programmes are adopted from time to time to promote development of relatively less developed states and regions by giving them preferential treatment in central public investment, and fiscal and financial concessions and incentives.

Public policy instruments, no doubt, influence the growth of economic activity in different regions, but in ultimate analysis, relative economic position of different regional entities depends on their rate and pattern of economic growth which are determined by several other factors, especially the region-specific factors. According to the dominant theory of modern economic development, industry is expected to play a major role in creating as well as mitigating disparities among different regions. Industry is seen as the main “engine of growth” (Kaldor, 1967) and industrial development subject to “cumulative causation” to a larger degree than development of other sectors (Myrdal, 1957). Industrial development, and consequently overall economic development of different regions, according to the typical conventional theory of regional development, is expected to take a path that finally leads to a “convergence” (See Barro and Sala-i-Martin, 1992 and 1995). To begin with, industry goes where industry is—as a result of developed infrastructure, agglomeration and linkages, but subsequently, when diminishing returns set in—in the more industrialised regions—it shifts to less developed regions. Since diminishing returns set in agriculture much earlier, due to fixity of land and limits to technological advances, it is industry with continuation of increasing returns for a reasonably long period of time, that plays the levelling role once the process of its

development starts in the poorer regions. The historical experience of development, as a result, has revealed what is called “inverted U-shaped” behaviour of disparities in the long period development (Williamson, 1965; Barro and Sala-i-Martin, 1990; Kuznets, 1955). In a way, this represents the “spatial” version of Kuznets Hypothesis on income inequality.

Contrasting the ‘convergence’ hypothesis there is an equally strong view that postulates increasing divergence due to “technology and agglomeration externalities” which make increasing returns possible over long periods. Different regions situated differently in terms of initial levels and capacities for development are thus subjected to “cumulative causation”. They not only grow differentially due to internal factors, but differences get reinforced through interaction among them through the mechanism of “back-wash effects” (Myrdal, 1957; Hirschman, 1958; Kaldor, 1970). Differences arise and get perpetuated often by what are called the ‘core-periphery’ and ‘dependency’ relationships that apply both internationally and inter regionally (Baron, 1957). Technological change, new forms of organisation and transaction costs are also seen by some, specially the post-Fordist scholars, as factors leading to widening of disparities (Piore and Sebel, 1984).

What has been the experience in India? Have inter-regional disparities in levels of incomes, economic development and industrial activity increased or declined over the post-Independence period, especially since early 1990s when economic reforms were introduced and the country adopted the path of globalisation? The fact that wide variations exist in the levels of economic development, particularly of industrial development, was recognised soon after Independence. Policy mechanisms and instruments were devised to mitigate these disparities, specially in industrial sector in the form of establishment of central public sector undertakings in less industrially developed regions, use of “backwardness” of regions as a criterion in industrial licensing, special packages for development of industrial infrastructure in poorer states, and special fiscal and financial incentives for industrial development in backward areas. Have they helped in promoting industrial development in poorer states and regions thus leading to a reduction in inter-regional disparities in the levels of industrialisation? There is a view that these policies of state intervention have, in fact, tended to favour better developed

urbanized areas within the backward states (Lipton, 1977). Some of the policies aiming at providing a level-playing field to all states, such as Freight Equalisation in respect of coal, steel and cement have actually been found to disfavour the industrially backward states like Bihar and Madhya Pradesh.

Most of these policies have been removed, if not reversed, since the introduction of economic reforms. Has that led to any change in the trends in interregional variations in growth of industrial activity? There is a view that post-reform regional development is likely to be more evenly balanced” (Elizondo and Krugman, 1992), as a “free flow of goods, services and factors of production” would have strengthened spread effects thus reducing inter-regional disparities (Dholakia, 2009). A study using ASI data has, however, found that the new investments are spatially more concentrated in the post-reform than in the pre-reform period (Chakravorty and Lall, 2007). It is, therefore, interesting to study the pattern of disparities in the post-reform period when most of the “interventionist” measures have been removed in comparison with the pre-reform period when they were in place. If anything, India now has “a reduced or spatially disengaged state as far as the promotion of regional balance is concerned and a more enlarged state in terms of promoting selected metropolitan regions for receiving investment, especially foreign direct investment (FDI)” (Chakravorty and Lall, 2007, p. 20).

There have been a few studies examining the pattern of interstate disparities in industrial development in India, covering different periods of time. Some early studies, covering 1950's and 1960's, observed a decline in disparities (Dhar and Sastry, 1967; Sardamoni, 1969). Covering the period of 1950–51 to 1975–76, another study (Mathur, 1983) observed that while overall income disparity had narrowed down, the secondary sector has moved along an inverted U-shaped path (the primary sector having followed the reverse path). Another study (Awasthi, 1991), covering almost the same period, however, found that interstate disparities in industrial development had narrowed down. Increasing divergence seems to be the case during 1970's and 1980's, according to another study (Bajpai and Sachs, 1996) which finds a reversal of trend in disparity in per capita income from convergence during 1961–71 to divergence during 1972–82 and 1983–93 and attributes it to concentrated pattern of industrialisation and of Green Revolution during the latter

two decades. Another study (Marjit and Mitra, 1996) covering the period (1961–62/1989–90) found that income disparities across Indian states are on the ascending part of the “inverted U-shaped curve”.

All of the few studies that relate to the post-reform period have pointed to a trend towards greater divergence in industrial growth as industrialised states were found to be growing faster than backward states (Bhattacharya and Sakthival, 2004). One of them (Nair, 2005) found this trend to be in contrast with the pre-reform period. A study that has examined the post-reform behaviour of investment and industrial location taking ASI census sector data for 1995 as indicative of pre-reform level of investment and investment in completed or under-implementation projects during January 1992 to February 1998 from CMI database for investment in post reform period (Chakravorty and Lall, 2007) has come out with several interesting findings. Overall, it concludes that there is evidence of the “return of cumulative causation and divergence”. It found that advanced region (Western India), though not the most advanced state (Maharashtra) was the main beneficiary of new investment; Northern and Eastern Regions lost their shares though Orissa—the least industrialised state—gained. Southern Region maintained its share though Karnataka had a significant gain and Andhra Pradesh suffered a loss. Another interesting aspect examined by this study related to the trend in localised concentration. Based on district level investment data it found that only two districts (greater Bombay and Visakhapatnam) among the top ten in the pre-reform period, could maintain their position in the top ten in the post reform period, though even these two lost in their relative share (*ibid.*, Table 2.6). Bharuch, which held 22nd position in pre-reform period, stood first in post reform period and Surat climbed up from fourteenth to second position. Madras with sixth rank and Hyderabad with eighth rank in pre-reform period did not feature even among the top 25 districts in post-reform period. A geographically significant finding of the study is that all top ten districts in terms of the share of investment in the post-reform period were situated “south of Vindhya”, the corresponding number was six in pre-reform period. Even among the top 25 districts, the study concludes that metropolitan regions have gained, but not necessarily the largest ones. The phenomenon is described as that of “concentrated decentralisation” (*ibid.*, p. 71).

Why do rates of industrial growth differ among states? It is a natural question with seemingly obvious answers: infrastructure, human development and expanding markets are among the factors most often mentioned to explain differences in growth rates. Level and growth of agriculture is seen as another factor acting both on supply and demand side to affect the rate of industrial growth. According to a study (Sastry *et. al.*, 2003), agriculture contributed to industrial growth through production channel during 1960's, but by 1990's it contributed greatly through the demand channel. Another study (Chakravorty and Lall, 2007) argues that new investments tend to go where industrial concentration exists. Does industry go where industry is; the other factors only explaining existence, rather than growth, of industry in different regions? A related question, why industrial structure varies among states in term of degrees of diversification and specialization, is also equally interesting, as the industrial base varies widely among them. On the basis of an examination of the industrial structure of different states and changes in it between 1951 and 1965, a study (Alagh *et. al.* 1971) found that states with specialization in resource (raw material) based industries have less diversified industrial structure, while industrial structure of states with a base of "rounded spectrum of industries" including capital goods and demand based industries is more diversified. Also, more industrialised states had a more diversified industrial structure than those with lower levels of industrialisation. Another study (Awasthi, 1991) covering the period 1961–1978, also confirmed this observation. These propositions need to be examined afresh in the context of a highly different pattern of industrialisation that has emerged during the last two to three decades.

II. The Present Study: Objectives, Scope and Method

The present study examines the issues and propositions outlined above by analyzing the growth and structure of manufacturing industry in different states of India, in a comparative framework. It attempts an assessment of the contribution of industry to the interstate variations in the rates of economic growth. In the process it also analyses the differences in the industrial structure and factors responsible for variations in the extent and structure of industrialisation. Interstate variations in the levels of productivity and capital intensity are also studied. It also examines the differences in the pre- and post-reform trends at regional levels and pattern of industrial development, as the earlier studies have covered only a short period after economic reforms. It also covers the organised and unorganised manufacturing unlike most of the earlier studies which have covered only the former. Broadly, the study seeks to answer the following questions:

- i) How strong is the relationship between the level of industrialisation and overall economic development across the states of India? Does this relationship hold cross-sectionally and temporally?
- ii) How is industry distributed across states? What changes have taken place in the share of different states over the years?
- iii) What has been the performance of different states in the growth of industry? How have the rates of industrial growth varied across states in relation with the initial levels of industrialisation? Have the industrially better developed states experienced faster industrial growth?
- iv) How does the structure of industries—by product group, organised/unorganised segments, agro-based and others—differ among states? Have there been significant changes in recent years? What explains the structural variations in industry among states?

- v) How do technical ratios, like output-labour and capital-labour, differ among states? Have there been changes in relative position of different states in these ratios?
- vi) What has been the impact of economic reform measures on the relative industrial performance of different states?

'Industry' for the purpose of this study includes 'manufacturing'. Period of study and states covered in different parts of the study some time vary depending upon the availability of data. Major sources of data for study are: CSO for Gross State Domestic Product (GSDP) estimates, Annual Survey of Industries (ASI) and National Sample Survey Organization (NSSO) survey of employment and unemployment and unorganised enterprises. Due to data limitations some analysis is attempted only for the organised industry (ASI) and some other only for the unorganised industry (NSSO Surveys), or for the two separately rather than for the industrial sector in aggregate except in respect of GSDP of different states and employment for which data from CSO, National Accounts Statistics and NSSO quinquennial surveys on employment and unemployment are available.

III. The Extent and Change in Industrialisation: Convergence or Divergence among States

Extent of Industrialisation

Differences in the extent of industrialisation are one of the most glaring aspects of the variations in the levels and structure of state economies. The share of manufacturing in the Gross State Domestic Product (GSDP) varies very widely among the Indian states. In terms of this indicator, Gujarat with about 30 per cent share of manufacturing in GSDP was the most industrialised state among the major states of India in 2008–09 (*Table 1*). Other major states which had a higher than the national figure of 17 per cent were Maharashtra (23.46 per cent), Tamil Nadu (23.32 per cent), Haryana (20.0 per cent), Karnataka (19.85 per cent) and Orissa (17.04 per cent). Kerala had the lowest 9.96 per cent of its SDP originating in manufacturing. Andhra Pradesh followed by Bihar and Uttar Pradesh were other states with low level of industrialisation with only 12 to 14 per cent of their SDP originating in manufacturing.

Among the three new states—Chhattisgarh, Jharkhand and Uttarakhand—Chhattisgarh and Jharkhand feature as relatively better industrialised states with 21.94 and 32.02 per cent share of manufacturing in their SDP. Uttarakhand with 14.12 per cent of its SDP from manufacturing is among the states with a low level of industrialisation. All states in the North Eastern Region except Assam (10.74 per cent) had less than 10 per cent of their SDP from manufacturing industry. Among UTs and other states Pondicherry (65.49 per cent) and Goa (30.08 per cent) showed a relatively high degree of industrialisation. The share of industry in GDP ranged between 9.96 per cent in Kerala, the least industrialised state to 29.94 per cent in Gujarat, the most industrialised state, in 2008–09. The range of variation seems to have marginally declined from 1980–81, when the least industrialised state (Kerala) had 9.52 per cent of its SDP originating from manufacturing while in the most industrialised state (Tamil Nadu) manufacturing contributed 31.47 per cent. But the states in the most industrialised category have changed their relative positions. In fact, West Bengal which held second position in 1980–81 has gone out of the group

Table 1
Share of Manufacturing in Total GSDP (%) at 1993–94 Prices

	Major States	1980–81	1990–91	2000–01	2008–09
1	Andhra Pradesh	13.86	15.32	13.69	12.05
2	Bihar(+)	9.92	12.56	9.17 (3.73)	13.27 (2.50)
3	Gujarat*	18.92	26.14	30.41	29.94
4	Haryana**	13.65	19.10	20.59	20.00
5	Karnataka	15.25	18.63	17.26	19.85
6	Kerala*	9.52	11.11	11.68	9.96
7	Madhya Pradesh (+)	11.11	15.50	16.46 (15.08)	15.35 (12.73)
8	Maharashtra*	24.92	26.08	23.93	23.46
9	Orissa	9.08	11.29	12.13	17.04
10	Punjab	9.21	13.61	15.96	16.05
11	Rajasthan	12.43	12.36	16.50	15.63
12	Tamil Nadu	31.47	28.54	24.36	23.32
13	Uttar Pradesh (+)	9.01	13.87	13.85 (14.00)	14.02 (14.01)
14	West Bengal*	20.31	17.80	17.28	16.37
New States					
15	Chhattisgarh	-	-	18.50	21.94
16	Jharkhand	-	-	19.17	32.02
17	Uttarakhand	-	-	11.74	14.12
North Eastern States					
18	Arunachal Pradesh*	3.80	2.60	3.43	2.03
19	Assam	9.55	9.17	7.67	10.74
20	Manipur	6.41	13.53	7.93	7.48
21	Meghalaya	1.80	2.42	2.07	8.49
22	Mizoram	1.49	2.87	1.73	2.13
23	Nagaland**	5.09	3.65	1.12	1.40
24	Sikkim	0.00	0.00	4.13	3.48
25	Tripura*	3.44	2.78	4.85	2.82
Union Territories and Other States					
26	A&N Islands*	7.27	6.39	4.80	3.35
27	Chandigarh	N.A.	N.A.	15.63	12.72
28	Delhi	8.25	8.94	11.49	8.80
29	Dadar and Nagar Haveli	N.A.	N.A.	N.A.	N.A.
30	Daman and Diu	N.A.	N.A.	N.A.	N.A.
31	Lakshadweep	N.A.	N.A.	N.A.	N.A.
32	Pondicherry	20.39	28.74	49.10	65.49
33	Goa*	24.24	22.29	33.26	30.08
34	Himachal Pradesh*	3.01	7.32	15.02	13.64
35	Jammu & Kashmir*	N.A.	N.A.	5.86	8.10
	India	13.80	16.60	17.20	17.00
	SD	6.78	5.82	5.74	5.29
	CV	45.52	33.70	33.06	30.08

Note: 1. Figure in parentheses against Bihar, Madhya Pradesh and Uttar Pradesh are for the territory after division while those outside include new states Jharkhand, Chhattisgarh and Uttarakhand respectively, in this as well as other tables.

2. Estimates of SD and CV are based on 14 major states

3. * Latest available data is for the year 2007–08, ** Latest data available is for the year 2006–07

4. N.A: Not available

Source: www.mospi.gov.in

of top five, to the seventh position. Haryana, which was below national average, has acquired fourth position. Tamil Nadu has yielded its first position in 1980–81 to

Gujarat in 2008–09, the latter held fourth position in 1980–81. Orissa, which was amongst the least industrialised states in 1980–81, rose to the national average in 2008–09. Other states which have experienced relatively rapid industrialisation during the 28 year period, in terms of a significant increase in the share of manufacturing in GSDP are: Karnataka, Punjab, Madhya Pradesh, Rajasthan and Uttar Pradesh. Gujarat, of course, had the fastest advance in industrialisation, raising its manufacturing share in SDP from 19 per cent in 1980–81 to 30 per cent in 2008–09. Among smaller states and UTs, Himachal Pradesh (from 3.01 per cent in 1980–81 to 13.64 per cent in 2008–09) and Pondicherry (from 20.39 per cent in 1980–81 to 65.49 per cent in 2008–09) made rapid advance in industrialisation.

West Bengal saw a ‘deindustrialisation’ insofar as manufacturing now contributes only 16.4 per cent in SDP as compared to 20.3 per cent 28 years back. Maharashtra and Andhra Pradesh also experienced some decline in the share of manufacturing in their SDP from 25 to 24 per cent and from 14 to 12 per cent, respectively. North Eastern states in which some such decline has taken place are Arunachal Pradesh (3.80 to 2.03 per cent), Nagaland (5.09 to 1.40 per cent) and Tripura (3.44 to 2.82 per cent). Andaman and Nicobar Island also saw a significant decline in the share of manufacturing SDP from 7.27 to 3.35 per cent.

Amidst changes in different directions and extent, the overall disparity in the degree of industrialisation seems to have declined. Both standard deviation (SD) and coefficients of variation (CV) have declined from one decade to another since 1980–81. SD declined from 6.78 in 1980–81 to 5.29 in 2008–09 and CV from 45.52 per cent to 30.08 per cent (*Table 1*).

Industrialisation, SDP Growth Rate and Structural Transformation

Has a faster pace of industrialisation been accompanied also by a larger transformation of state economies from agricultural to non-agricultural? Is there a direct relationship between the increase in the share of manufacturing and decline in that of agriculture, as has been conventionally presumed? In this connection it needs to be noted that over the years 1980–81 to 2008–09, the share of agriculture in the national GDP declined from 39.70 per cent to 16.20 per cent (*Table 2*). This decline has, however, not meant a corresponding gain in the share of manufacturing which

Table 2
Share of Agriculture in Total GSDP (%) at 1993–94 Prices

	<i>Major States</i>	1980–81	1990–91	2000–01	2008–09
1	Andhra Pradesh	38.66	33.31	28.61	22.23
2	Bihar(+)	52.45	43.84	38.43 (46.56)	25.74 (31.62)
3	Gujarat*	38.21	27.02	15.19	16.00
4	Haryana**	49.09	42.94	32.07	23.10
5	Karnataka	43.56	33.45	26.37	13.83
6	Kerala*	41.70	31.16	23.64	15.68
7	Madhya Pradesh (+)	47.30	38.01	24.03 (25.87)	23.99 (26.23)
8	Maharashtra*	25.53	20.73	15.49	13.35
9	Orissa	54.59	38.69	28.22	19.24
10	Punjab	46.41	46.02	39.21	32.55
11	Rajasthan	43.80	41.11	26.73	24.00
12	Tamil Nadu	25.25	22.75	17.62	10.99
13	Uttar Pradesh (+)	48.05	39.27	35.60 (35.65)	27.72 (28.37)
14	West Bengal*	31.94	30.95	26.06	20.70
<i>New States</i>					
15	Chhattisgarh	-	-	18.25	18.33
16	Jharkhand	-	-	23.49	15.48
17	Uttarakhand	-	-	34.88	28.37
<i>North Eastern States</i>					
18	Arunachal Pradesh*	44.96	31.79	28.99	16.31
19	Assam	49.21	41.48	34.02	23.93
20	Manipur	28.76	35.44	32.89	26.36
21	Meghalaya	41.75	29.45	25.06	21.03
22	Mizoram	26.96	21.14	19.67	15.38
23	Nagaland**	27.57	24.70	33.94	35.51
24	Sikkim	41.08	34.75	21.86	16.66
25	Tripura*	56.00	42.09	32.05	28.59
<i>Union Territories and Other States</i>					
26	A&N Islands*	43.69	47.39	29.32	11.90
27	Chandigarh	N.A.	N.A.	1.10	0.53
28	Delhi	4.28	2.98	1.31	0.63
29	Dadar and Nagar Haveli	N.A.	N.A.	N.A.	N.A.
30	Daman and Diu	N.A.	N.A.	N.A.	N.A.
31	Lakshadweep	N.A.	N.A.	N.A.	N.A.
32	Pondicherry	29.08	18.90	6.95	3.52
33	Goa*	20.55	14.53	8.44	4.46
34	Himachal Pradesh*	44.21	35.51	23.41	18.99
35	Jammu & Kashmir*	N.A.	N.A.	32.17	28.57
<i>India</i>		<u>39.70</u>	<u>32.20</u>	<u>23.90</u>	<u>16.20</u>

Note: Same as Table 1

has increased at a much slower pace, from 13.80 to 17.00 per cent. Major gain in the share has been for the services which rose from 36.60 per cent in 1980–81 to 57.30 per cent in 2008–09.

Similar phenomenon of a shift mainly from agriculture to services is observed in the case of most of the major states. Yet in some cases, particularly where industrialisation has been rapid, decline in agriculture has been accompanied, to a

large extent, by an increase in industry. Thus in the case of Gujarat, share of agriculture declined from 38 to 16 per cent, that is, by 22 percentages point, it was accompanied by an equal increase in the share of manufacturing and of services, by 11 percentage point each (Tables 1 & 3). Similarly, in Orissa, a decline in the share of

Table 3
Share of Services in Total GSDP (%) at 1993–94 Prices

		1980–81	1990–91	2000–01	2008–09
Major States					
1	Andhra Pradesh	39.26	41.71	46.54	51.25
2	Bihar(+)	28.02	31.95	39.76 (43.39)	45.41 (51.28)
3	Gujarat*	33.22	37.34	44.18	44.38
4	Haryana**	25.39	29.81	40.18	46.43
5	Karnataka	31.59	39.17	46.13	54.53
6	Kerala*	40.92	50.35	56.09	60.73
7	Madhya Pradesh (+)	27.99	33.36	39.82 (40.55)	38.22 (39.71)
8	Maharashtra*	39.94	43.86	53.36	57.20
9	Orissa	27.16	34.76	43.38	45.07
10	Punjab	36.18	33.48	36.92	41.27
11	Rajasthan	33.94	35.12	41.15	41.90
12	Tamil Nadu	36.73	39.98	47.93	57.10
13	Uttar Pradesh (+)	33.94	37.90	40.30 (40.34)	42.00 (42.44)
14	West Bengal*	40.38	43.34	49.35	53.50
New States					
15	Chhattisgarh	-	-	37.55	34.44
16	Jharkhand	-	-	33.09	35.17
17	Uttarakhand	-	-	39.81	37.07
North Eastern States					
18	Arunachal Pradesh*	29.04	23.08	34.24	23.31
19	Assam	31.57	35.34	44.58	51.05
20	Manipur	23.13	41.59	46.24	41.03
21	Meghalaya	42.46	49.88	53.45	50.79
22	Mizoram	59.10	46.15	64.42	62.46
23	Nagaland**	52.78	59.14	53.46	48.70
24	Sikkim	41.63	51.34	52.91	50.00
25	Tripura*	39.37	49.84	59.23	58.42
Union Territories and Other States					
26	A&N Islands*	34.16	29.64	50.31	34.39
27	Chandigarh	N.A.	N.A.	72.74	72.20
28	Delhi	82.32	83.06	78.72	81.88
29	Dadar and Nagar Haveli	N.A.	N.A.	N.A.	N.A.
30	Daman and Diu	N.A.	N.A.	N.A.	N.A.
31	Lakshadweep	N.A.	N.A.	N.A.	N.A.
32	Pondicherry	34.56	37.44	40.77	29.38
33	Goa*	39.53	50.61	47.94	55.88
34	Himachal Pradesh*	33.65	38.69	41.57	40.95
35	Jammu & Kashmir*	N.A.	N.A.	51.44	48.76
	India	36.60	40.60	46.90	57.30

Note: Same as Table 1

agriculture was accompanied not only by increase in the share of services, but also that of manufacturing to a significant extent. On the other side, in Kerala and Karnataka, services have taken the major share of the loss in the share of agriculture. In Punjab, agriculture has seen a relatively smaller decline in its share: it is the only

state in which it still contributed almost one-third (32.6 per cent) of GSDP. The decline in the share of agriculture has, however benefitted industry more than services. West Bengal is another stand alone case with everything happening rather slowly: Agricultural GDP has decline by 11 percentage point only (against 24 per cent at the national level), industry share has significantly declined and that of services was much less than the national average. Tamil Nadu is yet another exceptional case, where share of agriculture has sharply declined—it is now at the lowest (11 per cent) in any state, share of manufacturing has also significantly declined, and all the gains have gone to services sector only. Among smaller states and UTs, a very sharp shift from agriculture to non-agricultural sector is observed in the case of Goa and Pondicherry. In the case of Goa, share of agriculture declined from 21 to 4 per cent, which was mostly compensated by an increase in the share of services from 40 to 56 per cent; Pondicherry saw a decline in the share of agriculture from 29 to 4 per cent; manufacturing increased its share by 45 percentage points from 20 to 65 per cent.

There are two questions that are of significant interest in regard with the relationship between growth and structural changes. One, Have growth rate and structural transformation (shift from agriculture to non-agriculture) taken place together? And two, Which type of structural transformation, one characterized by shift to manufacturing or to services, has been more growth augmenting? Gujarat has been the fastest growing state during the entire period 1980–81/2008–09 and in all the sub-periods since 1991, having recorded a GSDP growth rate of 9.48 per cent during 1991–2001 and 11.71 per cent during 2001–2009 (*Appendix A*). It also has undergone a large transformation with share of agriculture in GSDP declining from 38 per cent in 1980–81 to 16 per cent in 2008–09. The largest transformation has, however, been experienced by Karnataka—reducing share of agriculture in its GSDP from 44 per cent to 14 per cent during 1981–2009. Its rate of growth has also been quite high in recent years. Orissa has experienced the second highest growth, after Gujarat during 2001–09 and it has also seen rapid transformation in its economy: share of agriculture in its SDP declined from 55 in 1980–81 to 28 in 2000–01 and to 19 per cent in 2008–09. Kerala is another state where both growth rate and structural transformation have been fast. Slowest transformation is observed in Punjab and West Bengal; both have also had slow growth of GSDP. Madhya Pradesh

and Uttar Pradesh are also in the same category. Andhra Pradesh, Haryana and Rajasthan have grown relatively faster though the process of transformation has been rather slow in these states. Maharashtra already had a relatively low share of agriculture initially; saw a significant decline in it and a reasonably high growth rate.

Among the North Eastern states, Mizoram, Nagaland and Sikkim are the fastest growing states, having recorded a GSDP growth rate of 10 per cent per annum during 1981–2009. Mizoram and Sikkim have also undergone a large transformation with share of agriculture in GSDP declining during 1981–2009, from 27 per cent to 15 per cent and from 41 to 17 per cent, respectively. Nagaland, however, seems to have experienced an increase in the share of agriculture from 28 to 36 per cent. Andaman and Nicobar Island, Pondicherry and Goa have not only experienced faster transformation from agricultural sector to non-agricultural sector, but have also seen very high growth rates, particularly during 2001–09.

Insofar as decline in the share of agriculture is taken as a measure of structural transformation, its relation with growth of GSDP has been rather weak – $r=-0.181$ if we take the long period 1981–2009. Yet the two have been significantly related in the shorter period, 2001–09 where $r=-0.676$. States with faster decline in the share of agriculture also seem to have seen faster growth of GSDP, during this period. Changes in the share of manufacturing or services, either in the short or long term do not seem to have any significant relation with GSDP growth rates in states (Table 4).

Table 4
Relationship between Structural Change and its Components and
Rate of Growth of GSDP (Correlation Coefficients)

	80–81/90–91	90–91/00–01	00–01/08–09	80–81/08–09
Correlation between growth of GSDP & % change in the share of agriculture during 1980–81/2008–09	0.275	-0.176	-0.676*	-0.181
Correlation between growth of GSDP & % change in the share of manufacturing during 1980–81/2008–09	0.078	0.038	0.029	0.056
Correlation between growth of GSDP & % change in the share of services during 1980–81/2008–09	0.01	-0.04	0.429	0.082

* significant at 0.01 level.

Punjab has seen the slowest transformation in its economy: Over a period of almost thirty years, the contribution of non-agricultural sectors has increased from 54 to 66 per cent only. It still derives about one-third of its GDP from agriculture—highest in any state. Its growth rate has been one of the lowest around 5 per cent, against the national average of 7 per cent, during 1980–81/2008–09. During 2000–01/2008–09 when the national economy grew at 8.3 per cent per annum, Punjab's economy grew at 5.4 per cent. Strangely enough, Tamil Nadu, the state with the largest structural transformation of the economy, with the lowest (11 per cent) share of agriculture in GDP, has also not done very well in terms of the growth of its GSDP. The state experienced an average growth rate of 6.5 per cent over the period 1980–81/2008–09, though it has accelerated to 7.6 per cent during 2000–01/2008–09.

Did structural transformation in favour of manufacturing help in accelerating growth of a state? Here again, Gujarat provides strong positive evidence: it increased share of manufacturing in its GSDP from 19 per cent in 1980–81 to 30 per cent in 2008–09 and experienced the fastest economic growth overall. Orissa, and Haryana are other states with significantly large increase in the share of manufacturing and both of them have grown reasonably fast. Bihar, Karnataka, Madhya Pradesh, Rajasthan and Uttar Pradesh have seen moderate increase in the share of manufacturing and relatively low GSDP growth. Punjab, with significantly large increase in manufacturing share, experienced low growth. Maharashtra and West Bengal both saw a decline in manufacturing share; while the former grew reasonably well, the latter grew at a relatively slow rate. On the whole, there appears to be a positive relation between the increase in the extent of industrialisation and the rate of economic growth. This relation that holds in the case of most of the 14 major states is also observed in the case of Assam, Meghalaya, Pondicherry and Goa which have experienced a large increase in the share of manufacturing along with high growth rates. Himachal Pradesh, with significantly large increase in manufacturing share, on the other side, experienced low growth.

There are few major states where the services sector has played more important role in economic growth. Kerala, which now has the highest share (60.7%) of services in its GSDP, rising from 41 per cent in 1980–81 while the share of

manufacturing remaining constant at around 10 per cent (*Table 3*), registered a reasonably high growth. So did Haryana with services share rising from 25 to 47 per cent and Karnataka with increase in it from 32 to 55 per cent. Services sector has played an important role in economic growth in most of the North Eastern states, Goa and Himachal Pradesh. Tamil Nadu and West Bengal did not see large increase in the share of services, nor did they experience very high growth rates. It appears that unlike in the country as a whole, services did not make a major contribution to growth in most states in recent years. It is only a few states which had experienced high growth in the services sector, which is reflected in what is called a 'service-led growth' nationally. In most states, industries, particularly manufacturing, seem to have made a more significant contribution to growth of GSDP. In other words, structural change in favour of manufacturing is more often accompanied by a higher GSDP growth than a change in favour of services. The relationship, however, does not turn up to be consistent once all states are taken together for comparison, because in some states the manufacturing sector while in other states the service sector push up the GSDP growth. As a result, the coefficient of correlation between growth rates and change in the share of manufacturing and of services is not significant in the shorter or longer periods as noted earlier. It appears that faster growth of non-agricultural sectors as a whole, irrespective of whether it is derived from manufacturing or services, leads to high growth of GSDP.

Rates of Industrial Growth

How have different states performed in terms of the growth of manufacturing SDP over the longer period 1980–81 to 2008–09 and in the post-reform period, particularly during 2001–09 when national average growth rate has been relatively high. Gujarat is the only major state which has maintained high and accelerating growth rates over the years: its manufacturing sector grew at over 8 per cent during 1981–91, at 9.5 per cent during the 1991–2001 and a much higher rate of 11.7 per cent during 2001–09 (*Table 5*). Among other better industrialised states, Maharashtra maintained a moderate growth rate of 6 to 8.5 per cent; Tamil Nadu had a much lower average growth rate of about 6 per cent—only during 2001–09, it attained a growth of 7.7 per cent per annum; and West Bengal's manufacturing sector grew at

Table 5
Growth Rate of Manufacturing GSDP (at 1993–94 prices)

Major States		80–81/90–91	90–91/00–01	00–01/08–09	80–81/08–09
1	Andhra Pradesh	5.36	5.2	6.92	5.1
2	Bihar(+)	6.24	3.18	13.95 (1.44)	3.94
3	Gujarat*	8.29	9.48	11.71	8.17
4	Haryana**	10.42	6.8	8.13	7.33
5	Karnataka	7.07	6.9	10.51	7.42
6	Kerala*	3.26	5.92	6.19	5.12
7	Madhya Pradesh (+)	6.52	6.58	5.44 (2.26)	5.82
8	Maharashtra*	6.79	6.27	8.64	6.29
9	Orissa	8.78	4.17	15.6	6.68
10	Punjab	8.98	6.43	6.18	6.49
11	Rajasthan	6.66	9.37	7.84	6.96
12	Tamil Nadu	4.06	5.06	7.7	4.56
13	Uttar Pradesh (+)	9.53	4.8	6.26 (5.85)	5.65
14	West Bengal*	3.32	6.36	6.07	5.21
New States					
15	Chhattisgarh	-	-	11.66	-
16	Jharkhand	-	-	16.88	-
17	Uttarakhand	-	-	12.15	-
North Eastern States					
18	Arunachal Pradesh*	8.14	7.1	2.85	6.56
19	Assam	2.96	1.87	8.86	3.91
20	Manipur	7.81	3.37	5.19	4.46
21	Meghalaya	7.5	7.74	14.85	11.22
22	Mizoram	9.85	5.42	9.27	7.81
23	Nagaland**	11.73	-0.55	8.38	6.11
24	Sikkim	N.E.	N.E.	6.55	N.E.
25	Tripura*	3.05	12.82	4.52	8.44
Union Territories and Other States					
26	A&N Islands*	2.63	3.87	7.56	2.8
27	Chandigarh	N.E.	N.E.	9.2	N.E.
28	Delhi	8.04	3.35	5.83	5.47
29	Dadar and Nagar Haveli	N.E.	N.E.	N.E.	N.E.
30	Daman and Diu	N.E.	N.E.	N.E.	N.E.
31	Lakshadweep	N.E.	N.E.	N.E.	N.E.
32	Pondicherry	7.44	19.53	14.02	13.05
33	Goa*	0.71	10.68	8.68	8.08
34	Himachal Pradesh*	14.52	14.9	6.65	12.46
35	Jammu & Kashmir*	N.E.	N.E.	11.03	N.E.
	India	7.44	7.02	8.2	6.77
	SD	2.26	1.74	3.15	1.2
	CV	33.15	28.21	36.38	19.79
Correlation between growth of manufacturing GSDP 80-81/08-09 and initial share of manufacturing GSDP		-0.208	0.484**	0.601**	0.285

Note: N.E. = Not Estimated, ** Correlation is significant at 0.01 level,

Source: Same as Table 1

a still lower rate, averaging about 5 per cent over the entire period and slightly over 6 per cent during the post-reform period.

Some of the less industrialised states have shown spectacular growth in manufacturing during 2001–09. Orissa registered a manufacturing growth of 15.6 per cent. Karnataka has also recorded a manufacturing growth of 10.5 per cent. Haryana and Punjab saw significantly high growth rates in this sector during 1981–91, but it decelerated in the next two decades, particularly in Punjab, where it has been only 6 per cent as against the national average of over 10 per cent. Similar is the case with Uttar Pradesh. Andhra Pradesh and Kerala have maintained a relatively low growth rate over the whole period. All the three new states have registered high growth rate in manufacturing GSDP during 2001–09, Jharkhand having the highest, about 17 per cent growth rate. Among other states and UTs, Meghalaya, Pondicherry and Himachal Pradesh registered relatively high—above 11 per cent—rate of growth over the entire period 1981–2009.

Growth rates of manufacturing in different states seem to show a tendency towards divergence over the longer period. Coefficient of variation among growth rates of different states was 33 per cent during 1981–91, it declined to 28 per cent during 1990–91/2000–01; but increased to 36 per cent during 2000–01/2008–09. Also, while better industrialised states grew slower than less industrialised during 1981–91, the reverse seems to have happened in recent decades. Correlation between initial level of industrialisation and growth rate was negative during 1981–91 (-0.317), it turned positive and significant during 1991–01 (0.484) and 2001–09 (0.601). Thus, it appears that the trend towards a decline in differences in the level of industrialisation among states observed in earlier years has been reversed in the post-reform period.

IV. Shares of States in Total, Organised and Unorganised Manufacturing

Share in Total Manufacturing

Maharashtra has always accounted for the largest share in manufacturing output of the country. In 2006–07, it contributed about one-fifth of the manufacturing GSDP of the all states of India. It has maintained that share all along though there is a small decline in it from that in 1980–81 (Table 6). Tamil Nadu used to be the second largest contributor to the national manufacturing GSDP till 1990–91, but has now given way to Gujarat: the former accounted for 14 per cent and latter for 8 per cent of national manufacturing GDP in 1980–81, their shares in 2006–07 are 11 per cent and 14 per cent respectively. West Bengal has been a major loser with a share of 10 per cent in 1980–81 and only 7 per cent in 2006–07. Other losers are: Andhra Pradesh (from 7.3 per cent to 6.1 per cent), Madhya Pradesh (from 5.7 to 4.7 per cent) Assam (from 1.42 to 0.90 per cent) and Delhi (from 1.95 to 1.87 per cent). Gainers include Karnataka, Haryana, Goa and Pondicherry. Uttar Pradesh, a significant contributor with about 8 per cent, has maintained its share. This pattern of changes in the GSDP shares seems to be in line with the changes in investment shares reported in an earlier study covering the immediate pre-reform and post-reform periods (Chakravorty and Lall, 2007).

The four most industrialised states viz. Maharashtra, Tamil Nadu, West Bengal and Gujarat, accounted for 53 per cent of the total manufacturing GDP of 14 major states of India in 1980–81; their share is lower at 51 per cent in 2006–07. West Bengal continues to be part of this group in 2006–07, only because Uttar Pradesh has lost a part of its territory to Uttarakhand, which otherwise would have had a higher share than that of West Bengal. Among the states with relatively small (1 to 3 per cent) contribution to national manufacturing GSDP manufacturing in 1980–81, Haryana, Orissa, Punjab and Himachal Pradesh have improved their shares while Kerala has a lower share in 2006–07 than in 1980–81. Other major states, Andhra Pradesh and Madhya Pradesh (even including Chhattisgarh) and Bihar (even

Table 6
State-wise Distribution of Manufacturing GSDP (%) at 1993–94 Prices

<i>Major States</i>		1980–81	1990–91	2000–01	2006–07
1	Andhra Pradesh	7.33	6.80	6.14	6.12
2	Bihar(+)	4.17	4.51	2.54 (0.67)	3.62 (0.41)
3	Gujarat	7.98	9.58	11.72	13.70
4	Haryana	2.54	3.40	3.63	3.69
5	Karnataka	5.21	5.38	5.86	6.77
6	Kerala	2.71	2.15	2.32	1.98
7	Madhya Pradesh (+)	5.71	6.31	5.70 (4.15)	4.71 (2.85)
8	Maharashtra	20.51	20.34	19.89	19.70
9	Orissa	1.79	1.55	1.49	2.21
10	Punjab	2.41	3.09	3.46	2.92
11	Rajasthan	3.25	3.47	4.46	3.99
12	Tamil Nadu	14.81	12.12	11.37	10.58
13	Uttar Pradesh (+)	7.38	9.68	8.35 (7.88)	7.39 (6.82)
14	West Bengal	9.70	6.91	7.54	7.02
<i>New States</i>					
15	Chhattisgarh	N.A.	N.A.	1.54	1.86
16	Jharkhand	N.A.	N.A.	1.87	3.21
17	Uttarakhand	N.A.	N.A.	0.47	0.57
<i>North Eastern States</i>					
18	Arunachal Pradesh	0.02	0.02	0.03	0.02
19	Assam	1.42	1.08	0.70	0.90
20	Manipur	0.12	0.14	0.11	0.09
21	Meghalaya	0.02	0.03	0.04	0.09
22	Mizoram	0.002	0.01	0.01	0.01
23	Nagaland	0.01	0.03	0.01	0.01
24	Sikkim	0.00	0.00	0.01	0.01
25	Tripura	0.05	0.04	0.11	0.06
<i>Union Territories and Other States</i>					
26	A&N Islands	0.03	0.02	0.02	0.01
27	Chandigarh	N.E.	N.E.	0.23	0.22
28	Delhi	1.95	2.47	2.14	1.87
29	Dadar and Nagar Haveli	N.E.	N.E.	N.E.	N.E.
30	Daman and Diu	N.E.	N.E.	N.E.	N.E.
31	Lakshadweep	N.E.	N.E.	N.E.	N.E.
32	Pondicherry	0.19	0.21	0.61	0.77
33	Goa	0.55	0.40	0.67	0.69
34	Himachal Pradesh	0.13	0.27	0.60	0.54
35	Jammu & Kashmir	N.E.	N.E.	0.26	0.30
	<i>India</i>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>
	<i>SD</i>	<u>5.30</u>	<u>4.97</u>	<u>4.92</u>	<u>4.97</u>
	<i>CV</i>	<u>77.67</u>	<u>72.97</u>	<u>72.96</u>	<u>73.65</u>

N.A. = Not Applicable, N.E. = Not Estimated

Source: Same as Table 1

including Jharkhand) have lost while, Karnataka and Rajasthan have gained. On the whole, the relative positions of different states have not changed much, except a 6 percentage point rise in the share of Gujarat and a 4 percentage point decline in the share of Tamil Nadu and 3 percentage point decline in that of West Bengal. Among the new states, only Chhattisgarh and Jharkhand each have a significant (about 2 per

cent) share of manufacturing GDP of the country and both, especially Jharkhand, have increased their shares since their formation in 2000. Among other states and UTs only Delhi contributes more than one per cent of manufacturing GSDP and it has maintained its share of around 2 per cent.

In terms of employment, however, Uttar Pradesh accounts for the largest share of manufacturing (Table 7). In 2004–05 (the latest year for which data are available) Tamil Nadu, West Bengal and Maharashtra employed about 11 per cent each,

Table 7
State-wise Distribution of Manufacturing Employment (UPSS) (%)

		1983	1993 –94	1999–2000	2004–05
Major States					
1	Andhra Pradesh	9.08	8.53	7.73	8.17
2	Bihar(+)	5.71	3.07	5.61	4.65 (2.84)
3	Gujarat	6.42	8.25	5.61	7.25
4	Haryana	1.91	1.71	1.72	2.32
5	Karnataka	6.05	6.13	5.44	4.98
6	Kerala	4.46	3.93	3.94	3.6
7	Madhya Pradesh (+)	5.51	4.36	5.3	5.29 (4.24)
8	Maharashtra	9.85	10.26	10.36	10.5
9	Orissa	3.67	2.94	3.53	3.8
10	Punjab	2.35	1.87	2.32	2.6
11	Rajasthan	3.86	3.07	3.51	4.54
12	Tamil Nadu	12.8	14.86	12.7	11.09
13	Uttar Pradesh (+)	13.26	12.55	15.32	15.80 (15.44)
14	West Bengal	10.87	14.38	12.12	10.74
New States					
15	Chhattisgarh	-	-	-	1.05
16	Jharkhand	-	-	-	1.81
17	Uttarakhand	-	-	-	0.36
North Eastern States					
18	Arunachal Pradesh	0.01	0.02	0.02	0
19	Assam	0.73	0.81	0.92	0.73
20	Manipur	0.13	0.23	0.13	0.16
21	Meghalaya	0.06	0.03	0.02	0.08
22	Mizoram	0.01	0.01	0.01	0.02
23	Nagaland	0.01	0.01	0.01	0.02
24	Sikkim	0.02	0.02	0.01	0.01
25	Tripura	0.14	0.13	0.08	0.12
Union Territories and Other States					
26	A&N Islands	0.01	0.02	0.02	0.01
27	Chandigarh	0.06	0.16	0.13	0.12
28	Delhi	1.87	2.01	2.39	2.02
29	Dadar and Nagar Haveli	0.00	0.02	0.04	0.06
30	Daman and Diu	0.00	0.02	0.04	0.03
31	Lakshadweep	0.00	0.00	0.00	0.00
32	Pondicherry	0.12	0.13	0.20	0.14
33	Goa	0.23	0.10	0.14	0.07
34	Himachal Pradesh	0.23	0.25	0.30	0.37
35	Jammu & Kashmir	0.57	0.12	0.35	0.69
India		100	100	100	100

Source: NSS Report on Employment and Unemployment (Various Rounds)

Andhra Pradesh 8 per cent and Gujarat 7 per cent of all manufacturing workers in the country. Karnataka and Madhya Pradesh contributed above 5 per cent each. Employment shares of different states have not significantly changed over the years, except some decline in the case of Bihar (even including Jharkhand) and increase in case of Gujarat. Except the 14 major states, Chhattisgarh, Jharkhand and Delhi, all other 18 states/UTs contributed less than 1 per cent each of the country wide manufacturing employment in 2004–05.

There are large differences between the employment and GSDP shares of individual states. Maharashtra with over 21 per cent of GSDP, contributed only 11 per cent of employment among the 14 major states. Uttar Pradesh with 16 per cent employment has much less, about 8 per cent share in GSDP and Gujarat with 14 per cent SDP had only 7 per cent share in employment. This is a reflection of large variations of the industrial structure and productivity among states, a point to which we will turn later in Section VII of this paper.

Share of Organised and Unorganised Sectors

The quality of industrial activity varies significantly across the states depending on composition in terms of the shares of the organised (registered) and unorganised (unregistered) segments in manufacturing. The aggregate manufacturing GSDP of the all states and UTs covered in this study was distributed between organised (registered) and unorganised (unregistered) sectors in the ratio of 68.61: 31.39 in 2008–09. The organised sector, no doubt, contributed the major share in manufacturing GSDP in most of the major states except West Bengal (42 per cent) (*Table 8*). On the other side, it was as high as 87 per cent in Orissa. States with over 75 per cent share of the organised sector include Chhattisgarh, Jharkhand, Uttarkhand, Assam, Meghalaya, Himachal Pradesh and Goa and those with less than 60 per cent include Kerala, West Bengal, Mizoram, Nagaland, Sikkim, Tripura, Andaman Nicobar Island, Chandigarh, Delhi and Jammu and Kashmir. Manipur derives practically all its manufacturing GSDP from the unorganised sector. Among the major states, Bihar gets only 19 per cent and West Bengal 42 per cent of manufacturing GSDP from organised sector; all other states drive over 50 per cent from this segment. Changes in the shares of different states in national GDP from

Table 8
Share (%) of Registered Sector in Manufacturing GSDP at 1993–94 Prices

		1980–81	1990–91	2000–01	2004–05	2008–09
Major State						
1	Andhra Pradesh	59.01	69	63.91	66.44	66.51
2	Bihar(+)	72.67	79.08	81.69 (38.95)	88.28 (34.66)	88.98 (18.74)
3	Gujarat*	66.68	69	64.08	85.2	71.66
4	Haryana**	79.03	66.89	70.84	71.7	72.24
5	Karnataka	52.13	63.44	60.98	66.23	72.91
6	Kerala*	54.41	47.71	57.93	51.82	51.26
7	Madhya Pradesh (+)	57.66	61.46	64.71 (62.00)	66.65 (55.27)	64.07 (53.56)
8	Maharashtra*	69.88	74.99	60.56	62.85	63.18
9	Orissa	62.93	73.44	77.49	86.43	87.19
10	Punjab	68.74	70.62	66.48	63.12	61.26
11	Rajasthan	42.77	57.99	63.63	60.53	61.5
12	Tamil Nadu	47.96	60.22	63.18	62.45	64.89
13	Uttar Pradesh (+)	44.7	60.51	56.93 (55.67)	59.20 (57.23)	59.89 (57.76)
14	West Bengal*	55.47	54.91	44.69	47.66	41.95
New States						
15	Chhattisgarh	-	-	72.01	83.27	80.35
16	Jharkhand	-	-	96.98	98.28	98.54
17	Uttarakhand	-	-	78.03	83.86	83.8
North Eastern State						
18	Arunachal Pradesh*	N.A.	N.A.	N.A.	N.A.	N.A.
19	Assam	68.64	74.41	71.66	82.48	81.24
20	Manipur	3.9	1.82	1.12	2.42	2.67
21	Meghalaya	36.93	45.64	32.57	62.39	77.41
22	Mizoram	35.48	58.63	26.51	25.15	21.79
23	Nagaland**	0	15.53	27.81	32.66	35.22
24	Sikkim	N.A.	N.A.	42.3	42.83	42.64
25	Tripura*	13.8	27.32	62.14	42.59	48.17
Union Territories and Other States						
26	A&N Islands*	73.91	39.01	26.26	23.66	29.81
27	Chandigarh	N.E.	N.E.	26.01	23.85	25.44
28	Delhi	36.48	40.62	32.21	28.45	24.94
29	Dadar and Nagar Haveli	N.A.	N.A.	N.A.	N.A.	N.A.
30	Daman and Diu	N.A.	N.A.	N.A.	N.A.	N.A.
31	Lakshadweep	N.A.	N.A.	N.A.	N.A.	N.A.
32	Pondicherry	66.95	77.12	87.52	84.87	92.83
33	Goa*	36.24	74.47	84.18	70.99	84.53
34	Himachal Pradesh*	46.54	73.09	79.71	80.96	80.49
35	Jammu & Kashmir*	N.A.	N.A.	15.76	30.56	30.62
	India	58.58	65.51	61.29	64.05	68.61

Source: Same as Table 1

manufacturing are obviously the results of the differential rates of growth of the organised and unorganised segments of manufacturing in different states. In aggregate, the organised segment has grown faster than the unorganised one in all the sub-periods during 1980–81 to 2008–09 (Table 9). The difference appears to have been widened during 2000–01 to 2008–09. In most states, organised sector has grown at a higher rate than the unorganised sector. But a few states, namely Kerala,

Table 9
Growth of Registered and Unregistered Manufacturing GSDP at 1993–94 Prices

	80–81/90–91		90–91/00–01		00–01/08–09		04–05/08–09	
	Registered	Unregistered	Registered	Unregistered	Registered	Unregistered	Registered	Unregistered
Major States								
Andhra Pradesh	6.83	2.74	4.65	6.3	7.22	6.36	5.65	5.27
Bihar(+)	6.84	4.25	4.02	-1.17	15.37 (-9.20)	5.78 (5.86)	11.24 (-8.17)	9.56 (9.78)
Gujarat*	8.78	7.27	9.6	9.13	13.65	7.67	12.86	11.69
Haryana**	8.35	16.37	7.54	5.18	8.53	7.13	10.48	9.01
Karnataka	9.45	4.15	7.2	6.33	13.15	5.21	14.23	5.29
Kerala*	4.11	1.79	7.82	3.72	4.13	8.69	10.33	11.11
Madhya Pradesh (+)	7.71	4.73	7.42	5.17	5.27 (-0.02)	5.73 (5.44)	3.38 (2.96)	6.67 (5.39)
Maharashtra*	7.48	5.03	4.81	9.5	9.49	7.27	10.19	9.61
Orissa	11.92	2.57	4.36	3.49	17.74	6.06	10.57	9.18
Punjab	9.18	8.53	5.65	8.12	5.26	7.83	7.75	9.95
Rajasthan	9.34	4.12	11.41	6.44	7.74	8.02	11.25	10.59
Tamil Nadu	6.83	0.79	5.39	4.51	8.62	6.13	9.09	7
Uttar Pradesh (+)	12.96	5.71	4.7	4.89	6.85 (6.21)	5.43 (5.38)	7.05 (6.78)	5.98 (5.87)
West Bengal*	2.95	3.75	5.05	7.68	4.76	7.09	0.56	8.54
New States								
Chhattisgarh	N.E.	N.E.	N.E.	N.E.	13.11	7.14	6.72	10.29
Jharkhand	N.E.	N.E.	N.E.	N.E.	17.15	5.16	12.11	7.96
Uttarakhand	N.E.	N.E.	N.E.	N.E.	13.37	7.12	9.27	9.6
North Eastern States								
Arunachal Pradesh*	N.E.	8.14	N.E.	7.1	N.E.	2.85	N.E.	7.01
Assam	3.84	0.7	1.6	2.63	10.01	5.05	2.02	3.94
Manipur	0.91	7.89	-2.75	3.46	15.47	5	10.31	5.86
Meghalaya	10.35	5.49	3.81	10.29	39.15	5.23	25.23	9.36
Mizoram	38.41	22.59	-2.51	10.55	5.11	10.67	9.37	13.55
Nagaland**	N.E.	10.88	1.44	-1.31	11.07	7.17	20.78	14.07
Sikkim	N.E.	N.E.	N.E.	N.E.	6.54	6.55	7.35	7.6
Tripura*	7.34	2.04	18.79	8.92	4.82	4.53	5.28	7.15
Union Territories And Other States								
A&N Islands*	-2.24	10.38	3.13	5.18	15.03	5.45	21.82	13.46
Chandigarh	N.E.	N.E.	N.E.	N.E.	9.88	8.99	15.77	10.51
Delhi	9.17	7.34	2.26	4.01	0.77	8.02	2.59	9.42
Dadar and Nagar Haveli	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.
Daman and Diu	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.
Lakshadweep	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.
Pondicherry	8.85	4.48	21.04	12.69	14.63	8.21	39.21	9.57
Goa*	10.31	-9.69	12.03	5.46	8.72	8.46	9.9	11.83
Himachal Pradesh*	19.65	6.25	15.79	12.03	6.66	6.57	6.76	7.45
Jammu & Kashmir*	N.E.	N.E.	N.E.	N.E.	25.19	7.15	12.82	12.92
India	8.28	6.14	7.28	6.54	8.8	7	10.19	8.29
Correlation between growth rates of registered & unregistered manufacturing GSDP	0.476*		0.501*		-0.31		0.408*	

Note: * correlation significant at 0.05 per cent level

Source: Same as Table 1

Madhya Pradesh, Punjab and West Bengal have experienced higher growth of the unorganised than of the organised segment. In more recent years (04–05/08–09), West Bengal has hardly seen any growth in the organised sector GSDP in manufacturing while its unorganised segment has recorded higher growth than the national average. By and large the states with higher growth in organised segment have also experienced higher growth in unorganised segment of manufacturing. Thus we find that the two rates were significantly correlated across states in each of the three periods, 1980–81/1990–91, 1990–91/2000–2001 and 2004–05/2008–09 though the relationship does not hold for the period 2001–01/2008–09 (Table 9, last row).

Share of States in Organised and Unorganised Industry

States with high share of organised manufacturing in the country also have high share in the unorganised manufacturing, suggesting that unorganised industry generally coexists with the organised industry. Maharashtra has about 19 per cent of country's organised manufacturing, it also has 21 per cent of unorganised manufacturing, in 2006–07 (*Table 10*). Gujarat accounts for 15 per cent of organised and 11 per cent of unorganised manufacturing. Tamil Nadu has 11 per cent of the organised as well as unorganised manufacturing. A few cases of exceptional differences between the state's share in total organised and unorganised segments are: West Bengal with 12 per cent of the unorganised but only 4.5 per cent of the organised and Bihar and Orissa with much larger share of the organised than of the unorganised manufacturing.

It is interesting to note that while in some cases, a decline in one segment has been compensated by an increase in another so as to retain the state's share in total manufacturing or prevent a sharp decline in it; in others, the two have proceeded in the same direction to result in an increase or a decline in their respective shares. Thus, Maharashtra saw a decline from 24 per cent in 1980–81 to 19 per cent in 2006–07 in its share in organised, but an increase in its share in unorganised manufacturing from 15 to 21 per cent. As a result, it could maintain its share in total at about 21 per cent. In Gujarat, both organised and unorganised segments contributed almost equally to increase in its share in total from 8 per cent to 14 per cent. Tamil Nadu's share declined primarily because of a sharp decline in its share in

unorganised segment and West Bengal saw a decline in its share in total manufacturing despite some increase in unorganised segment, because of a sharp decline in its share of the organised manufacturing. In most cases, however, changes in the two segments were in the same direction: Andhra Pradesh, Assam, Bihar, Kerala, MP and Tamil Nadu experienced a decline in their share, both in the organised and unorganised manufacturing while Gujarat, Haryana, Jammu and Kashmir and Punjab saw increase in both (*Table 10*). Thus, it appears that the two segments—organised and unorganised—in manufacturing generally go together: a state which has a larger share of one also has a larger share of the other and vice versa. The exact proportions of the two may not be similar, but ranking of states by the two is remarkably similar. In 2006–07, ranking of states in terms of the shares of organised and unorganised in national aggregate were remarkably similar (*Table 11*) yielding a rank correlation coefficient of 0.906.

Each of the two segments also showed very high similarity in ranking with that in total manufacturing. These ranking have also remained quite stable in terms of the total manufacturing, as well as its two segments. But ranks changed significantly in some cases in respect of the organised and unorganised segments. So, Karnataka ranked ninth in 1980–81, but climbed up to fourth position in 2006–07 in terms of its share in organised manufacturing and West Bengal slid down from the second to the ninth position.

Table 10
Share of States in Total Manufacturing GSDP: Total, Registered and Unregistered

	Total- Manufacturing						Registered- Manufacturing						Unregistered- Manufacturing					
	1980-81	1990-91	2000-01	2004-05	2006-07		1980-81	1990-91	2000-01	2004-05	2006-07		1980-81	1990-91	2000-01	2004-05	2006-07	
Major States																		
1 Andhra Pradesh	7.33	6.8	6.14	6.17	6.12	6.12	7.39	7.16	6.54	6.34	6.33	6.33	7.26	6.11	5.89	5.88	5.74	
2 Bihar(+)	4.17	4.51	2.54 (0.67)	3.33 (0.51)	3.62 (0.41)	3.62 (0.41)	5.18	5.44	4.49 (0.43)	4.61 (0.27)	5.01 (0.12)	2.75	2.73	1.06 (1.06)	1.04 (0.93)	1.07 (0.94)		
3 Gujarat	7.98	9.58	11.72	13.76	13.7	13.7	9.09	10.09	14.47	15.22	15.07	6.42	8.61	10.54	11.14	11.18		
4 Haryana	2.54	3.4	3.63	3.73	3.69	3.69	3.43	3.47	4.15	4.17	4.11	1.29	3.26	2.92	2.93	2.9		
5 Karnataka	5.21	5.38	5.86	6.85	6.77	6.77	4.64	5.21	6.62	7.38	7.45	6.02	5.7	6.01	5.91	5.52		
6 Kerala	2.71	2.15	2.32	1.95	1.98	1.98	2.52	1.57	1.61	1.57	1.57	2.98	3.26	2.66	2.65	2.72		
7 Madhya Pradesh (+)	5.71	6.31	5.70 (4.15)	4.74 (3.30)	4.71 (2.85)	4.71 (2.85)	5.62	5.92	5.78 (4.20)	4.66 (2.85)	4.64 (2.36)	5.84	7.05	5.16 (4.08)	4.90 (4.10)	4.84 (3.75)		
8 Maharashtra	20.51	20.34	19.89	19.71	19.7	19.7	24.47	23.28	19.35	19.32	19.26	14.91	14.74	20.38	20.39	20.51		
9 Orissa	1.79	1.55	1.49	1.98	2.21	2.21	1.93	1.74	2.85	2.64	2.97	1.6	1.2	0.8	0.78	0.8		
10 Punjab	2.41	3.09	3.46	2.92	2.92	2.92	2.82	3.33	2.91	2.86	2.83	1.82	2.63	3.02	3.03	3.09		
11 Rajasthan	3.25	3.47	4.46	3.99	3.99	3.99	2.37	3.08	3.61	3.86	3.84	4.49	4.23	4.19	4.24	4.26		
12 Tamil Nadu	14.81	12.12	11.37	10.66	10.58	10.58	12.13	11.14	9.73	10.82	10.68	18.6	13.98	10.42	10.36	10.4		
13 Uttar Pradesh (+)	7.38	9.68	8.35 (7.88)	7.70 (7.29)	7.39 (6.82)	7.39 (6.82)	5.64	8.94	7.28 (7.15)	7.04 (6.52)	6.79 (6.05)	9.86	11.08	9.02 (8.68)	8.89 (8.68)	8.49 (8.23)		
14 West Bengal	9.7	6.91	7.54	6.92	7.02	7.02	9.19	5.79	5.76	4.68	4.53	10.43	9.03	11.27	10.96	11.6		
New States																		
15 Chhattisgarh	N.E.	N.E.	1.54	1.74	1.86	1.86	N.E.	N.E.	2.94	2.12	2.28	N.E.	N.E.	1.05	1.05	1.08		
16 Jharkhand	N.E.	N.E.	1.87	2.92	3.21	3.21	N.E.	N.E.	4.22	4.47	4.89	N.E.	N.E.	0.13	0.12	0.13		
17 Uttarakhand	N.E.	N.E.	0.47	0.57	0.57	0.57	N.E.	N.E.	0.76	0.75	0.74	N.E.	N.E.	0.26	0.26	0.26		

	Total- Manufacturing												Registered- Manufacturing						Unregistered- Manufacturing																					
	1980-81				1990-91				2000-01				2004-05				2006-07				1980-81				1990-91				2000-01				2004-05				2006-07			
	1980-81	1990-91	2000-01	2004-05	2006-07	1980-81	1990-91	2000-01	2004-05	2006-07	1980-81	1990-91	2000-01	2004-05	2006-07	1980-81	1990-91	2000-01	2004-05	2006-07	1980-81	1990-91	2000-01	2004-05	2006-07	1980-81	1990-91	2000-01	2004-05	2006-07	1980-81	1990-91	2000-01	2004-05	2006-07					
North Eastern States																																								
18	Arunachal Pradesh*	0.02	0.02	0.03	0.02	0.02	0	0	0.02	0.02	0	0	0	0	0.04	0.06	0.07	0.05	0	0	0.04	0.06	0.07	0.05	0	0	0.04	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05				
19	Assam	1.42	1.08	0.7	1.05	0.9	1.66	1.23	0.82	1.35	1.13	0.82	1.35	1.13	1.07	0.8	0.51	0.51	0.47	1.13	1.07	0.8	0.51	0.51	0.47	1.13	1.07	0.8	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51			
20	Manipur	0.12	0.14	0.11	0.1	0.09	0.01	0	0.09	0.09	0	0	0	0	0.28	0.39	0.26	0.26	0.25	0	0.28	0.39	0.26	0.26	0.25	0	0.28	0.39	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26			
21	Meghalaya	0.02	0.03	0.04	0.09	0.09	0.02	0.02	0.09	0.09	0.02	0.05	0.11	0.11	0.04	0.05	0.06	0.06	0.06	0.06	0.11	0.04	0.05	0.06	0.06	0.06	0.04	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06			
22	Mizoram	0	0.01	0.01	0.01	0.01	0	0.01	0.01	0.01	0	0	0	0	0	0.01	0.02	0.02	0.03	0	0	0.03	0.06	0.02	0.03	0.03	0	0.03	0.06	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02		
23	Nagaland	0.01	0.03	0.01	0.01	0.01	0	0.01	0.01	0.01	0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		
24	Sikkim	0	0	0.01	0.01	0.01	0	0.01	0.01	0.01	0	0.01	0.01	0.01	0.01	0	0	0.02	0.02	0.03	0	0.03	0.06	0.02	0.02	0.03	0	0.03	0.06	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02		
25	Tripura	0.05	0.04	0.11	0.11	0.06	0.01	0.01	0.06	0.06	0.01	0.04	0.12	0.12	0.05	0.08	0.1	0.1	0.1	0.1	0.05	0.1	0.08	0.1	0.1	0.1	0.05	0.1	0.08	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Union Territories and Other States																																								
26	A&N Islands	0.03	0.02	0.02	0.01	0.01	0.03	0.01	0.01	0.01	0	0	0.01	0.01	0.01	0.04	0.03	0.03	0.03	0.01	0.01	0.02	0.04	0.03	0.03	0.01	0.01	0.02	0.04	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02		
27	Chandigarh	0	0	0.23	0.21	0.22	0	0	0.22	0.22	0.08	0.08	0.06	0.06	0.08	0	0	0.46	0.48	0.08	0	0	0.46	0.47	0.48	0.08	0	0	0.46	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	
28	Delhi	1.95	2.47	2.14	1.95	1.87	1.21	1.53	1.87	1.87	0.86	0.86	0.83	0.83	0.73	4.25	3.87	3.98	3.97	1.87	2.99	2.99	4.25	3.87	3.98	3.97	2.99	4.25	3.87	3.98	3.98	3.98	3.98	3.98	3.98	3.98	3.98	3.98	3.98	3.98
29	Dadar and Nagar Haveli	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	
30	Daman and Diu	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.
31	Lakshadweep	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.
32	Pondicherry	0.19	0.21	0.61	0.5	0.77	0.22	0.25	0.77	0.77	0.66	0.66	0.66	0.66	1.08	0.14	0.21	0.21	0.21	0.77	0.15	0.15	0.14	0.21	0.21	0.21	0.15	0.14	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	
33	Goa	0.55	0.4	0.67	0.69	0.69	0.34	0.46	0.69	0.69	0.92	0.92	0.91	0.91	0.9	0.3	0.29	0.29	0.3	0.69	0.85	0.85	0.3	0.29	0.29	0.3	0.85	0.3	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	
34	Himachal Pradesh	0.13	0.27	0.6	0.59	0.54	0.11	0.31	0.54	0.54	0.72	0.72	0.73	0.73	0.66	0.21	0.3	0.35	0.31	0.54	0.17	0.17	0.21	0.3	0.35	0.31	0.17	0.21	0.3	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	
35	Jammu & Kashmir	N.E.	N.E.	0.26	0.28	0.3	N.E.	N.E.	0.3	0.3	0.14	0.14	0.13	0.13	0.14	N.E.	0.55	0.54	0.59	0.3	N.E.	N.E.	0.55	0.54	0.59	0.59	N.E.	N.E.	0.55	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	
India		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
SD		5.3	4.97	4.92	5.01	4.97	5.89	5.56	4.87	4.87	4.87	4.87	5.07	5.07	5.01	4.29	5.28	5.3	5.36	5.01	5.17	5.17	4.29	5.28	5.3	5.36	5.17	4.29	5.28	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	
CV		77.67	72.97	72.96	74.31	73.65	85.52	80.97	71.59	71.59	71.59	74.59	74.59	74.59	73.74	64.22	79.2	79.7	80.55	73.74	76.84	76.84	64.22	79.2	79.7	80.55	76.84	64.22	79.2	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7	

Source: Same as Table 1

Table 11
Rank Orders of States in Organised and Unorganised Manufacturing (2006–07)

State	Rank in terms of the share in manufacturing in GSDP		
	Total	Registered	Unregistered
Maharashtra	1	1	1
Gujarat	2	2	3
Tamil Nadu	3	3	4
Uttar Pradesh (+)	4	5	5
West Bengal	5	9	2
Karnataka	6	4	7
Andhra Pradesh	7	6	6
Madhya Pradesh (+)	8	8	8
Rajasthan	9	11	9
Haryana	10	10	12
Bihar(+)	11	7	14
Punjab	12	13	11
Orissa	13	12	15
Kerala	14	14	13
Delhi	15	18	10
Assam	16	15	18
Pondicherry	17	16	22
Goa	18	17	20
Himachal Pradesh	19	19	19
Jammu & Kashmir	20	20	16
Chandigarh	21	21	17
Meghalaya	22	22	24
Manipur	23	28	21
Tripura	24	23	23
Arunachal Pradesh	25	29	25
Nagaland	26	24	28
Mizoram	27	27	26
A&N Islands	28	26	27
Sikkim	29	25	29
Dadar and Nagar Haveli	N.E.	N.E.	N.E.
Daman and Diu	N.E.	N.E.	N.E.
Lakshadweep	N.E.	N.E.	N.E.
Correlation between share of total and registered manufacturing GSDP			0.971**
Correlation between share of registered and unregistered manufacturing GSDP			0.906**
Correlation between share of total and unregistered manufacturing GSDP			0.968**

Note: **Correlation is significant at 0.01 per cent level

V. Differences in Structure of Industries

Organised Sector

Since organised (registered) segment now constitutes a substantially large part of total manufacturing in the country (accounting for 69 per cent) and also a large part of the unorganised segment is found to be linked with the organised segment, it would be meaningful here to go into some more details regarding the product structure of this segment. This is attempted here in respect of two aspects of the product groups. In the first instance, we have tried to broadly classify industries into two groups—agro-based and non agro-based, the former consisting of product group 20–21 to 29 and later 30 to 39, according to the National Industrial Classification (NIC) 1987 (*Appendix-B*). Next, we have tried to identify major product groups (at 2-digit level) of different states and examine industrial diversification and specialization of states and industries by identifying industries which dominate the structure of different states and states which account for large part of important industries. The analysis is further sharpened with the use of location quotients and coefficients of specialization/diversification.

Agro-based and Non Agro-based

Even though NIC groupings have changed and we have data according to 1987 scheme till 1997–98, and 1998 scheme since 1998–99, it is possible to regroup the 2-digit industry groups into the broad agro-based and non agro-based as mentioned above¹.

Agro-based products have always dominated the Indian manufacturing industry in terms of employment, employing majority of workers working in the sector. Even after experiencing some decline from 58 per cent in 1980–81, the share

¹ To make the new series (2000–01 and 2006–07) comparable with the previous one (1980–81 and 1990–91) we have used concordance table between NIC 1987 and NIC 1998 prepared by CSO. For detail see *Appendix-C*.

of this group of industries was one-half of the total manufacturing employment in 2006–07 (Table 12). Their share in gross value added in manufacturing has, however, been much lower, it was about one-third in 1980–81, and declined to less than one-fourth in 2006–07 (Table 13). The importance of agro-based industries, differed widely among states both in terms of employment and value added, as also between shares of the two in individual states reflecting differences in productivity levels among states.

Table 12
Share of Agro-based Product Group in Organised Manufacturing (Number of Workers)

		1980–81	1990–91	2000–01	2006–07
Major States					
1	Andhra Pradesh	76.60	70.94	72.34	65.91
2	Bihar(+)	27.13	17.31	16.11 (39.82)	14.13 (33.62)
3	Gujarat	64.50	51.84	41.08	36.02
4	Haryana	38.38	39.33	41.76	43.33
5	Karnataka	55.24	48.38	59.01	59.93
6	Kerala	76.80	72.33	74.23	76.85
7	Madhya Pradesh (+)	58.04	46.84	43.93 (52.02)	36.59 (43.90)
8	Maharashtra	51.28	46.60	46.00	35.78
9	Orissa	42.69	37.47	35.34	29.44
10	Punjab	49.67	54.91	54.13	45.78
11	Rajasthan	50.62	46.37	48.51	46.58
12	Tamil Nadu	57.63	55.42	61.62	63.28
13	Uttar Pradesh (+)	67.48	55.44	53.23 (53.69)	49.62 (51.95)
14	West Bengal	54.02	50.38	60.25	59.37
New State					
15	Chhattisgarh	-	-	22.39	24.97
16	Jharkhand	-	-	7.54	4.89
17	Uttarkhand	-	-	46.94	32.45
North Eastern States					
18	Arunachal Pradesh	N.A.	N.A.	N.A.	N.A.
19	Assam	89.34	83.22	79.31	64.04
20	Manipur	91.15	73.80	24.44	12.05
21	Meghalaya	56.63	50.49	17.95	7.84
22	Mizoram	N.A.	N.A.	N.A.	N.A.
23	Nagaland	N.A.	93.77	49.45	72.27
24	Sikkim	N.A.	N.A.	N.A.	N.A.
25	Tripura	26.85	17.33	38.34	10.10
Union Territories And Other States					
26	A&N Islands	86.49	76.10	100.00	100.00
27	Chandigarh	49.18	34.43	20.24	28.43
28	Delhi	47.93	39.51	50.41	56.49
29	Dadar and Nagar Haveli	N.A.	67.40	44.25	36.67
30	Daman and Diu	34.51	20.50	25.20	23.24
31	Lakshadweep	N.A.	N.A.	N.A.	N.A.
32	Pondicherry	92.23	73.91	48.68	32.34
33	Goa	N.A.	28.40	24.66	19.21
34	Himachal Pradesh	38.92	46.64	57.36	37.47
35	Jammu & Kashmir	53.73	71.21	61.78	38.04
	India	57.54	52.49	54.30	50.28

Source: Annual Survey of Industry, CSO

Table 13
Share of Agro-based Product Group in Total Manufacturing (Gross Value Added)

		1980-81	1990-91	2000-01	2006-07
Major States					
1	Andhra Pradesh	45.87	39.12	32.59	25.24
2	Bihar(+)	12.70	7.30	8.39 (46.88)	6.49 (80.56)
3	Gujarat	45.44	32.11	20.99	13.19
4	Haryana	23.06	26.40	25.92	22.34
5	Karnataka	30.01	29.81	39.91	33.96
6	Kerala	42.00	38.28	37.66	50.06
7	Madhya Pradesh (+)	23.42	23.36	25.88 (35.69)	23.80 (41.83)
8	Maharashtra	27.32	24.13	25.88	29.72
9	Orissa	20.46	15.79	11.45	6.69
10	Punjab	36.62	51.26	54.30	55.63
11	Rajasthan	36.60	40.13	26.43	29.48
12	Tamil Nadu	41.15	39.79	43.90	40.29
13	Uttar Pradesh (+)	43.63	33.50	35.56 (35.96)	30.67 (33.53)
14	West Bengal	33.15	30.44	42.05	32.19
New State					
15	Chhattisgarh	-	-	4.18	3.26
16	Jharkhand	-	-	1.64	1.18
17	Uttarkhand	-	-	31.24	16.80
North Eastern States					
18	Arunachal Pradesh	N.A.	N.A.	N.A.	N.A.
19	Assam	85.97	70.87	50.13	23.04
20	Manipur	79.31	67.36	52.61	28.92
21	Meghalaya	43.06	25.94	11.43	17.73
22	Mizoram	N.A.	N.A.	N.A.	N.A.
23	Nagaland	N.A.	98.74	75.69	92.94
24	Sikkim	N.A.	N.A.	N.A.	N.A.
25	Tripura	42.55	63.35	92.14	48.08
Union Territories And Other States					
26	A&N Islands	90.41	88.48	100.00	100.00
27	Chandigarh	51.45	28.13	33.11	35.23
28	Delhi	42.44	47.63	63.77	54.85
29	Dadar and Nagar Haveli	N.A.	71.44	31.40	35.03
30	Daman and Diu	7.08	22.70	14.38	22.94
31	Lakshadweep	N.A.	N.A.	N.A.	N.A.
32	Pondicherry	90.42	59.81	20.85	12.61
33	Goa	N.A.	9.97	20.86	17.33
34	Himachal Pradesh	27.80	32.65	31.31	16.03
35	Jammu & Kashmir	55.47	33.66	53.49	16.11
	India	33.75	31.17	30.47	23.74

Source: Same as Table 12

Agro-based industries accounted for as much as 77 per cent of manufacturing employment in Kerala, but only 29 per cent Orissa in 2006-07. States with dominance of such industries in employment include Andhra Pradesh, Tamil Nadu, Karnataka and West Bengal each with about or above 60 per cent share. Bihar and Orissa have low (less than 40 per cent) contribution of agro-industries in their manufacturing employment. Three new, Jharkhand, Chhattisgarh and Uttarakhand, and most other smaller states and UTs, all fall in this category. Two North Eastern

states Assam and Nagaland, however, have major part of their organised manufacturing employment in agro-based industry. There does not appear to be any systematic pattern of the importance of agro-based industries in different states which could be associated with any one or a set of variables such as agricultural development and degree of industrialisation.

In aggregate, agro-based industries contribute less to gross value added (24 per cent) than to employment (50 per cent), reflecting lower productivity than in non agro-based industries. That was true for most of the states and UTs as well. But that was not the case in Punjab where they contributed 56 per cent of value added against 46 per cent of manufacturing employment in 2006–07, reflecting not only highest productivity in agro-based industries among the states but also higher productivity in these industries than the non agro-based industries in the state. Maharashtra, Kerala, Tamil Nadu and Delhi are among states with relatively higher productivity in this group of industries, though even in these states their productivity was lower than that in the non agro-based industry.

Turning to the share of different states in employment in agro-based manufacturing, Tamil Nadu accounts for the largest chunk (22%) in 2006–07 followed by Andhra Pradesh (14%), Maharashtra (9%), Karnataka (8%), Uttar Pradesh (8%), Gujarat (7%) and Kerala and West Bengal (6%) (*Table 14*).

In the case of non agro-based industries, Maharashtra topped the list with 16 per cent followed by Tamil Nadu (13%) and Gujarat (12%), Andhra Pradesh, Karnataka, Punjab and UP were other states with a higher than five per cent share each. It is also worth noting that Gujarat increased its share significantly while West Bengal had a large fall in its share in all India non agro-based manufacturing employment during 1981–2007. In the agro-based sector, Gujarat, Maharashtra, Uttar Pradesh and West Bengal lost heavily while Karnataka, Madhya Pradesh, Punjab and Tamil Nadu registered substantial gains.

Importance of different states in terms of their share in value added in agro-industries follows the similar pattern as in the case of employment. Thus, Tamil Nadu with a share of 18 per cent tops the list followed by Maharashtra (14%), Karnataka (10%), Andhra Pradesh (7%) and Gujarat (7%) (*Table 15*). In respect of

Table 14
% Share of Different States in Total India (Number of Workers)

Major States		Agro-based Industries				Non Agro-based Industries			
		1980-81	1990-91	2000-01	2006-07	1980-81	1990-91	2000-01	2006-07
1	Andhra Pradesh	12.6	15.65	16.39	13.56	5.22	7.08	7.45	7.09
2	Bihar(+)	2.1	1.46	0.90 (0.59)	0.61 (0.47)	7.65	7.73	5.55 (1.06)	3.74 (0.93)
3	Gujarat	11.47	8.67	6.75	6.71	8.56	8.9	11.5	12.05
4	Haryana	1.49	2.18	2.76	3.72	3.24	3.72	4.57	4.92
5	Karnataka	4.85	4.63	6.32	8.37	5.35	5.46	5.22	5.65
6	Kerala	5.18	5.18	5.97	5.83	2.12	2.19	2.46	1.78
7	Madhya Pradesh (+)	3.83	3.90	3.24 (2.79)	2.56 (1.88)	3.75	4.89	4.91 (3.05)	4.48 (2.43)
8	Maharashtra	15.32	13.13	11.18	9.03	19.81	16.62	15.6	16.38
9	Orissa	1.09	1.09	1.06	0.95	1.99	2.01	2.31	2.3
10	Punjab	2.64	4.52	4.57	4.66	3.63	4.1	4.6	5.57
11	Rajasthan	1.87	2.32	2.54	2.86	2.47	2.96	3.2	3.31
12	Tamil Nadu	10.7	13.16	17.26	21.82	10.66	11.69	12.78	12.8
13	Uttar Pradesh (+)	11.02	9.68	6.89 (6.48)	7.57 (6.98)	7.23	8.6	7.20 (6.65)	7.78 (6.53)
14	West Bengal	12.45	9.08	8.3	6.09	14.53	9.88	6.51	4.21
New State									
15	Chhattisgarh	-	-	0.45	0.67	-	-	1.86	2.05
16	Jharkhand	-	-	0.31	0.14	-	-	4.49	2.81
17	Uttarkhand	-	-	0.41	0.59	-	-	0.55	1.25
North Eastern States									
18	Arunachal Pradesh	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
19	Assam	2.72	2.5	2.25	1.89	0.44	0.56	0.7	1.08
20	Manipur	0.02	0.01	0.01	0.01	0	0.01	0.02	0.04
21	Meghalaya	0.03	0.02	0	0.01	0.03	0.02	0.02	0.11
22	Mizoram	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
North Eastern States									
23	Nagaland	N.A.	0.06	0.03	0.06	N.A.	0	0.04	0.02
24	Sikkim	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
25	Tripura	0.08	0.05	0.09	0.05	0.29	0.26	0.17	0.42
Union Territories And Other States									
26	A&N Islands	0.1	0.11	0.06	0	0.02	0.04	0	0
27	Chandigarh	0.1	0.1	0.04	0.05	0.14	0.21	0.17	0.13
28	Delhi	1.37	1.28	1.24	1.25	2.02	2.17	1.44	0.97
29	Dadar and Nagar Haveli	N.A.	0.1	0.4	0.56	N.A.	0.05	0.6	0.98
30	Daman and Diu	0.11	0.02	0.24	0.4	0.27	0.07	0.85	1.32
31	Lakshadweep	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
32	Pondicherry	0.41	0.38	0.45	0.33	0.05	0.15	0.56	0.7
33	Goa	N.A.	0.1	0.16	0.16	N.A.	0.28	0.58	0.67
34	Himachal Pradesh	0.08	0.25	0.52	0.5	0.18	0.32	0.46	0.85
35	Jammu & Kashmir	0.38	0.25	0.33	0.36	0.45	0.11	0.25	0.6
	India	100	100	100	100	100	100	100	100
Correlation Between Agro- and Non Agro-based Product Group in 2006-07 (Number of Workers)								0.797**	

Note: **Correlation is significant at 0.01 per cent level

Source: Same as Table 12

Table 15
% Share of Different States in Total India (Gross Value Added)

	Major States	Agro-based Industries				Non Agro-based Industries			
		1980-81	1990-91	2000-01	2006-07	1980-81	1990-91	2000-01	2006-07
1	Andhra Pradesh	6.36	7.41	6.49	6.89	3.83	5.22	5.88	6.35
2	Bihar (+)	2.12	1.28	0.92 (0.76)	0.66 (0.55)	7.42	7.34	4.38 (0.38)	2.95 (0.04)
3	Gujarat	13.18	9.46	8.58	7.47	8.06	9.06	14.15	15.3
4	Haryana	2.1	2.81	3.54	3.93	3.58	3.55	4.43	4.25
5	Karnataka	4.66	5.18	7.48	10.12	5.54	5.52	4.93	6.13
6	Kerala	3.63	2.81	2.91	1.86	2.55	2.05	2.11	0.58
7	Madhya Pradesh (+)	4.05	4.58	4.75 (4.51)	5.05 (4.72)	6.74	6.81	5.96 (3.56)	5.03 (2.04)
8	Maharashtra	20.05	17.75	16.35	14.36	27.19	25.28	23.66	27.92
9	Orissa	1.29	1.1	0.65	0.53	2.56	2.65	2.22	2.28
10	Punjab	2.98	5.87	5.36	6.14	2.63	2.53	1.98	1.52
11	Rajasthan	2.41	3.91	3.14	3.84	2.13	2.64	3.83	2.86
12	Tamil Nadu	11.99	14.29	16.66	18.01	8.74	9.8	9.33	8.31
13	Uttar Pradesh (+)	7.84	8.98	8.70 (8.05)	8.83 (8.00)	5.16	8.07	6.91 (6.28)	6.21 (4.94)
14	West Bengal	11.34	5.86	5.55	3.82	11.66	6.06	3.35	2.5
New State									
15	Chhattisgarh	-	-	0.24	0.32	-	-	2.4	2.98
16	Jharkhand	-	-	0.15	0.11	-	-	4	2.91
17	Uttarkhand	-	-	0.66	0.83	-	-	0.64	1.27
North Eastern States									
18	Arunachal Pradesh	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
19	ASSAM	2.51	3.83	1.49	0.98	0.21	0.71	0.65	1.02
20	Manipur	0.002	0.005	0.003	0.003	0	0.001	0.001	0.002
21	Meghalaya	0.009	0.012	0.003	0.005	0.006	0.015	0.01	0.007
22	Mizoram	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
23	Nagaland	N.A.	0.03	0.02	0.05	N.A.	0	0	0
24	Sikkim	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
25	Tripura	0.01	0.03	0.32	0.11	0.01	0.01	0.01	0.04
Union Territories And Other States									
26	A & N. Island	0.04	0.09	0.02	0	0	0.01	0	0
27	Chandigarh	0.07	0.1	0.15	0.1	0.03	0.12	0.13	0.06
28	Delhi	0.74	2.08	3.75	1.77	0.51	1.04	0.93	0.45
29	Dadra & N Haveli	N.A.	0.31	1.79	2.08	N.A.	0.06	1.71	1.2
30	Daman & Diu	0.05	0.02	0.6	1.16	0.33	0.03	1.56	1.21
31	Lakshadweep	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
32	Pondicherry	0.21	0.33	0.79	0.34	0.01	0.1	1.31	0.72
33	Goa	N.A.	0.09	0.92	1.13	N.A.	0.36	1.52	1.68
34	Himachal Pradesh	0.1	0.37	0.92	1.07	0.14	0.34	0.88	1.75
35	Jammu & Kashmir	0.26	0.18	0.19	0.27	0.11	0.16	0.07	0.43
	India	100	100	100	100	100	100	100	100
Correlation Between Agro- and Non Agro-based Product Group in 2006-07 (Gross Value Added)								0.746**	

Note: ** Correlation is significant at 0.01 per cent level

Source: Same as Table 12

non agro-based industries: the situation is similar, insofar as Maharashtra with largest share in employment also contributes the largest (28%) to value added, Gujarat with 15 per cent and Tamil Nadu with 8 per cent of value added have 12 and 13 shares in

employment. Andhra Pradesh and Karnataka follow them, though in terms of employment Uttar Pradesh is ahead of them. It also needs to be noted that share of Gujarat and Andhra Pradesh in all states value added in non agro-based industries has vastly increased while that of Bihar and West Bengal has drastically declined. Maharashtra and Tamil Nadu have been able to retain their shares.

Do the two segments of manufacturing industry—agro-based and others—follow each other? This may primarily be the size effect with the states with larger overall industrial sector having larger share of both segments. Still, it is interesting to note that the distribution of the two segments across the states is very significantly correlated. The states with larger share of one also have the larger share of the other, both in respect of employment and value added. Correlating the state shares between agro and non agro in industries in 2006–07, the coefficient turned out to be +0.797 in respect of workers and +0.746 in respect of value added (both coefficients being significant at 0.01 per cent level).

Interstate Differences in Structure and Specialisation: Top 5 Product Groups in a State

As in the case of the composition of manufacturing industry in terms of agro-based and non agro-based groups, industrial structure of states differs in terms of product groups at more disaggregated (2-digit) level. We look here at the top five product groups in terms of their contribution to employment in organised manufacturing in a state to see to what extent the product groups featuring in this bunch differ from state to state. This exercise also enables us to see the degree of specialization or diversification of the manufacturing sector in a state, as shown by the percentage of employment claimed by the five top industries. This analysis has been attempted for the year 2006–07.

Among all states and UTs, food products feature in 24 out of 31, for which data are available (data are not available for Arunachal Pradesh, Mizoram, Sikkim and Lakshadweep), in the top five product groups (*Table 16*). The next most ubiquitous groups among the top five in 18 states and Union Territories are non-metallic mineral products and machine tools and machinery. Different states, however, show diverse patterns insofar as the largest product group is concerned. Textiles group

T Table 16
Top Five Industries of the States in terms of Number of Workers in Organised Manufacturing (2006-07)

	20-21	22	23+24+25	26	27	28	29	30	31	32	33	34	35-36	37	38	39	Total of five
Major States																	
1	Andhra Pradesh	*	* 35.04	*				*		*							75.67
2	Bihar	*	*	*					*	* 53.69							85.54
3	Gujarat	*	* 20.25	*				*		*			*				64.48
4	Haryana	*		*								*	*	* 25.53			74.22
5	Karnataka	*		* 38.10							*		*	*			71.34
6	Kerala	* 48.87							*	*			*				77.97
7	Madhya Pradesh	*	* 16.20					*		*			*				62.6
8	Maharashtra	*	*	*				*		*			*	* 14.23			56.66
9	Orissa	*	*	*				*		*	* 45.14						84.33
10	Punjab	* 18.68		*						*				*			66.01
11	Rajasthan	*	* 26.73							*	*		*				67.82
12	Tamil Nadu	*	*	* 25.26				*						*			69.74
13	Uttar Pradesh	* 21.22		*			*					*	*				59.11
14	West Bengal	*	* 35.99								*	*	*				76.53
New States																	
15	Jharkhand								*	*	* 51.90		*	*			92.08
16	Chhattisgarh	*	*							*	* 54.36		*				87.45
17	Uttarakhand	*				*		*				*	* 22.58				78.95

	20-21	22	23+24+25	26	27	28	29	30	31	32	33	34	35-36	37	38	39	Total of five
North Eastern States																	
18	Assam																N.A.
19	Assam	*56.10				*		*	*	*							91.68
20	Manipur	*			*					*87.95							100
21	Meghalaya	*				*		*		*47.11	*						100
22	Mizoram																N.A.
23	Nagaland	*			*63.74	*				*							100
24	Sikkim																N.A.
25	Tripura	*						*		*86.46		*					97.25
Union Territories and Other States																	
26	A & N. Island	*98.39			*												100
27	Chandigarh										*	*	*28.41				74.82
28	Delhi				*37.91	*						*	*	*			74.7
29	Dadra & N Haveli		*27.64					*	*		*		*				83.5
30	Daman & Diu							*	*33.72				*		*		80.75
31	Lakshadweep				*												N.A.
32	Pondicherry												*				62.91
33	Goa	*						*18.19	*	*	*		*	*			71.84
34	Himachal Pradesh		*23.65					*26.85		*	*		*	*			75.33
35	Jammu & Kashmir	*						*21.44		*	*		*				66.3
	India	*13.99	*	*	*			*					*				54.28

Note: Figure in parentheses shows the highest share of the industry in the states, Source same as Table 12

and food products are the largest in each of the six states. A single product group (out of 15 two-digit industries) accounts for over 50 per cent of the organised sector manufacturing employment in several, mostly less industrialised/smaller states. Thus, in Manipur and Tripura non-metallic mineral products dominate with 88 and 86 per cent of workers respectively. The same group dominates in Bihar, though with small share (54 per cent) in total employment. Chhattisgarh and Jharkhand have 52 and 54 per cent, respectively, of organised sector manufacturing employment in basic metal industries. In Andaman and Nicobar Islands and Assam, food products dominate with 98 and 56 per cent employment respectively. Wood and wood products is the largest industry in Nagaland with 64 per cent of employment. Industries with significant domination though with smaller proportion (between 33% to 55%) of total employment in different states are: beverages and tobacco in Andhra Pradesh (35%), food products in Kerala (49%), basic metals in Orissa (45%), textile products in Delhi and Karnataka (38% each), textiles in West Bengal (36%) and non-metallic mineral products in Meghalaya (47%).

The above features suggest a high degree of specialization in the product structure of different states. That is also reflected by the high proportion of total employment accounted for by the largest five industry groups. Among major states, Andhra Pradesh, Bihar, Kerala, Orissa and West Bengal had over 75 per cent of their respective organised manufacturing employment concentrated in top 5 industry groups. Haryana came close to them with a figure of 74 per cent as also Karnataka with 71 and Rajasthan with 70 per cent. The three new states also showed very high degree of concentration. So did all the states in Northeast with a much higher degree. Product structure of Gujarat, Maharashtra, Madhya Pradesh, Punjab and Uttar Pradesh, on the other side, is relatively well-diversified with the top five industries contributing less than two-thirds of total employment. Maharashtra has the most diversified industrial structure with the top five industries contributing only 57 per cent and even the largest industry group (transport equipment) accounting for only 14 per cent of employment. Interestingly, the largest group which accounted for similar share in total employment in organised manufacturing in the country is food products.

Locational Diversification: Five Most Important States in a Product Group

How are different industries dispersed or concentrated among states? Leather products is most concentrated industry with the five largest contributing states accounting for 84 per cent of total employment in that industry with Tamil Nadu alone accounting for 41 per cent (*Table 17*). That is followed by beverages and tobacco with 83 per cent of employment in five largest contributing states and Andhra Pradesh alone accounting for 56 per cent. Next comes textile products with 82 per cent share of the five top states and 39 per cent of the largest contributing state, namely Tamil Nadu. Most other industries seem reasonably dispersed in their location; though the top five states contribute more than half of total employment in all cases. Non-metallic mineral products, chemical products, wood products and metal products are among the most dispersed industries with the top five states contributing between 51 to 55 per cent each of their employment.

Difference in the Structure of Unorganised Manufacturing

Top Five Industries

Based on the NSSO data for 2005–06, we have also attempted a look at the interstate differences in product structure and specialization and locational differences among different industry groups, in the case of unorganised manufacturing. On the whole, product structure of unorganised manufacturing is more similar among different states than of organised manufacturing. Thus, textile products feature among the top five industry groups in terms of employment in all the states and Union Territories. Food products also have similar presence in all UTs, except Delhi and Daman and Diu (*Table 18*). Wood and wood products is also among the important industries in 31 out of the 35 states and UTs. Unlike in the case of organised manufacturing, where a single product group accounted for more than 50 per cent of employment in several cases, there is such single industry dominance in the unorganised manufacturing only in two cases: food products in Arunachal Pradesh and textiles in Manipur. Cases of a single industry contributing between one-third to one-half of employment were also less frequent in the case of the unorganised than of the organised manufacturing. Thus, the product structure of

Table 17
Top five States in Organised Manufacturing in terms of Number of Workers (2006-07)

Industry Code	Andhra Pradesh	Bihar	Gujarat	Haryana	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Orissa	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh	West Bengal	Chhattisgarh	Jharkhand	Uttaranchal	Assam	Manipur	Meghalaya	Nagaland	Tripura	A & N. Island	Chandigarh	Delhi	Dadra & N Haveli	Daman & Diu	Pondicherry	Goa	Himachal Pradesh	Jammu & Kashmir	Total of five
20-21	* 13.53					*		*				*	*																			60.10
22	* -55.7					*		*					*	*																		82.60
23+24+25			*					*			*	* 27.83																				74.42
26				*				*				* 38.70	*																			81.92
27					*	*		* 18.54				*	*																			53.40
28	*		*			*		* 15.48				*	*																			58.55
29				*								* 40.76	*	*											*							84.16
30	*		* 20.34					*				*	*																			68.32
31	*		*					* 15.96				*	*																			53.31
32	* 12.60		*							*		*																				51.34
33								* 14.19	*					*	*	*																54.86
34			*					* 18.64		*		*	*																			64.79
35-36			*			*		* 18.26				*	*																			59.26
37				*				* 27.28		*		*																				76.61
38			* 27.14					*			*	*	*																			72.23

Table 18
Top Five Industries of States in Unorganised Manufacturing in terms of Number of Workers (2005-06)

	20-21	22	23 + 24 + 25	26	27	28	29	30	31	32	33	34	35-36	37	38	Total of Five
Major States																
1	Andhra Pradesh	*	*	* -22.36	*											84.61
2	Bihar	* -25.88	*	*	*			*								85.29
3	Gujarat	*	*	*									*		* -28.05	77.08
4	Haryana	*		* -29.28	*				*			*				72.86
5	Karnataka	* -26.46	*	*	*											79.09
6	Kerala	*	*	* -23.39	*											74.05
7	Madhya Pradesh	*	* 40.53	*	*				*							86.31
8	Maharashtra	*	* 32.34	*	*				*							83.52
9	Orissa	*	*	*	* 36.22				*							87.01
10	Punjab	*		* -39.84	*							*			*	76.16
11	Rajasthan	*		* -26.89	*										*	77.76
12	Tamil Nadu	*	*	* -23.05	*			*								66.89
13	Uttar Pradesh	*		* -32.38	*					*						79.91
14	West Bengal	*	*	* -24.4	*											80.58
New States																
15	Chhattisgarh	*		*	* -28.05					*		*				84.79
16	Jharkhand	*	* -38.98	*	*							*				91.06
17	Uttarakhand	* -27.92		*	*								*		*	86.08

	20-21	22	23 + 24 + 25	26	27	28	29	30	31	32	33	34	35-36	37	38	Total of Five
North Eastern States																
18	Arunachal Pradesh	* -54.23		*	*							*			*	96.47
19	Assam	*	*	*	* 22.94											86.5
20	Manipur	*	* -60.19	*	*										*	95.89
21	Meghalaya	*		*	*34.67				*	*						81.08
22	Mizoram	* -38.79		*	*							*				94.47
23	Nagaland	*	* -24.27	*	*											89.44
24	Sikkim	*		*	* -31.11							*				91.53
25	Tripura	*41.72		*	*					*						92.52
Union Territories and Other States																
26	Andaman & Nicobar	*		* -30.13	*						*				*	80.73
27	Chandigarh	*		* -31.47								*	*		*	90.15
28	Delhi			* -37.99		*	*					*	*			80.71
29	Dadra & Nagar Haveli	*		*	* -37.57				*			*				88.5
30	Daman & Diu			*	*	*			*		*				* -23.86	86.14
31	Lakshadweep	*		*	* -43.12					*		*				99.07
32	Pondichery	*		* -24.07	*								*		*	64.73
33	Goa	*		*	* -19.58							*	*		*	75.48
34	Himachal Pradesh	*		* -25.23	*							*				89.27
35	Jammu & Kashmir	*		* -48.72	*					*						92.14
	INDIA	* -	* -	* -22.02	* -											73.41

Note: Figure in parentheses shows the highest share of the industry in the states

Source: NSSO survey on Unorganised Manufacturing (62nd Round)

individual states appears to be much more diversified in the case of the former than the latter.

Diversification, however, does not seem to be very wide, as the top five industries accounted for over 80 per cent of employment in 25 states/UTs and between 75 to 80 per cent in 6 states and UTs. By this measure, the unorganised manufacturing shows a narrow, if not narrower, product structure as the organised manufacturing in different states. Tamil Nadu seems to have the most diversified structure with the top five industries contributing about two-thirds of total unorganised manufacturing employment. In the case of the organised manufacturing, the largest five industries contributed less than two-thirds of total employment in as many as seven states.

There appears to be a significant similarity among states in so far as the top five product groups are concerned. Food products, beverages and tobacco, textiles, textile products and wood products which ranked the highest in that order at all India level, accounting for 73 per cent of employment in the unorganised manufacturing, also are the top five groups in the case of Andhra Pradesh, Assam, Kerala and West Bengal. Four of them feature among the top five in Bihar, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan and Uttar Pradesh. Three of them feature in rest of the states, except Uttarakhand. The largest industry, however, is obviously different in different states. Textile products is the largest in nine states, food products, wood products and beverages and tobacco in three states each and textiles in one (Tamil Nadu) state. In Gujarat, 'other products' make the largest group.

Top five States

How are the unorganised manufacturing industries distributed among different states? Here again, we have looked at the shares of the top five states. Taking all industries, the top five states are Andhra Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh and West Bengal together accounting for 55 per cent of the nation-wide employment in unorganised manufacturing, West Bengal being at the top with a share of 15 per cent (*Table 19*). So far as individual industries are concerned, rubber and plastic products is most concentrated in the top five states (Bihar,

Table 19
Top five States in Unorganised Manufacturing in terms of Number of Workers (2005-06)

Industry Code	Andhra Pradesh	Bihar	Gujarat	Haryana	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Orissa	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh	West Bengal	Chhattisgarh	Jharkhand	Uttarakhand	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	Andaman & Nicobar	Chandigarh	Delhi	Dadra & Nagar Haveli	Daman & Diu	Lakshadweep	Pondicherry	Goa	Himachal Pradesh	Jammu & Kashmir	Total of five top 5				
20-21	*	*											* -17.47	*																							58.45			
22	*						*		*				*	* 21.44																							63.07			
23 + 24 + 25	*							*				* -24.05	*	*																							66.41			
26	*							*				*	* -21.34	*																							61.89			
27	*	*										*	*	* -18.42																							59.78			
28	*							*				* -28.38	*	*																							68.33			
29			*					*				*	*	* -27.34																							60.53			
30		*										* -36.62	*	*																							77.12			
31			*					*				*	*	*																								62.27		
32							*	*					* -17.57	*																								52.99		
33												*		* 21.83																								69.43		
34								*				*	* -16.99	*																								54.21		
35-36			*				*	* -15.54				*	*	*																									60.99	
37								*			*	*	* -28.28	*																									76.39	
38								*			*	*	*	*																										68.82

Note: Figure in parentheses shows the highest share of the states in the industry

Source: Same as Table 18

Karnataka, Tamil Nadu, Uttar Pradesh and West Bengal) accounting for 77 per cent of total employment followed by transport equipment with five top states (Maharashtra, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal) accounting for 76 per cent of total employment in unorganised segment of this industry. Non-metallic mineral products and metal products, on the other side, are most dispersed groups with the top five states contributing 53 and 54 per cent, respectively, of their total employment.

On the whole, unorganised segment of most of the industry groups seems well dispersed among different states. The cases of an individual state claiming a significant share in total employment are not many. Rubber and plastics with 37 per cent of employment in Tamil Nadu, paper products with 28 per cent employment again in Tamil Nadu, transport equipment with 28 per cent employment in Uttar Pradesh and leather products with 27 per cent employment in West Bengal are the only industries where a single state claimed more than one-fourth of total employment. On this basis, metal products, machinery, food products, wood and wood products and non-metallic mineral products are locationally most dispersed as no single state claimed 20 per cent or more of their respective total employment in the unorganised segment.

Differences in the Structure of Total Manufacturing Activity: An Account Based on NSSO Employment Data for 2004–05

Top Five Industries

Most features of the industrial structure of different states and location pattern of different industries among states in aggregate terms are similar to those revealed by data on organised or unorganised segments of manufacturing, because these two segments also share common characteristics in these respects. As such food products and wood products are featured among the five largest industries (in terms of employment) in 25 out of 35 states/UTs; and textiles products in 24 and textiles in 23 (*Table 20*). Thus, the industrial structure of most states and UTs were similar to the extent of the common importance of these four industries. These industries were also among the top five in the country as a whole, non-metallic

Table 20
Top Five Industries of the States in terms of Number of Workers (Total) 2004-05

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	Total of Five	
Major States																									
1	Andhra Pradesh	*	*	*(19.60)	*							*													72.12
2	Bihar	*	*(21.55)	*	*	*						*													83.24
3	Gujarat	*		*						*															69.6
4	Haryana	*		*	*(14.48)							*	*							*					52.68
5	Karnataka	*	*	*	*(21.81)	*																			70.78
6	Kerala	*(19.32)		*	*	*																*			74.93
7	Madhya Pradesh	*	*(31.83)	*	*	*						*													71.85
8	Maharashtra	*		*	*(16.37)							*	*									*			57.14
9	Orissa	*	*	*		*(38.98)						*													82.03
10	Punjab	*		*(23.96)	*	*									*										63.82
11	Rajasthan	*		*(20.92)	*							*										*			70.94
12	Tamil Nadu	*	*	*(30.30)	*					*															64.22
13	Uttar Pradesh	*		*(24.39)	*	*						*	*												70.36
14	West Bengal	*	*	*(18.32)	*	*																			67.7
New States																									
15	Chhattisgarh	*		*	*	*						*(19.17)	*												71.88
16	Jharkhand	*	*	*		*(19.55)						*	*												71.09
17	Uttarakhand	*		*	*	*(20.08)						*	*	*											69.82

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	Total of Five	
North Eastern States																									
18	Arunachal Pradesh	*(32.98)	*	*		*							*							*					85.61
19	Assam	*	*	*		*(25.61)																*			79.3
20	Manipur	*	*(58.13)	*		*																*			93.74
21	Meghalaya	*	*(32.79)	*		*						*										*			89.36
22	Mizoram	*		*(32.14)		*								*								*			86.78
23	Nagaland	*	*(56.37)	*		*		*						*								*			98.61
24	Sikkim	*		*		*								*								*(22.51)			86.69
25	Tripura	*		*		*(32.05)						*										*			88.27
Union Territories and Other States																									
26	Andaman & Nicobar	*		*(36.39)		*		*															*		91.27
27	Chandigarh	*		*(20.36)										*											59.04
28	Delhi			*	*(29.06)		*							*								*			66.04
29	Dadra & Nagar Haveli			*						*	*(32.73)		*	*											85.04
30	Daman & Diu			*						*	*(51.60)			*			*					*			86.43
31	Lakshadweep	*(42.11)		*																					100
32	Pondicherry	*(15.35)		*								*													59.23
33	Goa	*		*				*																	70.9
34	Himachal Pradesh	*		*		*(16.31)					*(22.52)														58.5
35	Jammu & Kashmir	*	*(57.02)	*		*							*												90.86
	All India	*	*(18.02)	*		*																			60.18

Note: Figure in parentheses shows the highest share of the industry in the states, for detail of the industry code see Appendix-D
Source: NSSO survey on employment and Unemployment (61st Round)

mineral products being the fifth in that group. Textiles', being the largest group at the national level, also was the largest in the case of as many as nine states/UTs. Otherwise, industry with largest share in employment in a state differed widely. So, wood and wood products was the largest industry in Himachal Pradesh, Jharkhand, Orissa, Tripura and Uttarakhand; textile products (wearing apparels, etc.) in Andaman and Nicobar Islands, Chandigarh, Delhi, Karnataka and Maharashtra; paper and paper products in Meghalaya; and, non-metallic mineral products in Chhattisgarh and Rajasthan.

How narrow or diversified is the industrial structure of different states? In the country as a whole the top five industries accounted for 59 per cent of total manufacturing employment. In most states the corresponding figure was much larger. Leaving aside small states and UTs, even some of the larger states, like Bihar, Gujarat, Karnataka and Orissa have a rather narrow base with the top five industries contributing over 75 per cent of state's total industrial employment. Haryana, Kerala, Madhya Pradesh, Maharashtra, Uttar Pradesh and West Bengal, on the other side, have a more diversified industrial structure with the top five industries accounting for less than 60 per cent of total industrial employment in each of them. All the North Eastern states have very narrow industrial base with the top 5 industries accounting for 80 per cent or more of manufacturing employment. Among other smaller states and UTs, Delhi, Himachal Pradesh, Jammu & Kashmir and Pondicherry have relatively diversified industrial structure.

Top Five States

How are different industries locationally diversified in terms of having dispersed or concentrated location across states? We have attempted to answer this question with reference to five most important states in the case of each industry. Different sets of states feature in the group with largest employment share in individual industries. In most cases, the states featuring are, of course, the larger ones.

Taking the share in total employment in an industry claimed by the top five states as one measure of concentration and dispersal, we find that industry groups manufacture of coke and petroleum products, electrical and electronic machinery,

precision instruments, office equipment including computers, motor vehicles and tobacco products are least dispersed, the five states accounting for 70 to 80 per cent of employment in each of these industries (*Table 21*). In case of petroleum product, a single state, namely Tamil Nadu, accounts for 35 per cent and in the case of office equipment and computing machinery, Tamil Nadu again accounts for 32 per cent of total employment. In electrical machinery, Uttar Pradesh dominates with 32 per cent of total employment. In the case of precision instruments industry 78 per cent of employment is in the top five states and over one-fourth (27%) in a single state, Haryana. Recycling is, however, the most geographically concentrated industry the five top states account for 88 per cent and a single state, West Bengal, 65 per cent of its total employment.

Wood and wood products and leather products, on the other side, have the most dispersed location among states, the top five states accounting for 52 per cent of its total employment. Metal products, general machinery and textiles come next with a 56 per cent share of the top five states in their total employment. Food products and non-metallic mineral products are other groups with relatively lower geographical concentration in their location across the states, with 50 to 60 per cent employment in the top five states.

Which states feature among the top five in respect of the share of employment in an industry? Obviously, the larger states have this privilege more often than the smaller ones. Thus, Maharashtra finds place in this group in respect of 18 (out of 23) industry groups, Uttar Pradesh and West Bengal in respect of 17 and Tamil Nadu in respect of 16 industries. Andhra Pradesh features among the top five states in respect of eight and Karnataka five industries. Smaller states and Union Territories generally do not feature in this group, but we find that Delhi is among the top five in respect of four industries, paper and paper products, rubber and plastic products, office equipment and computing machinery, and, radio, televisions and communication equipment, in the last case accounting for 20 per cent of the total countrywide employment in that industry.

Among the larger states, Bihar does not feature among the top five states in any industry, Haryana features in case of only one industry, Punjab, Kerala and

Table 21
Top five States in terms of Number of Workers (Total) 2004-05

Industry Code	Andhra Pradesh	Bihar	Gujarat	Haryana	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Orissa	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh	West Bengal	Chhattisgarh	Jharkhand	Uttarakhand	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	Andaman & Nicobar	Chandigarh	Delhi	Dadra & Nagar Haveli	Daman & Diu	Lakshadweep	Pondichery	Goa	Himachal Pradesh	Jammu & Kashmir	Total of top five			
15	*						*	*				*	*(17.22)	*	*																								60.02
16	*		*		*		*						*	*(22.11)	*																								71.4
17	*		*									*	*(20.90)	*	*																								66.47
18					*		*	*				*	*(15.41)	*	*																								54.79
19							*	*			*	*	*(15.84)	*	*																								67.89
20	*								*(15.21)			*	*	*	*																								52.13
21								*				*	*(23.05)	*	*																								63.88
22					*		*(19.29)					*	*	*	*																								62.26
23	*		*				*	*				*(35.22)	*	*	*																								85.44
24			*				*	*				*(27.14)	*	*	*																								72.6
25			*				*(22.66)	*				*	*	*	*																								68.66
26	*						*	*	*		*	*	*(23.87)	*	*																								58.99
27			*				*	*	*		*	*	*(15.56)	*	*																								56.24
28			*				*	*	*		*	*	*(17.42)	*	*																								56.53
29			*				*(16.60)	*	*	*	*	*	*	*	*																								59.18
30			*				*	*	*		*	*(33.04)	*	*	*																								75.93
31			*				*	*	*		*	*	*(32.00)	*	*																								72.87
32	*						*	*	*		*	*	*	*	*																								70.97
33							*(26.82)	*			*	*	*	*	*																						*		77.57
34							*(28.32)	*			*	*	*	*	*																								76.4
35	*						*(18.48)	*		*	*	*	*	*	*																								65.79
36							*	*			*	*	*	*	*																								63.37
37							*	*			*	*	*	*	*																								84.91

Note: Figure in parentheses shows the highest value of the state in the industry
Source: Same as Table 20

Madhya Pradesh in two each and Rajasthan and Orissa in three each. Among smaller states, Jharkhand is among the top five in three industries and Chhattisgarh in one industry. None among the North Eastern states features in top five.

VI. Industrial Base and Specialisation of States

The descriptive account of the industrial structure of different states given in the preceding sections is subjected here to some quantitative analysis to measure the industrial base and specialization of different states. Industrial base of a state has been identified in terms of the bunch of industries which claim a higher share in the state's industrial structure than in the industrial structure of the country as a whole and is measured by location quotients of individual industries. Location quotient is one for an industry if its share in the state is the same as in India, is less than one if this share is lower and more than one if it is higher than in India. Industries having quotient value of one or higher are considered to constitute the industrial base of the state. Location quotients for different industries in different states are given in *Table 22*. To simplify the presentation and analysis, we have identified and presented information on industries with location quotient ≥ 1 in each state separately (*Table 23*).

It must be noted that the location quotients measure industrial base of a state only relative to the industrial structure of the country. Those industries which have a higher share in the state's than in the country's industrial structure constitute this base and these industries need not necessarily be the largest in the state. Location quotient, in fact, reflects the state's relative specialization vis-à-vis the industrial structure of the country and is identified in terms of value of the quotients, and defines industrial base in a relative and not in absolute sense. It also implies that more industrialised states would have a wider industrial base in terms of having a larger number of industries with value of location quotients higher than one.

Industrial base of Maharashtra is relatively wide consisting of 16 (out of 23) industries. Haryana, Delhi and Chandigarh come next with 14, 13 and 11 industry groups having a higher than one location quotient. Madhya Pradesh has 7 industries with a greater than one location quotient and Assam 6. Manipur has the narrowest industrial base with only two industries having a location quotient higher than one, followed by Arunachal Pradesh and Orissa each with four industries in that category. Jammu and Kashmir, Nagaland and Andaman also have a small number (5

Table 22
Location Quotients of Industries in Different States (2004-05)

	Food Product	Tobacco Prod	Textiles	Wearing Apparel	Leather Prod	Wood Prod	Paper Prod	Printing	Coke & Petro Prod	Chemical Prod	Rubber Prod	N.M.M. Prod	Basic Metals	Metal Prod	Machinery	Office/Computing Equipments	Electrical & Apparatus	Radio, TV and Communication Equipments	Medical Instruments	Motor Vehicles	Other Transport Equipment	Furniture/N.E.C	Recycling	
Major States																								
1	Andhra Pardesh	1.5	1.8	1.1	0.9	0.4	0.9	0.5	0.8	1.5	0.6	0.4	1.1	0.9	0.7	0.7	0.6	0.2	1.3	0.0	0.1	1.1	0.6	0.4
2	Bihar	1.2	2.5	0.2	1.2	0.6	1.9	0.0	0.2	0.0	0.2	0.1	1.7	0.1	0.3	0.6	0.0	0.0	0.0	0.0	0.1	1.8	0.7	0.0
3	Gujrat	0.6	0.1	1.0	1.0	1.1	0.5	0.8	0.8	2.1	2.6	2.0	0.6	1.4	0.9	1.1	1.0	1.7	0.0	0.3	0.0	0.1	2.9	0.0
4	Haryana	0.6	0.0	0.7	1.1	1.3	0.5	1.5	1.0	0.0	1.6	1.9	1.0	1.0	2.0	2.8	0.0	1.2	1.3	11.6	6.4	1.2	0.8	0.0
5	Karnataka	0.9	1.9	0.6	1.6	0.7	1.3	0.6	2.2	0.6	0.6	0.4	0.4	0.6	0.9	1.3	0.6	1.1	2.3	0.0	1.1	0.9	0.6	0.0
6	Kerala	1.9	0.5	1.0	1.3	0.2	1.0	1.5	1.3	0.4	0.9	1.1	0.4	0.1	1.0	0.5	2.1	0.4	0.9	1.0	1.0	1.0	1.3	1.4
7	Madhya Pradesh	0.9	3.7	0.3	0.8	0.4	1.1	0.0	0.5	0.0	1.2	0.4	1.1	0.6	0.8	0.5	1.3	1.3	0.3	0.0	1.6	0.2	0.6	0.2
8	Maharashtra	1.1	0.2	0.6	1.2	1.1	0.6	1.1	1.8	1.4	1.4	2.2	0.9	0.8	1.6	1.6	1.5	1.1	1.8	0.4	2.7	1.8	1.5	0.0
9	Orissa	0.9	0.8	0.5	0.3	0.0	4.0	0.8	0.2	0.0	0.1	0.3	2.1	2.3	0.6	0.2	0.0	0.1	0.0	0.0	0.0	1.0	0.4	0.0
10	Punjab	0.9	0.0	1.3	1.1	1.0	0.7	0.9	0.8	0.0	0.5	1.8	0.7	1.4	1.5	3.7	0.4	0.4	1.1	0.8	1.0	7.0	0.5	0.8
11	Rajasthan	0.7	0.2	1.2	0.9	2.2	0.8	0.8	0.8	1.1	0.4	0.5	1.9	0.2	1.2	0.5	0.0	0.3	1.6	3.3	0.2	0.7	1.7	0.2
12	Tamil Nadu	0.7	0.8	1.7	0.8	1.4	0.7	0.8	1.4	3.2	2.4	0.7	0.5	0.5	0.9	0.9	3.0	0.5	0.0	0.4	1.8	0.5	0.8	0.3
13	Uttar Pradesh	1.1	0.6	1.4	1.0	1.0	0.8	1.5	0.6	0.0	0.4	0.2	1.5	1.0	1.1	1.0	0.0	2.1	0.6	0.0	0.4	0.3	0.6	0.2
14	West Bengal	1.1	2.1	1.0	0.9	1.4	0.9	1.0	0.6	0.4	0.5	1.6	0.6	1.3	0.6	0.5	0.5	1.1	0.6	1.7	0.2	1.3	0.9	6.0
New States																								
15	Chhattisgarh	1.4	0.9	0.1	0.8	0.2	1.6	0.2	1.1	0.0	0.2	0.0	2.3	7.0	1.8	0.3	0.0	0.0	1.5	0.0	0.2	0.6	0.6	3.7
16	Jharkhand	0.7	2.1	0.5	0.3	1.1	2.0	0.0	0.2	4.2	0.0	0.3	2.1	4.0	0.8	0.7	2.0	0.2	0.0	0.0	3.6	0.0	0.3	4.2
17	Uttarakhand	1.2	0.0	0.1	1.3	0.0	2.1	0.6	2.4	0.0	0.9	0.5	0.9	0.6	2.6	2.7	0.0	1.5	8.2	0.4	2.3	0.0	0.5	0.3

	Food Product	Tobacco Prod	Textiles	Wearing Apparel	Leather Prod	Wood Prod	Paper Prod	Printing	Coke & Petro Prod	Chemical Prod	Rubber Prod	N.M.M. Prod	Basic Metals	Metal Prod	Machinery	Office/Computing Equipments	Electrical & Apparatus	Radio, TV and Communication Equipments	Medical Precision/Optical Instruments	Motor Vehicles	Other Transport Equipment	Furniture/N.E.C	Recycling	
North Eastern States																								
18	Arunachal Pradesh	3.2	0.0	0.8	0.4	0.7	1.3	0.0	0.7	0.0	0.7	0.0	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0	0.6	0.0
19	Assam	1.7	0.0	0.7	0.6	0.0	2.6	3.2	0.8	0.6	0.3	0.0	0.9	0.2	1.2	0.0	0.0	0.2	0.3	0.0	0.0	0.0	2.0	3.6
20	Manipur	0.5	0.0	3.2	1.2	0.0	0.7	0.0	0.8	0.0	0.3	0.0	0.2	0.7	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	1.0	0.0
21	Meghalaya	1.2	0.0	1.8	0.5	0.0	1.6	0.0	0.3	2.9	0.0	0.1	2.2	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0
22	Mizoram	1.2	0.4	0.3	2.4	0.0	0.7	0.0	1.3	0.0	0.0	0.1	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0
23	Nagaland	1.4	0.0	3.1	0.0	0.0	1.7	0.0	1.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0
24	Sikkim	2.1	0.0	0.2	1.6	0.0	1.2	0.0	1.2	0.0	2.1	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0
25	Tripura	2.5	0.3	0.2	0.7	0.0	3.3	0.3	0.2	0.0	0.2	0.4	0.5	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0
Union Territories																								
26	Andaman & Nicobar	1.2	0.0	0.0	2.7	0.0	1.2	0.0	8.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9	2.1	0.0
27	Chandigarh	1.3	0.0	0.4	1.5	0.0	0.5	2.1	2.9	0.0	1.2	3.6	0.0	1.5	1.8	4.1	0.0	3.8	0.0	17.9	0.0	0.0	0.8	0.0
28	Delhi	0.2	0.0	0.8	2.2	2.4	0.2	5.5	1.9	0.0	0.2	3.2	0.0	0.1	1.4	2.1	6.2	2.3	10.0	4.4	0.7	1.5	1.3	0.2
29	Dadra & Nagar Haveli	0.2	0.0	1.4	0.1	0.0	0.0	2.9	0.0	6.5	29	23.4	0.0	6.4	0.5	2.1	6.1	0.5	0.0	0.0	2.4	0.0	0.0	0.0
30	Daman & Diu	0.5	0.0	0.1	0.7	0.0	0.0	0.9	1.2	0.0	4.3	36.9	0.0	0.0	0.5	1.0	0.0	3.2	0.0	0.0	0.0	1.2	0.3	0.0
31	Lakshadweep	4.1	0.0	0.3	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	2.1	0.0
32	Pondicheri	1.5	0.1	0.7	1.0	3.4	0.6	2.1	1.4	0.0	1.7	1.5	1.1	0.0	1.2	0.7	0.0	4.6	0.0	0.0	0.0	1.4	0.9	0.0
33	Goa	1.2	0.0	0.3	0.3	0.0	0.2	0.0	8.0	0.0	6.1	0.0	0.1	3.2	0.5	1.5	0.0	2.4	0.0	11.6	0.5	5.5	2.0	0.0
34	Himachal Pradesh	1.2	0.0	0.6	1.0	0.3	1.7	2.6	0.8	0.0	1.7	0.1	0.7	3.6	0.8	1.2	0.0	0.0	0.0	23.6	4.1	0.0	0.7	0.0
35	Jammu & Kashmir	0.9	0.0	3.2	0.6	0.1	1.5	1.1	0.3	0.0	0.1	0.2	0.2	0.4	0.5	0.1	0.0	0.9	0.2	4.5	0.0	0.0	0.1	2.7

Table 23
Industrial Base of Different States (Industries with Location Quotients ≥ 1) 2004-05

	Specialization Coefficients	Food Product	Tobacco Prod	Textiles	Wearing Apparel	Leather Prod	Wood Prod	Paper Prod	Printing	Coke & Petro Prod	Chemical Prod	Rubber Prod	N.M.M. Prod	Basic Metals	Metal Prod	Machinery	Office/Computing Equipments	Electrical & Apparatus	Radio, TV and Communication Equipments	Medical Precision/Optical Instruments	Motor Vehicles	Other Transport Equipment	Furniture/N.E.C	Recycling	
Major States																									
1	Andhra Pradesh	0.14	1.46	1.09						1.54			1.05						1.29				1.10		
2	Bihar	0.33	1.19		1.20		1.95						1.74										1.80		
3	Gujrat	0.25				1.15				2.10	2.58	1.99		1.37		1.13		1.69							
4	Haryana	0.25			1.08	1.29		1.46			1.61	1.91	1.04	1.04	2.00	2.83		1.24	1.25	*(11.57)	6.39	1.18			
5	Karnataka	0.22			1.62		1.25		*(2.20)							1.26		1.13	2.27						
6	Kerala	0.13	1.88		1.31		1.03	1.49	1.31			1.09					*(2.10)				1.10				
7	Madhya Pradesh	0.26			1.22	1.13	1.05		1.84	1.41	1.45	2.16	1.09				1.35	1.32			1.63				
8	Maharashtra	0.19	1.06					1.06					2.09	2.32	1.56	1.58	1.51	1.07	1.81		*(2.70)	1.76	1.45		
9	Orissa	0.41					*(4.00)															1.02			
10	Punjab	0.22			1.33	1.07						1.81		1.37	1.46	3.73			1.10		1.03	*(6.98)			
11	Rajasthan	0.21				2.25				1.05			1.95		1.20				1.61	*(3.29)			1.75		
12	Tamil Nadu	0.21				1.39			1.39	*(3.18)	2.45						2.98				1.78				
13	Uttar Pradesh	0.15	1.12		1.00	1.03		1.49					1.55	1.01	1.13										
14	West Bengal	0.14	1.08	2.06	1.02	1.36						1.64		1.27				1.09		1.70		1.32		*(6.04)	
New States																									
15	Chhattisgarh	0.32	1.36				1.61		1.06				2.30	*(7.00)	1.77				1.46					3.70	
16	Jharkhand	0.38			1.09		2.01			4.19			2.13	3.99			2.02		*(8.19)		3.64			*(4.23)	
17	Uttarakhand	0.32	1.18		1.31		2.06		2.36						2.57	2.68		1.49			2.30				

	Specialization Coefficients	Food Product	Tobacco Prod	Textiles	Wearing Apparel	Leather Prod	Wood Prod	Paper Prod	Printing	Coke & Petro Prod	Chemical Prod	Rubber Prod	N.M.M. Prod	Basic Metals	Metal Prod	Machinery	Office/Computing Equipments	Electrical & Apparatus	Radio, TV and Communication Equipments	Medical Precision/Optical Instruments	Motor Vehicles	Other Transport Equipment	Furniture/N.E.C	Recycling		
North Eastern States																										
18	Arunachal Pradesh	0.48	3.20				1.27							6.15	1.18											
19	Assam	0.35	1.66				2.63	3.22																2.04	*(3.58)	
20	Manipur	0.42		*(3.22)	1.15																			1.32		
21	Meghalaya	0.35	1.25	1.82			1.56			*(2.87)			2.16		1.50				3.22					*(3.49)		
22	Mizoram	0.45	1.21	2.39					1.31															1.14		
23	Nagaland	0.51	1.41	3.13			1.71		1.09						2.03									2.81		
24	Sikkim	0.45	2.08		1.59		1.20		1.16		2.05													2.16		
25	Tripura	0.47	2.51				*(3.29)																			
Union Territories																										
26	Andaman & Nicobar	0.55	1.21		2.71		1.19		8.10																	
27	Chandigarh	0.39	1.28		1.51		2.11	2.88			1.25	3.63		1.46	1.83	4.10		3.83		*(17.86)						
28	Dadra & Nagar Haveli	0.61		1.39				2.92		6.51	2.90	*(23.38)		6.40		2.10	6.09					2.36				
29	Daman & Diu	0.62							1.25		4.26	*(36.86)						3.24								
30	Delhi	0.38			2.16	2.37		5.48	1.92						1.36	2.09	6.18	2.31	*(10.00)	4.35			1.51	1.27		
31	Lakshadweep	0.63	4.09	0.25	2.24																					
32	Pondicheri	0.22	1.49		1.00	3.41		2.12	1.42	1.66	1.49	1.12		3.19	1.22			*(4.56)								
33	Goa	0.30	1.20						8.02	6.11				3.64	1.47			2.43		*(11.64)			5.48	2.01		
34	Himachal Pradesh	0.29	1.23				1.68	2.64		1.70					1.24					*(23.61)		4.09				
35	Jammu & Kashmir	0.46		3.16			1.53	1.10												*(4.54)					2.73	

$$L.Q. = \frac{V_{ij}}{V_j} / \frac{V_t}{V_n}$$

$$SQ = \sum_{i=1}^n \frac{V_{ij}}{V_j} - \frac{V_t}{V_n}$$

Location quotient (L.Q.) is calculated as $\frac{V_{ij}}{V_j} / \frac{V_t}{V_n}$ and Specialization Coefficient (S.Q.) as $\sum_{i=1}^n \frac{V_{ij}}{V_j} - \frac{V_t}{V_n}$ where V= Employment, i = ith industry, j = jth region, N= National Aggregate In both equation~

or 6) of industries in which each one of them specializes. But what is surprising is that some larger states like Andhra Pradesh (7) and Rajasthan (8) also have similarly narrow industrial bases. What is most surprising, however, is the fact that Pondicherry, a small UT, has as many as 11 industries constituting its industrial base, while Tamil Nadu a relatively more industrialised state has only 7 industries and the most industrialised state Gujarat only 8 industries constituting their industrial base.

Let us also see how similar or different the industrial structure of a state is vis-à-vis that of the country as a whole. For this purpose, shares of different industries in the total industrial employment in a state are compared with the corresponding shares at the national level. The differences between the two are summed up in a single statistic: coefficient of specialization. Value of this coefficient is zero if the industrial structure of the state is exactly similarly diversified as that of the country as a whole and one if that state has one industry and that industry is present in that state only. In between, the values of coefficient show the degrees of specialization of states vis-à-vis the industrial structure of the country.

Coefficients of specialization for different states are presented in *Table 23* (first column). If we take the value of specialization coefficient lower than 0.3 as indicating significant similarity of the state's industrial structure with that of the country as a whole, thirteen states (most of them major states) fall in this category. Kerala has the lowest degree of specialization with the value of specialization quotient at 0.13, followed by West Bengal and Andhra Pradesh (with SQ=0.14), Uttar Pradesh (0.15), Maharashtra (0.19), Rajasthan, Tamil Nadu (0.21) and Punjab and Karnataka (0.22), Haryana and Gujarat (0.25) and Himachal Pradesh (0.24) and Madhya Pradesh (0.26). Bihar, Chhattisgarh, Jharkhand, and Uttarakhand have a moderate degree of specialization with coefficient values between 0.30 and 0.40. Only Orissa has a coefficient which is higher than 0.40 (0.41), which is also the highest among all the states except three North Eastern states—all of which have a higher degree of coefficient of specialization. Other smaller states, Himachal Pradesh and Goa have relatively low coefficient of specialization. UTs have high specialization: Lakshadweep and Dadra and Nagar Haveli show a coefficient of specialization at 0.63 and 0.62 respectively and also Daman and Diu (0.62), Andaman and Nicobar (0.55). Delhi and Chandigarh have relatively low coefficient of specialization. Among smaller

states, Goa and Himachal Pradesh have low coefficient of specialization. In general, it may be concluded that the degree of specialization is rather low in most of the states and UTs in India, as their industrial structures are not very different from that of the country as a whole.

VII. Interstate Productivity

Differences in Manufacturing

As was noted earlier while comparing shares of gross value added and employment of different states in all-India totals, there are wide differences in productivity in manufacturing among different states. In this section we attempt a comparison of productivity, defined in terms of gross value added per worker, among states, in aggregate manufacturing and in individual 2-digit product groups. Data constraints do not permit such comparison for the entire manufacturing sector, but only for organised and unorganised sectors separately.

Organised Sector

Extent of Differences

Per worker productivity in the organised manufacturing sector varied between Rs. 29,000 in Manipur and Rs. 8,20,000 in Maharashtra in 2000–01. Goa with a figure of Rs. 5.39 lakh, Madhya Pradesh (Rs. 3.02 lakh), Himachal Pradesh (Rs. 2.87 lakh) and Gujarat (Rs. 2.16 lakh) were other high productivity states. In Andhra Pradesh, Kerala, West Bengal, Nagaland and Jammu and Kashmir, GVA per worker was less than Rs. 1 lakh. All UTs had relatively high GVA per worker, the highest at Rs. 5.39 lakh in Dadra and Nagar Haveli and lowest in Chandigarh (Rs. 1.93 lakh) and Delhi (Rs. 1.90 lakh). The all-India average was Rs. 1.61 lakh (*Table 24*).

Similar pattern is seen in 2006–07, the latest year for which comparable data are available, with Manipur at the lowest level (GVA per worker at Rs. 33,000) and Maharashtra at the top (GVA per worker at Rs. 17.66 lakh) (*Table 25*). Goa (Rs. 9.59 lakh), Gujarat (Rs. 3.64 lakh) and Himachal Pradesh (6.05) continue to be in the high productivity states, but Madhya Pradesh slides down to below average, while Orissa, Bihar, Karnataka and Rajasthan climb up to the group of states with per worker value added higher than the national average (Rs. 2.55). Kerala (Rs. 0.67 lakh) followed by Uttar Pradesh (Rs. 0.97 lakh) are at the bottom; Punjab, West

Table 24
Per Worker Productivity of Organised Manufacturing in Rs. Lakh (2000-01)

Industry Code	Andhra Pradesh	Bihar	Gujarat	Haryana	Karnataka	Kerala	Maharashtra	Madhya Pradesh	Orissa	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh	West Bengal	Chhattisgarh	Jharkhand	Uttarakhand	Assam	Manipur	Meghalaya	Nagaland	Tripura	A&N Islands	Chandigarh	Delhi	Dadar and Nager Haveli
20-21	0.59	1.27	1.1	1.22	1.18	0.34	7.28	1.43	0.49	1.09	0.9	0.8	1.04	0.4	0.43	1.56	1.16	0.57	0.94	0.74	0.57	0.58	N.E.	1.01	3.26	N.E.
22	0.2	1.14	1.4	1.69	4.54	0.9	1.04	0.89	0.5	1.04	1.29	1.48	2.53	1.84	0.41	0.18	0.76	0.9	N.E.	N.E.	0.28	32.24	N.E.	3.85	1.47	0
23+24+25	1.04	0.28	1.22	0.68	1.37	0.82	4.55	2.08	0.15	1.18	1.08	1.02	0.91	0.56	1	0.54	0.06	0.41	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	0.56	4.84
26	0.45		1.09	1.45	0.59	0.75	6.13	3.13	0.44	1.18	1.95	0.87	1.28	1.52	2.44	N.E.	0.92	N.E.	N.E.	N.E.	N.E.	0.55	N.E.	N.E.	2.56	2.72
27	0.38	0.2	0.61	0.66	1.56	0.21	7.11	0.56	0.6	0.44	0.48	0.45	0.68	0.33	0.23	0.29	0.41	0.17	0.37	N.E.	0.47	0.25	N.E.	0.84	0.81	1.49
28	1.41	1.26	1.34	1.42	1.47	1.2	7.03	1.12	1.28	0.57	0.94	2.18	1.33	1.73	0.38	1.4	2.24	2.03	N.E.	N.E.	0.35	0.5	N.E.	2.33	2.48	2.33
29	0.58	0.52	0.55	1.01	0.69	2.87	0.41	0.92	N.E.	0.68	0.94	0.49	0.63	0.96	0.3	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	1.59	N.E.
30	1.82	0.52	3.88	1.14	2.28	2.64	19.79	3.3	0.76	2.52	6.44	1.12	2.64	2.03	1.57	0.78	2.56	0.9	N.E.	N.E.	N.E.	0.36	N.E.	4.25	1.69	9.76
31	2.49	1.4	4.26	2.08	2.03	3.54	33.16	2.68	1.82	0.74	3.89	3.09	3.69	0.82	1.32	0.24	4.35	6	N.E.	N.E.	N.E.	1.02	N.E.	0.62	1.15	5.35
32	1.65	0.28	1.61	0.75	1.58	0.65	2.39	5.85	1.55	0.72	2.42	2.05	0.93	0.91	4.35	0.38	0.25	0.23	0.19	0.56	0.15	0.16	N.E.	0.93	0.72	4.35
33	2.45	3.47	3.74	2.87	3.03	2.62	1.21	19.79	3.16	0.58	2.58	1.17	3.71	1.07	2.74	3.57	0.91	1.12	N.E.	3.18	N.E.	N.E.	N.E.	2.08	0.85	3.13
34	0.76	0.72	0.86	0.94	1.61	0.4	10.08	0.82	0.68	0.8	2.98	1.54	1.09	0.95	0.27	0.75	0.55	0.49	N.E.	N.E.	0.58	0.34	N.E.	1.46	1.47	2.95
35-36	2.13	1.46	1.79	2.69	1.99	1.49	16.59	2.32	1.28	1.68	1.8	1.84	2.08	1.56	0.95	1.62	2.88	1.46	N.E.	N.E.	N.E.	1.66	N.E.	1.92	1.41	6.09
37	1.08	0.66	0.53	2.5	2.05	1.57	16.2	1.46	0.67	0.67	0.45	2.96	2.11	0.59	0.74	0.6	N.E.	0.36	N.E.	N.E.	N.E.	N.E.	N.E.	0.76	1.57	N.E.
38	0.9	0.12	0.99	1.73	1.67	0.8	35.59	0.63	N.E.	0.62	1.22	1.64	1.29	1.85	0.23	N.E.	1.91	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	0.98	1.38	1.77
All	0.87	1.8	2.16	1.76	1.56	0.95	8.2	3.02	1.72	1.07	2.03	1.3	1.65	0.9	2.29	2.08	1.9	1.02	0.29	1.16	0.33	1.56	N.E.	1.9	1.93	5.39

Note: Note estimated
Source: Annual Survey of Industry, CSO

Table 25
Per Worker Productivity of Organised Manufacturing in Rs. Lakh (2006-07)

Industry Code	Andhra Pradesh	Bihar	Gujarat	Haryana	Karnataka	Kerala	Maharashtra	Madhya Pradesh	Orissa	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh	West Bengal	Chhattisgarh	Jharkhand	Uttarakhand	Assam	Manipur	Meghalaya	Nagaland	Tripura	A&N Islands	Chandigarh	Delhi	Dadar and Nagar Haveli	Daman and Diu	Ponducherry	Goa	Himachal Pradesh	Jammu & Kashmir	India
20-21	1.12	1.1	1.36	1.73	1.75	0.34	6.6	0.86	0.53	1.1	1.74	0.86	0.8	0.57	0.61	1.74	1.08	0.51	0.89	0	0.78	1.62	0.07	0.98	2.17	18.31	1.01	2.4	11.97	2.98	0.86	1.25
22	0.21	2.12	1.51	1.78	11.47	0.09	1.76	1.41	0.23	7.27	2.69	2.19	1.72	2	0.36	0.38	0.03	2.74	N.E.	N.E.	0.37	7.12	N.E.	0.37	1.12	7.39	2.46	2.75	5	1.43	0.69	1.11
23+24 +25	1.09	0.53	1.45	1.22	2.22	0.99	4.53	2.41	0.54	2.16	1.86	1.5	1.14	0.64	0.99	N.E.	2.26	0.43	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	0.75	5.21	2.95	0.86	N.E.	2.55	1.3	1.52
26	0.4	0.74	1.39	1.28	0.82	1.01	45.85	5.78	0.63	1.16	1.61	0.53	0.47	1.31	0.56	0.74	5.66	0.71	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	1.41	1.82	5.38	1.19	14.12	2.23	0.41	0.92
27	0.78	0.34	0.69	0.26	1.01	0.41	12.92	0.44	1.44	0.5	N.E.	0.56	0.39	1.02	0.44	0.65	0.75	0.29	0.29	N.E.	1.2	0.71	0.38	0.49	1.22	2.47	1.39	1.49		1.86	0.24	0.76
28	2.14	0.72	1.38	1.71	1.83	1.99	12.92	1.06	1.99	1.65	N.E.	1.49	0.71	1.63	0.58	1.27	2.21	2.38	N.E.	1.59	0.48	0.84	N.E.	3.03	2.03	2.5	2.15	1.24	3.59	4.21	1	1.83
29	0.42	1.25	1.26	1.13	1.83	1.58	2.25	0.85	N.E.	0.84	0.72	0.75	0.28	1.47	0.36	N.E.	2.76	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	1.25	N.E.	N.E.	0.76	N.E.	3.32	2.09	0.96
30	4.07	3.83	5.15	3.09	3.19	2.4	21.31	2.97	N.E.	2.66	4.02	0.84	1.62	4.09	1.03	5.77	4.78	4.86	N.E.	8.06	N.E.	5.24	N.E.	N.E.	3.81	6.6	2.67	3.95	14.68	13.37	4.76	3.83
31	6.59	1.95	22.39	2.17	3.45	N.E.	12.53	1.83	1.92	1.1	1.99	4.37	2.14	5.75	11.8	3.57	2.81	13.16	N.E.	N.E.	N.E.	0	N.E.	2.29	1.27	3.86	1.84	1.32	10.35	1.81	0.55	10.4
32	2.01	0.46	2.02	0.73	3.3	1.06	3.27	4.27	1.61	0.63	3.34	2.26	0.33	1.25	5.05	0.93	1.19	0.44	0.27	16.76	0.23	0.28	N.E.	1.01	0.73	2.82	1.56	1.55	6.53	8.22	1.36	1.97
33	5.8	4.62	3.27	3.57	9.33	0.96	5.06	11.82	5.17	0.89	3.21	1.92	1.83	1.81	6.44	4.74	2.63	3.26	N.E.	3.45	N.E.	7.85	N.E.	1.21	0.67	1.85	2.15	1.1	13.05	1.89	2.69	4.07
34	1.04	1.27	2.05	1.26	1.68	0.55	13.59	0.35	0.46	0.67	1.11	1.82	0.34	0.98	1.46	1.52	1.15	0.36	N.E.	N.E.	N.E.	2.37	N.E.	0.48	1.2	1.5	1	1.63	5.07	1.34	0.71	1.45
35-36	3.46	6.35	2.57	2.82	4.39	2.01	22.55	1.72	2.22	1.88	5.52	3.18	1.32	2.24	1.25	13.9	4.6	1.05	N.E.	N.E.	N.E.	2.13	N.E.	2.19	1.52	5.74	8.77	12.33	6.69	5.22	3.59	3.56
37	1.21	2.92	2.36	4.75	3.02	2.05	69.45	1.33	0.23	1.07	3.57	4.55	1.6	1.33	0.75	1.91	1.39	0.53	N.E.	N.E.	N.E.	N.E.	N.E.	0.75	1.08	N.E.	2.15	3	1.98	1.27	1.28	3.89
38	1.25	N.E.	1.53	1.36	1.39	2.5	28.93	0.18	N.E.	0.9	1.81	1.64	0.93	2.18	0.25	N.E.	8.03	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	0	1.14	1.98	2.05	2.6	3.46	7.06	0.41	1.89
All	1.74	2.83	3.64	2.51	2.62	0.67	17.66	2.39	2.96	1.36	2.64	1.45	0.97	1.44	4.39	3.96	3.18	1.93	0.33	9.47	0.88	0.72	8.95	1.49	1.59	4.63	3.5	3.26	9.59	6.05	2.48	2.55

Note: Note estimated
Source: Annual Survey of Industry, CSO

Bengal and Tamil Nadu being only marginally better. All the three new states were among the better performers in terms of value added per worker in 2006–07, as in 2000–01. Among the North Eastern states, Meghalaya has gone up the ladder being the state with the third highest productivity (RS. 9.47 per worker) among all the states after Maharashtra and Goa in 2006–07; it was among the low productivity states in 2000–01. Tripura and Nagaland are at the bottom. Among UTs, Dadra and Nagar Haveli and Daman and Diu are in the high productivity and Delhi and Chandigarh in low productivity categories.

The Composition Effect

Overall productivity differences among the states are partly due to varying composition of the manufacturing sector and partly due to differences in productivity in the same product groups. States with larger share of high productivity industries in their product structure would have higher aggregate productivity and *vice versa*. The share of five industries with the highest all-India productivity (viz. Chemical products, basic metals, transport equipment, rubber and plastic products and machinery) was the highest in Meghalaya (85.18%) in 2006–07 (*Table 26*). The state was also among the high productivity category (third highest). Goa and Himachal Pradesh also were among the top five states in terms of both per worker productivity and the share of the five industries with higher productivity. Maharashtra, Gujarat and Uttarakhand were other states with large (>73%) share of the top five industries; they also had high aggregate productivities, though not in the same order in respect of the two variables. Bihar, Kerala, Punjab, Nagaland and Tripura all have a low value added per worker, in organised manufacturing, of less than RS. 1 lakh per year; they also have relatively small share (between 35 to 45, and as low as 7% in Nagaland) of the five high productivity industries. But there are some outliers in this pattern. Chhattisgarh has high productivity (RS. 4.39 lakh), but only a small share (12%) in the top five industries. Jharkhand shows similar pattern with a high figure of RS. 3.96 lakh in productivity and a low (36%) share in five high productivity industries. Manipur generates 71 per cent of its value added from the top five high productivity industries, but its overall productivity is the lowest (RS. 33,000).

Table 26
Average Share of Five Highest Productivity Industries at all India level in the Gross Value
Added in Organised Manufacturing (2006–07)

Major States	30	31	32	35–36	37	Total
Andhra Pradesh	19.70	12.93	10.40	14.64	1.55	59.23
Bihar	3.08	6.25	4.06	14.70	4.56	32.65
Gujarat	28.20	32.78	4.34	8.39	1.55	75.26
Haryana	4.41	1.90	1.23	14.01	47.25	68.80
Karnataka	6.41	4.29	4.53	21.54	7.45	44.22
Kerala	17.49	2.20	8.00	14.23	5.41	47.33
Madhya Pradesh	13.70	5.33	16.05	9.97	2.98	48.03
Maharashtra	9.37	35.26	1.55	12.89	14.31	73.38
Orissa	0.97	2.34	6.32	2.04	0.01	11.68
Punjab	7.24	2.79	6.25	11.33	8.34	35.96
Rajasthan	9.40	2.28	26.14	14.38	3.30	55.50
Tamil Nadu	4.17	7.28	4.80	14.14	19.15	49.54
Uttar Pradesh	14.39	8.01	2.49	17.14	8.55	50.59
West Bengal	14.26	11.11	2.26	10.81	3.24	41.69
New States						
Chattisgarh	0.59	1.57	8.50	1.16	0.15	11.97
Jharkhand	3.02	9.60	3.47	15.03	4.68	35.80
Uttarakhand	34.67	4.20	1.61	32.49	0.53	73.50
North Eastern States						
Arunachal Pradesh	N.E.	N.E.	N.E.	N.E.	N.E.	-
Assam	14.94	53.97	4.00	1.05	0.02	73.99
Manipur	0.00	0.00	71.08	0.00	0.00	71.08
Meghalaya	3.76	0.00	81.42	0.00	0.00	85.18
Mizoram	N.E.	N.E.	N.E.	N.E.	N.E.	-
Nagaland	0.00	0.00	7.06	0.00	0.00	7.06
Sikkim	N.E.	N.E.	N.E.	N.E.	N.E.	-
Tripura	7.32	0.00	32.38	1.14	0.00	40.84
Union Territories and Other States						
A&N Islands	0.00	0.00	0.00	0.00	0.00	0.00
Chandigarh	0.00	1.20	3.41	34.55	3.18	42.33
Delhi	15.10	2.98	0.14	12.89	4.96	36.07
Dadar and Nagar Haveli	25.04	17.03	1.24	17.14	0.00	60.44
Daman and Diu	12.49	16.63	0.22	40.62	0.42	70.38
Lakshadweep	N.E.	N.E.	N.E.	N.E.	N.E.	-
Pondicherry	44.02	6.93	2.11	8.05	2.29	63.40
Goa	21.23	4.75	4.12	45.61	4.97	80.67
Himachal Pradesh	52.13	1.37	9.06	16.11	0.42	79.09
Jammu & Kashmir	48.37	0.77	4.57	10.52	0.26	64.50
India	13.21	17.73	5.16	13.38	9.94	59.42

Source: Same as Table 1

Differences in Individual Industries

Thus, while a good part of the interstate productivity differentials in the organised manufacturing as a whole could be attributed to the differences in the structure of industries, part of them is also because there are interstate differences in productivity even in the same product groups. Thus, in chemical products the

group with highest productivity (RS. 10.40 lakh) on an all-India basis, generated a value added of RS. 12.53 lakh per worker in Maharashtra and RS. 10.35 lakh in Goa, the figure was as low as RS. 1.10 lakh for Punjab and RS. 0.55 lakh for Jammu and Kashmir (Table 25). Similarly, basic metals with the next highest figure (RS. 4.07 lakh) of value added per worker in aggregate has a figure as high as RS. 13.05 lakh in Goa, RS. 11.82 lakh in Madhya Pradesh and RS. 9.33 lakh in Maharashtra, but only RS. 93,000 in Kerala, RS. 89,000 in Punjab and RS. 67,000 in Delhi.

Highest productivity in any industry in any state is in transport equipment in Maharashtra (RS. 69.45 lakh), but it has as low a productivity as RS. 23,000 in Orissa and RS. 53,000 in Assam. Industry with lowest productivity (RS. 76,000) on an all-India basis viz. wood products, shows a variation between less than RS. 30,000 in Haryana, Manipur and Jammu and Kashmir and as high as RS. 12.92 lakh in Maharashtra.

Maharashtra had the highest value added per worker in 10 out of the 15 industry groups in which the organised manufacturing was divided. It occupied second place in two cases. Goa topped in two and was at second place in 6 industries. Assam, Bihar, Andhra Pradesh, Uttar Pradesh, Madhya Pradesh, Orissa and Chhatisgarh featured as the states with the lowest or second lowest value added per worker in case of several industry groups. Thus, it appears that besides the difference in composition of industries, there are significantly larger variations across the states in their regional social, economic, technological and labour market characteristics that produce wide variations in productivity in an industry.

Technology and Productivity Differentials

Does technological variation explain interstate differences in productivity in an industry? Taking capital intensity, measured in terms of capital per worker as the indicator of technology, we attempt to investigate this question. That different industries use different levels of technology in production is very well known. It could also be reasonably assumed that a high technology industry would be so, irrespective of its location in one state or the other. Yet, there could be variations from state to state due, first, to the items within the same product growth that a state specializes in production, and second, possibly because of the choice of

technology—labour versus capital intensive—that the producer in a state may choose to adopt depending on the labour market situation. A look at the figures of capital per worker (Rs. lakh) in different industries and states (*Table 27*) suggests: (i) industries that have high capital intensity show that characteristic in a relative sense across the states and similar is the case with industries with low capital intensity; and (ii) yet, these are significant variations in capital intensity in individual industries across the states.

Thus, industry with highest all-India value of capital per worker (RS. 13.69 per lakh), namely, chemical products, is either the industry with highest capital intensity or among the top few industries in this respect in most states. Similar is the case with the industry with the next highest capital intensity, namely basic metals. Even in a state with very low overall capital intensity (RS. 1.08 lakh), namely Tripura, capital intensity in these two industries (chemical products and basic metals) is as high as RS. 30 lakh and RS.54 lakh respectively. Beverages and leather products have the lowest capital intensity on an average; they also are among industries with lowest capital per worker in most of the states. Even in states with high overall capital intensity like Chhattisgarh (RS. 14.67 lakh), Jharkhand (RS. 13.43 lakh), Orissa (RS. 8.33 lakh) and Gujarat (RS. 7.82 lakh), capital intensity in beverages is low at Rupees 1.15, 1.26, 0.56 and 0.97 lakh respectively and in leather products RS. 0.54 lakh in Chhattisgarh and RS. 1.26 lakh in Gujarat (industry does not appear in Jharkhand and Orissa).

Yet, large variations are observed in capital intensity in the same industry among the states. In the industries mentioned above, for example, it varied between RS. 1.10 lakh in Punjab to RS. 45.26 lakh in Maharashtra in chemical products, between RS. 81.82 lakh in Punjab and RS. 24.98 lakh in Madhya Pradesh in basic metals, between RS. 0.20 lakh in Andhra Pradesh and to RS. 9.49 lakh in Uttarakhand in beverages and relatively less between RS. 0.29 lakh in Bihar to RS. 4.33 lakh in Uttarakhand. Capital intensity seems to explain productivity differences among states to a large extent. In 2000–01, interstate differences in productivity in individual industries were very highly correlated with the differences in capital intensity, among the major states in 2000–01. Coefficients of correlation between the two were higher than +0.75 in 13 out of 15 industry groups (*Table 28*), and more

Table 27
Capital Labour Ratio in Organised Manufacturing in Rs. Lakh (2006-07)

Industry Code	Andhra Pradesh	Bihar	Gujarat	Haryana	Karnataka	Kerala	Maharashtra	Madhya Pradesh	Orissa	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh	West Bengal	Chhattisgarh	Jharkhand	Uttarakhand	Assam	Manipur	Meghalaya	Nagaland	Tripura	A&N Islands	Chandigarh	Delhi	Dadar and Nagar Haveli	Daman and Diu	Ponducherry	Goa	Himachal Pradesh	Jammu & Kashmir	India
20-21	1.82	2.12	2.31	1.98	2.45	0.36	8.16	2.29	1.48	1.72	1.3	1.32	1.71	1.23	1.46	2.75	5.19	1.11	2.41	4.71	0.88	1.86	4.38	1.8	3.93	3.64	1.02	3.04	4.19	2.87	1.37	1.94
22	0.2	1.13	0.97	3.4	4	0.19	3.87	0.79	0.56	3.5	1.55	1.87	1.57	0.85	1.15	1.26	9.49	2.38	N.E.	N.E.	0.67	0.49	N.E.	1.12	5.7	5.88	5.86	5.46	7.11	1.35	1.84	0.83
23+24 +25	4.01	0.64	4.73	3.43	5.32	2.04	16.11	6.09	1.47	6.27	3.6	4.02	5.15	0.69	5.05	16.36	0.87	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	0.92	21.57	13.29	3.79	N.E.	7.46	3.71	4.23
26	1.46	0.35	2.66	1.87	0.59	2.17	15.9	6.14	1.55	1.4	2.38	1.15	0.62	1.37	3.13	0.43	4.46	0.35	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	1.47	8.66	3.81	4.42	15.83	2.08	1.49	1.63
27	1.33	0.25	0.82	1.21	1.77	0.82	15.11	1.38	0.64	1.61	1.62	0.79	0.63	1.37	0.92	0.46	16.61	0.85	0.4	N.E.	0.66	0.73	1.71	0.44	0.96	1.66	4.07	3.03	N.E.	0.89	0.36	1.32
28	6.61	0.84	3.98	3.73	2.39	2.5	24.83	1.6	8.72	5.13	1.76	3.07	2.04	2.7	2.09	2.22	15.15	3.32	N.E.	0.59	0.14	0.59	N.E.	3.25	4.61	5.85	7.95	3.4	3.24	3.81	1.67	4.02
29	0.94	0.49	1.26	3.15	1.18	2.13	1.5	0.71	N.E.	1.66	0.85	0.75	0.58	1.85	0.54	N.E.	4.33	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	2.29	N.E.	N.E.	0.53	N.E.	2.3	1.77	1.14
30	6.12	8.36	11.23	3.9	5	3.92	38.91	4.85	18.41	6.92	8.52	2.23	4.48	14.92	4.77	24.68	9.75	5.1	N.E.	3.09	N.E.	2.74	N.E.	N.E.	3.61	6.76	3.5	6.86	12.72	7.52	2.64	6.96
31	9.13	8.02	49.08	3.11	18.06	8.7	45.26	5.16	5.2	1.1	6.98	7.09	10.47	13.29	32.08	2.52	13.92	30.3	N.E.	N.E.	N.E.	30.23	N.E.	4.09	2.76	6.59	3.95	4.26	9.93	4.36	4.02	13.69
32	3.43	0.92	4.86	1.48	5.12	1.64	6.75	11.31	2.73	0.25	5.08	3.95	0.71	3.52	17.69	3.64	19.59	0.41	0.25	10.76	0.08	0.12	N.E.	2.94	2.31	6.15	2.65	12.79	8.64	2.91	3.41	
33	9.73	8.66	9.81	7.82	14.83	1.22	10.73	24.98	12.82	1.82	2.16	4.44	7.19	4.38	21.86	20.68	5.96	3.59	N.E.	6.88	N.E.	54.31	N.E.	9.44	1.62	8.54	4.75	4.66	16.95	3.01	0.89	7.74
34	1.51	2.44	2.54	2.07	1.45	0.89	14.89	1.09	0.61	0.73	2.4	1.12	0.46	0.58	1.14	7.55	2.29	0.17	N.E.	N.E.	N.E.	0.86	N.E.	0.8	2.36	2.24	1.15	3.29	4.7	1.57	0.95	1.47
35-36	3.01	4.38	3.31	2.87	4.69	1.43	20.9	2.39	2.37	1.76	3.57	2.33	2.42	2.17	2.14	4.34	4.08	0.91	N.E.	N.E.	N.E.	0.6	N.E.	5.64	1.67	5.36	3.84	3.45	8.22	4.57	0.68	3.26
37	1.41	4.78	3.9	4.56	3.97	1.18	61.14	2.14	0.51	1.44	3.46	4.94	8.66	1.34	1.64	9.7	27.82	0.38	N.E.	N.E.	N.E.	N.E.	N.E.	1.45	1.25	N.E.	4.92	4.02	4.62	4.94	0.41	4
38	1.03	N.E.	0.81	1.92	1.95	1.19	17.61	0.18	N.E.	1.03	1.41	1.43	1.1	2.59	0.5	N.E.	2.17	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	2.26	1.8	4.09	2.28	3.7	5.11	0.99	0.44	1.32
All	2.77	5.1	7.82	3.12	3.65	1.4	19.07	4.94	8.33	2.22	3.66	2.38	2.7	2.78	14.67	13.43	8.31	3.67	0.46	8.24	0.5	1.08	4.14	4.65	2.23	10.26	4.33	4.95	9.62	5.65	2.01	3.86

Note: Same as Table 25

Source: Same as Table 25

Table 28
Coefficient of Correlation between Per Worker Productivity and
Capital Labour Ratio in Organised Manufacturing

Industry Code	2000-01		2006-07	
	Among Major States	Among All States	Among Major States	Among All States
20-21	0.97	0.88	0.96	0.41
22	0.61	-0.02	0.70	0.28
23+24+25	0.96	0.88	0.95	0.91
26	0.98	0.88	0.97	0.80
27	0.99	0.96	0.99	0.64
28	0.94	0.78	0.96	0.82
29	0.42	0.66	0.38	0.65
30	0.88	0.74	0.97	0.70
31	0.76	0.65	0.92	0.80
32	0.97	0.77	0.93	0.51
33	0.84	0.82	0.93	0.65
34	0.98	0.94	0.99	0.90
35-36	0.99	0.88	0.99	0.81
37	0.98	0.95	0.99	0.90
38	0.99	0.79	0.99	0.92
All	0.76	0.62	0.79	0.65

Source: Same as Table 26

than +0.90 in 10 cases. Only in the case of leather products the relationship was somewhat weak. Relationship, however, became weaker once all states and UTs were considered; still, in all cases, except beverages where the coefficient was negative though insignificant, it was above +0.65. The relationship is found to be strong in all cases except in the case of leather products in 2006-07, coefficient of correlation being above 0.90 in eleven cases, and above 0.70 in the other three cases, if one considered the 14 major states. Once the analysis is extended to all states and UTs, the relationship becomes weaker, yet is significant in 13 cases including leather products. Thus technology, insofar as it is indicated by capital labour ratio, explains a large part of the interstate variations in productivity in manufacturing industries in the organised sector. Influence of regional factors, including working environment and culture in leading to differences in productivity even with the use of similar technology in an industry, however, cannot be ruled out.

Unorganised Sector

Extent of Differences

Productivity differences are smaller in the case of unorganised sector than of the organised sector. Still they were quite large. Taking the major states only, per worker value added ranged between the highest of Rs. 21951 in Punjab and Rs.

20530 in Gujarat to the lows of Rs. 3595 in Orissa and Rs. 7791 in Madhya Pradesh, in 2000–01 (Table 29). If all states and UTs were considered, then Sikkim and Arunachal Pradesh show highest productivity at Rs. 34101 and Rs. 31444 respectively. Orissa still has the lowest, but the second lowest place is taken by Chhattisgarh with a value added per worker of Rs. 6409. These figures are not as distant from the national average (Rs. 11649), than the highest and lowest figures in case of the organised sector.

In 2005–06, the latest year for which data are available for the unorganised sector, the variations are between Rs. 28606 in Haryana and 4802 in Orissa, among the major states (Table 30). The second highest productivity is found in Maharashtra (Rs. 27841) and the second lowest in Bihar (Rs. 6995). Including other states and UTs, we find that Arunachal is on the top, with a value added per worker of Rs. 57180, with Pondicherry (Rs. 46251) in the second position. Orissa is still at the bottom with Bihar the second lowest. Deviations from the national average (Rs. 12993) are, however, not as large in the organised as in the unorganised sector, in 2005–06 also.

Table 29
Per Worker Productivity of Unorganised Manufacturing in Rs. (2000–01)

States	20–21	22	23 + 24 + 25	26	27	28	29	30
Andhra Pradesh	11158	5700	5949	7976	6021	17187	16819	5446
Bihar	9138	6360	9004	10574	7327	14500	10127	3098
Gujarat	16459	8802	37979	15519	13765	20814	13237	21818
Haryana	19142	37654	23902	18110	14991	17435	16235	36650
Karnataka	10981	4433	14314	11742	8311	14687	14747	5951
Kerala	14023	6766	7413	10387	12166	14387	17080	16868
Madhya Pradesh	10194	2436	20263	11118	5790	14596	9682	17348
Maharashtra	13679	6166	29604	16235	10150	25952	14062	39682
Orissa	4954	4597	4515	6921	2235	8713	12529	27074
Punjab	23444	13362	15345	16050	16981	22096	15151	28709
Rajasthan	12710	3332	15310	14132	12267	20289	14025	15607
Tamil Nadu	15885	4414	12014	13196	7764	18215	37333	7878
Uttar Pradesh	8700	2917	10652	8696	7140	13502	14470	6030
West Bengal	8924	4021	8353	11713	4975	9566	21581	18141
Chhattisgarh	7306	3463	6079	8748	4192	10652	8121	2193
Jharkhand	8179	3756	5676	10992	4716	8807	13205	12657
Uttarakhand	11388	3635	5369	9500	10676	14414	12219	44095
Arunachal Pradesh	32354	N.E.	27148	28050	30769	541	N.E.	N.E.
Assam	10029	6305	10615	15322	9839	13856	13706	11308
Manipur	15809	7379	6275	8624	14173	19749	16636	10714
Meghalaya	22601	12520	7358	18376	7622	23005	17180	17451
Mizoram	13415	3193	44659	25306	21110	62223	22413	N.E.
Nagaland	13611	12841	13080	21398	12287	25969	10456	14886

Sikkim	22664	469623	N.E.	18775	14894	10451	N.E.	33017
Tripura	9763	4770	7950	15822	5517	28697	17587	3489
A & N Islands	9004	2581	N.E.	19632	24968	20091	18044	18062
Chandigarh	23242	N.E.	N.E.	16054	9202	15598	18201	42190
Delhi	29776	16189	24880	30493	24450	26346	24434	39684
D & Nagar Haveli	17183	N.E.	N.E.	18280	12348	42141	N.E.	N.E.
Daman & Diu	29974	10957	N.E.	15249	13781	16642	15842	34496
Lakshadweep	13209	N.E.	N.E.	21902	55699	2068	N.E.	N.E.
Pondicherry	13720	15632	6919	10214	10920	14712	15433	22557
Goa	20559	1909	21298	13274	17557	22563	4527	25009
Himachal Pradesh	16356	7844	10644	11701	8572	24699	16654	6796
J & K	22529	15213	6513	16149	19070	17092	19043	27597
India	10788	4292	11960	12809	6793	17763	17198	9913
States	31	32	33	34	35-36	37	38	ALL
Andhra Pradesh	10890	9833	20075	14861	18037	87700	11439	8381
Bihar	19615	14008	16177	13024	13129	15879	11566	9480
Gujarat	31054	15410	29406	22931	35020	22678	21118	20530
Haryana	32115	9963	40723	24415	27507	53534	19009	19327
Karnataka	15594	14979	25247	19618	19059	20299	14136	10033
Kerala	33162	23978	13130	20506	20389	21549	18710	13427
Madhya Pradesh	28646	7617	16333	8302	10991	16634	8908	7791
Maharashtra	34911	11549	33216	23009	48492	38561	20475	18835
Orissa	7611	3177	8681	6243	14680	12294	5749	3596
Punjab	49899	25603	41216	27684	40238	42370	20613	21951
Rajasthan	25531	15340	29647	18028	30499	25760	18520	14625
Tamil Nadu	24147	12765	20579	22451	37774	32288	11172	12817
Uttar Pradesh	23947	11001	18198	14416	17621	25844	10217	9384
West Bengal	16709	16470	77945	14651	19718	22334	9840	8701
Chhattisgarh	35175	4916	37999	8762	14824	3769	8131	6409
Jharkhand	12776	10100	11758	7085	6197	22397	8536	7121
Uttarakhand	43182	6979	5440	11629	18156	18582	16479	10228
Arunachal Pradesh	N.E.	N.E.	N.E.	27333	18347	N.E.	68361	31444
Assam	9312	9745	22735	20527	9985	36879	19534	10844
Manipur	17616	20138	13841	15482	22671	N.E.	24330	9635
Meghalaya	29806	12356	17788	19615	15945	59149	20825	13255
Mizoram	58502	47543	55318	24181	20246	40335	31476	22838
Nagaland	15642	51562	N.E.	15387	22248	35732	18842	14665
Sikkim	N.E.	N.E.	N.E.	7813	N.E.	N.E.	21588	34101
Tripura	10546	11456	28570	19581	17501	N.E.	14100	8598
A & N Islands	58870	29637	35206	44555	28529	27594	34374	18844
Chandigarh	32663	44988	168422	37389	44447	34590	64907	43340
Delhi	59035	25389	31434	28437	35515	30556	36235	32265
D & Nagar Haveli	47895	13780	55652	21354	27775	N.E.	10962	22964
Daman & Diu	77592	16777	24837	26907	66746	N.E.	17397	46127
Lakshadweep	N.E.	N.E.	N.E.	36348	N.E.	N.E.	N.E.	28534
Pondicherry	67063	23768	N.E.	17302	39243	N.E.	7531	16562
Goa	45288	15592	146005	24879	35238	22166	41636	14501
Himachal Pradesh	42024	82214	46957	15969	60405	38625	29446	14871
J & K	46970	19760	46850	24401	30131	N.E.	30997	15926
India	30319	12002	30246	17455	31324	31246	15473	11649

Note: N.E. Not estimated

Source: NSSO Survey on Unorganised Manufacturing (56th Round)

Table 30
Per Worker Productivity of Unorganised Manufacturing in Rs. (2005-06)

States	20-21	22	23 + 24 + 25	26	27	28	29	30
Andhra Pradesh	7239	3775	12636	7409	6278	12794	17415	6729
Bihar	7752	3749	5662	12249	7655	7388	10358	2020
Gujarat	17009	8461	33467	15273	13715	67705	11137	34755
Haryana	30492	17830	102678	23197	20309	26834	17442	29639
Karnataka	17800	2611	27976	16254	11317	17916	16139	8930
Kerala	11977	5929	8063	12558	16522	14521	22562	5567
Madhya Pradesh	10983	1632	14665	11956	5647	20565	16913	12307
Maharashtra	16593	1904	33034	20576	11968	40321	23243	34083
Orissa	5403	2339	10482	7829	2426	11641	11754	18117
Punjab	27936	120708	17069	15899	22184	30222	18595	45994
Rajasthan	17988	6091	8601	18615	10490	17344	12361	27509
Tamil Nadu	16940	5532	15980	16024	12312	11078	17874	6334
Uttar Pradesh	9176	2180	11557	9149	7991	15934	17614	5050
West Bengal	8608	2651	9189	10395	4830	8476	15993	4859
Chhattisgarh	7902	2111	10820	9294	3666	20379	18327	18439
Jharkhand	10327	3040	N.E.	11534	6824	13491	11893	37557
Uttarakhand	12468	N.E.	12945	12797	13930	17861	9556	10100
Arunachal Pradesh	56752	N.E.	N.E.	46741	39678	13080	N.E.	N.E.
Assam	11842	5873	8695	14024	12159	23420	14089	12447
Manipur	16076	10550	5497	11536	15827	N.E.	9400	7828
Meghalaya	24119	15341	17487	22188	11244	17762	27422	24835
Mizoram	11415	10349	46788	28260	23428	8372	N.E.	N.E.
Nagaland	19788	17560	12493	43499	14898	34929	1241	N.E.
Sikkim	17795	95649	N.E.	20300	11352	23163	N.E.	157590
Tripura	2248	3753	5250	13400	14389	86048	12367	25381
A & N Islands	7068	4448	N.E.	27528	20400	7913	38219	46194
Chandigarh	62897	37332	N.E.	15806	28702	33272	N.E.	60585
Delhi	30472	283342	31223	31337	27930	21009	22500	18888
D & Nagar Haveli	28414	N.E.	N.E.	33039	13968	35488	45831	85023
Daman & Diu	67881	12642	N.E.	18968	20124	14959	N.E.	N.E.
Lakshadweep	12111	N.E.	N.E.	18832	16346	9873	N.E.	N.E.
Pondicherry	43961	36136	11256	25477	16244	21219	12704	75290
Goa	32576	25697	N.E.	24150	17709	34484	3334	71687
Himachal Pradesh	9402	5720	9150	11600	7798	28982	41327	12991
J & K	21665	N.E.	9603	16125	24549	29713	44329	85850
India	11708	3112	16879	13251	8018	18790	17687	9230
States	31	32	33	34	35-36	37	38	ALL
Andhra Pradesh	18184	9856	4972	13504	21167	20558	10803	8091
Bihar	10443	8105	8150	12104	8795	13424	9129	6995
Gujarat	46400	15111	29712	13254	42213	25111	16377	20360
Haryana	67474	20081	56573	35795	34837	82126	19903	28606
Karnataka	26717	13108	53934	16187	43054	42286	14433	14707
Kerala	27662	18859	24548	15989	41016	30596	17823	13808
Madhya Pradesh	33844	10468	13173	6420	23904	167501	15723	7339
Maharashtra	42620	13538	24310	21230	62836	30010	57400	27841
Orissa	17511	7098	71520	7272	10777	34048	10129	4802
Punjab	55754	14022	30082	20410	31651	37591	22088	21790
Rajasthan	28094	11618	23199	20285	23665	40848	20579	16069
Tamil Nadu	22862	18548	19654	21120	33038	33952	12449	14376
Uttar Pradesh	41608	10075	15597	21868	20374	24096	12515	10008
West Bengal	19275	8207	28566	13558	47714	15258	18950	8746

Chhattisgarh	41686	5197	256234	4488	31339	29664	17716	8952
Jharkhand	39712	8803	16326	9840	23731	24404	23456	7127
Uttarakhand	52123	5845	39275	6106	21382	37412	28353	12953
Arunachal Pradesh	N.E.	31050	2161	99077	N.E.	N.E.	64644	57180
Assam	18117	6805	208976	14594	16761	13341	24730	11375
Manipur	16789	10987	9528	19533	10244	N.E.	17894	8789
Meghalaya	20306	14660	17330	20093	34283	47170	24742	17313
Mizoram	98381	11111	N.E.	14039	30993	N.E.	30549	19841
Nagaland	34821	42191	N.E.	11548	26684	15661	12213	18776
Sikkim	N.E.	N.E.	N.E.	11744	N.E.	N.E.	35443	25000
Tripura	22723	18452	13873	14334	18271	17676	22667	8945
A & N Islands	N.E.	49698	30505	18295	76028	51531	90197	28264
Chandigarh	N.E.	N.E.	397575	20972	70177	44772	32397	37095
Delhi	42419	59117	175897	22407	38259	29411	19532	31130
D & Nagar Haveli	53742	31973	N.E.	26973	44445	N.E.	69740	29177
Daman & Diu	49815	12294	143245	17879	45780	N.E.	33729	39677
Lakshadweep	N.E.	36906	N.E.	9842	N.E.	N.E.	6001	16922
Pondicherry	27013	23663	23713	12911	273575	13761	10246	46251
Goa	78879	17865	N.E.	22975	81074	75009	22218	29167
Himachal Pradesh	280974	9188	30818	12528	389097	136729	41745	19163
J & K	41506	34474	44875	24164	63073	26509	31230	18982
India	33310	11432	42758	17003	40248	32121	22948	12993

Note: Same as Table 29

Source: NSSO Survey on Unorganised Manufacturing (62nd Round)

The Composition Effect

How far can the interstate productivity differences be influenced by the structure of industries, i.e. high or low productivity industries dominating a state's unorganised manufacturing sector? We attempt to answer this question by comparing the relative productivity levels of states' with the share of five highest productivity industries (at the all-India level) for the year 2005–06. These five industries (namely chemical products, basic metals, machinery, transport equipment and other manufacturing) accounted for the largest share of unorganised manufacturing in Gujarat (41%), Maharashtra (39%) Haryana (28%) and Punjab (29%) (Table 31) in the group of major states; and these four were also the states with highest productivity. On the other side, Bihar, Andhra Pradesh and Orissa have the lowest shares (4%, 9% and 10%) of these five industries and also were at the bottom of the states ranking by productivity.

Differences in Individual Industries

Thus, it appears that overall differences in productivity in unorganised manufacturing among states are mainly due to the differences in the composition viz. share of high and low productivity industries. But, at the same time there are

Table 31
Average Share of Top Five Highest Productivity Industries at All-India level in the Gross Value Added in Unorganised Manufacturing (2005–06)

	31	33	35–36	37	38	Total
Major States						
Andhra Pradesh	1.47	0.06	2.05	0.38	4.64	8.60
Bihar	0.49	0.23	1.27	0.08	2.12	4.18
Gujarat	2.64	0.41	15.38	0.23	22.56	41.23
Haryana	4.11	2.22	13.35	2.74	5.47	27.89
Karnataka	1.65	0.01	4.22	0.69	2.78	9.35
Kerala	5.65	0.11	6.16	0.87	7.29	20.07
Madhya Pradesh	0.94	0.23	4.68	2.35	4.22	12.43
Maharashtra	3.08	0.44	10.69	1.83	23.38	39.43
Orissa	0.52	2.81	1.32	0.87	4.20	9.72
Punjab	2.09	0.15	10.40	7.73	8.47	28.85
Rajasthan	1.08	0.26	4.60	0.67	13.19	19.80
Tamil Nadu	2.08	0.82	4.46	1.09	4.66	13.11
Uttar Pradesh	0.99	0.45	4.52	2.61	2.89	11.45
West Bengal	0.93	1.53	8.14	0.18	10.34	21.13
New States						
Chhattisgarh	3.73	18.65	5.84	1.37	1.54	31.12
Jharkhand	0.35	0.03	1.32	0.18	2.78	4.66
Uttarakhand	0.09	0.35	8.25	0.71	11.89	21.30
North Eastern States						
Arunachal Pradesh	0.00	0.03	0.00	0.00	4.50	4.54
Assam	0.09	2.93	0.37	0.05	4.81	8.25
Manipur	0.31	0.83	0.25	0.00	7.82	9.21
Meghalaya	9.32	0.86	0.05	4.24	2.01	16.48
Mizoram	1.44	0.00	0.33	0.00	1.17	2.94
Nagaland	5.17	0.00	2.33	0.04	0.33	7.88
Sikkim	0.00	0.00	0.00	0.00	9.39	9.39
Tripura	0.73	0.02	0.39	0.08	6.69	7.91
Union Territories and Other States						
A & N Islands	0.00	5.13	4.95	8.62	20.02	38.71
Chandigarh	0.00	10.14	12.31	1.09	5.84	29.38
Delhi	3.17	8.62	10.22	1.95	4.92	28.87
D & Nagar Haveli	24.43	0.00	5.26	0.00	2.03	31.72
Daman & Diu	29.57	23.52	1.29	0.00	20.28	74.67
Lakshadweep	0.00	0.00	0.00	0.00	0.20	0.20
Pondicherry	3.43	0.47	51.32	1.08	1.66	57.95
Goa	3.31	0.00	18.43	2.31	10.46	34.51
Himachal Pradesh	6.39	0.77	39.18	1.02	1.60	48.96
Jammu & Kashmir	0.19	0.36	1.41	0.01	3.25	5.22
India	2.11	1.07	7.52	1.37	10.04	22.11

Source and Note: Same as Table 30

significant differences in productivity in the same industry groups. Thus, chemical products had a value added per worker as high as Rs. 67474 in Haryana followed by Rs. 55754 in Punjab, but as low as Rs. 10443 in Bihar and Rs. 17511 in Orissa (Table 30). The range in case of basic metals was between Rs. 71520 in Orissa (and Rs. 397575 in Chandigarh, if all states and UTs are considered) and Rs. 4972 in Andhra Pradesh (and Rs. 2161 in Arunachal Pradesh, if all states/UTs are included in comparison). In machinery, the difference was much less among major states, between Rs. 62836 in Maharashtra and Rs. 8795 in Bihar; the figure for Himachal

Pradesh was, however, way higher at Rs. 389097 if all states/UTs are considered, and in transport equipment differences among major states ranged between Rs. 167501 in Maharashtra to Rs. 13424 Bihar and Rs. 13341 in Assam.

Technology and Productivity Differentials

Are these differences in individual industries due to differences in technology, as seen in terms of capital intensity indicated by the fixed capital per worker? Capital intensity varies widely across states in the unorganised manufacturing as a whole. In 2005–06, it was the highest in Haryana at Rs. 93450 followed by Punjab at Rs. 59957 and Maharashtra at Rs. 49054. The lowest was in Orissa (Rs. 4546) followed by Bihar (Rs. 8918) (Table 32). Goa (Rs. 68235) and Pondicherry (Rs. 63377) showed higher capital intensity among smaller states and UTs. Variations do not seem very large. But they are larger in the case of individual industries. Thus chemical products, the industry with highest capital intensity (Rs. 82411), had fixed capital per worker of Rs. 203396 in Haryana, and Rs. 245059 in Himachal Pradesh, but only Rs. 12504 in Bihar and Rs. 10733 in Meghalaya. Industry with the next highest capital intensity, namely basic metals: it was Rs. 445787 in Chandigarh and Rs. 378679 in Delhi, but only Rs. 12340 in Jharkhand and Rs. 13635 in Meghalaya.

Yet, the technological differences as indicated by fixed capital per worker seem smaller in the case of unorganised than of the organised industry and they also seem to explain interstate productivity differences to a smaller extent and in a smaller number of industries than in the case of organised industry. And over the years the relationship between capital intensity and productivity seems to have become weaker, though continuing to be significant. In 2000–01, correlation between the two variables was high ($r \geq 0.80$) in 10 out of 15 industries in the 14 major states, but in only one industry if all states/UTs are included. In 2005–06, the relationship is strong ($r \geq 0.80$) in only 8 in the former and in two in the latter grouping (Table 33).

Broad conclusions that emerge from this analysis of interstate differences in productivity are as follows: *One*, difference in aggregate productivity is very large in the organised manufacturing but somewhat smaller in the case of the unorganised manufacturing. *Two*, these differences are due to the differences in composition of

**Table 32
Capital Labour Ratio in Unorganised Manufacturing in Rs. (2005-06)**

31		28120	8907	26742	38035	11231	17337	23701	8257	19090	Andhra Pradesh	12504	6593	8302	19119	5188	15436	6331	1941	15698	Bihar	137714	48671	11853	96779	24570	28719	110017	7237	27497	Gujarat	203396	64516	41658	107720	64298	69527	187119	58428	81012	Haryana	59824	21911	27397	60808	15396	32014	31092	6219	17283	Karnataka	61649	10642	28140	135893	22322	23135	10764	42119	25178	Kerala	94568	24863	20394	66160	9274	29101	12161	2547	25249	Madhya Pradesh	107579	68429	37627	91688	25398	37855	62671	4360	44293	Maharashtra	26138	54009	17629	30560	1233	9385	9916	813	7784	Orissa	128767	81379	33475	89061	64187	43622	59958	199006	76848	Punjab	91391	19929	22712	59675	20362	29398	24456	10785	32059	Rajasthan	68857	9224	34297	30671	23051	39457	30476	4865	39802	Tamil Nadu	70629	11079	23796	37016	9472	12634	28713	3046	21188	Uttar Pradesh	36861	6070	11156	15303	5178	10621	10650	2875	11584	West Bengal	128715	12896	65404	64791	5355	18489	4985	2013	21377	Chhattisgarh	76859	70933	21000	67066	4807	14872	N.E.	1336	13262	Jharkhand	156918	33065	56505	153087	20527	43894	20143	N.E.	54973	Uttarakhand	N.E.	N.E.	N.E.	51247	47338	14479	N.E.	30548	Arunachal Pradesh	27973	7596	6603	50553	4287	13045	10318	2199	13133	Assam	1856	4143	13834	112744	12675	25304	13828	26671	24015	Manipur	10733	20383	12884	37566	4896	28418	8971	7461	16131	Meghalaya	43972	N.E.	N.E.	92135	31115	81778	88357	479	18157	Mizoram	27063	N.E.	N.E.	67130	17871	34813	18997	14428	22025	Nagaland	N.E.	61559	N.E.	58207	2322	33727	N.E.	52947	31753	Sikkim	81770	14128	19215	40807	3984	27583	5693	1183	3677	Tripura	N.E.	83645	62382	46670	25504	37570	N.E.	5298	25312	A & N Islands	N.E.	237806	N.E.	53745	111580	39374	N.E.	1052212	118381	Chandigarh	135367	48603	48983	96195	42876	53656	19187	164382	143645	Delhi	66546	31999	110833	34401	4962	49596	N.E.	N.E.	48237	D & Nagar Haveli	31267	N.E.	N.E.	24426	13884	22474	N.E.	20842	20053	Daman & Diu	N.E.	N.E.	N.E.	52963	19639	28280	N.E.	N.E.	25346	Lakshadweep	170509	157239	15148	66599	41790	44479	9879	56477	89904	Pondicherry	111944	123975	78193	113038	44824	93437	N.E.	57369	79618	Goa	245059	282952	189820	121307	18371	31286	26413	29383	40241	Himachal Pradesh	97669	226921	60342	118898	24912	24249	46622	109515	46725	J & K	82411	16848	26523	53551	11370	23672	32322	4495	23138	India
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32	Industry Group	Andhra Pradesh	17329	24947	37617	48391	25588	44140	12757
33		Bihar	8918	11658	22977	15177	10085	22064	6243
34		Gujarat	34955	13084	42626	62753	38231	54483	11276
35		Haryana	93450	164958	130796	132224	106086	94240	68369
36		Karnataka	24059	30728	39211	85411	34051	95899	77906
37		Kerala	28820	23257	44043	73844	26982	60842	48260
38		Madhya Pradesh	12309	30195	88925	31220	11045	28344	7637
39		Maharashtra	49054	81692	35529	60851	42784	40295	22958
40		Orissa	4546	11954	73092	17523	7021	22625	4700
41		Punjab	59957	55442	87031	98087	74660	51785	32049
42		Rajasthan	28671	39348	147848	56617	35655	49473	14656
43		Tamil Nadu	29290	25819	48731	79963	36351	45883	20620
44		Uttar Pradesh	17354	25153	100646	50298	32858	42624	8161
45		West Bengal	9841	20054	25298	41287	26271	27135	10174
46		Chhattisgarh	22159	119589	52173	331311	11394	402369	9599
47		Jharkhand	6488	28612	23718	53909	5873	12340	8433
48		Uttarakhand	42774	84085	161278	77477	13824	37961	10836
49		Arunachal Pradesh	25857	14618	N.E.	N.E.	21032	11158	23539
50		Assam	9875	32162	20077	27124	11788	38592	11010
51		Manipur	16732	15348	N.E.	6891	32867	13913	1537
52		Meghalaya	10422	30062	22116	22711	6176	13635	2848
53		Mizoram	40866	38854	N.E.	7937	60180	N.E.	14085
54		Nagaland	20267	22712	25918	23132	14002	N.E.	45296
55		Sikkim	26471	49184	N.E.	N.E.	18948	N.E.	N.E.
56		Tripura	6119	41797	63272	30594	18243	21079	2076
57		A & N Islands	38214	129188	42694	27581	26190	7854	23690
58		Chandigarh	111318	138488	503373	318417	68712	445787	N.E.
59		Delhi	72506	34643	73367	145662	59256	378679	176477
60		D & Nagar Haveli	34016	42931	N.E.	81176	35354	N.E.	15914
61		Daman & Diu	35156	37902	N.E.	31618	8299	133130	21033
62		Lakshadweep	21326	6392	N.E.	N.E.	9747	N.E.	14382
63		Pondicherry	63377	93321	16053	74537	68372	91257	9766
64		Goa	68235	40082	122282	71364	71135	N.E.	37291
65		Himachal Pradesh	35921	88856	537007	90468	28958	124155	22952
66		J & K	35651	134092	21167	172863	88786	54613	29696
67		India	23240	35985	69834	70891	32120	71365	15044

Note: N.E. Not estimated
Source: Same as Table 30

Table 33
Correlation between Per Worker Productivity and Capital Labour Ratio
in Unorganised Manufacturing

Industry Code	2000-01		2005-06	
	Among Major States	Among All States	Among Major States	Among All States
20-21	0.94	0.71	0.92	0.54
22	0.86	0.79	0.97	0.07
23 + 24 + 25	0.51	0.48	0.94	0.92
26	0.90	0.60	0.87	0.41
27	0.88	0.53	0.92	0.70
28	0.91	0.43	0.56	0.07
29	0.62	0.62	0.72	0.71
30	0.87	0.76	0.90	0.48
31	0.92	0.61	0.95	0.68
32	0.64	0.41	0.64	0.61
33	0.45	0.83	0.42	0.87
34	0.93	0.57	0.88	0.22
35-36	0.89	0.53	0.46	0.16
37	0.33	0.47	0.43	0.57
38	0.84	0.62	0.44	0.35
ALL	0.93	0.66	0.91	0.62

Source: NSSO Survey on Unorganised Manufacturing (56th and 62nd Round)

industries, much more in the case of unorganised than of the organised manufacturing. *Three*, interstate technological variation in individual industries seem responsible for productivity differentials much more in the case of organised than the unorganised segment. And, therefore, *fourth*, local market and work environment in the states seem to play important roles in making productivity vary across states, but relatively more in the unorganised than the organised segment of manufacturing industry.

VIII. Conclusions: What Explains Variations?

Main Findings

Description and analysis of various aspects of industrial development in different states presented in the preceding sections, even though not showing any clear pattern, reveal the following interesting trends:

1. An indicated by the share of manufacturing in GSDP, Tamil Nadu, Maharashtra, West Bengal and Gujarat were the most industrialised states in that order in 1980–81. In 2008–09, the four most industrialised states were: Gujarat, Maharashtra, Tamil Nadu and Haryana, in that order. Gujarat is at the top with 30 per cent of its GSDP originating from manufacturing. Gujarat has also seen the fastest pace of industrialisation, followed by Haryana, Punjab and Himachal Pradesh, while West Bengal, Andhra Pradesh and Tamil Nadu experienced a decline in the share of manufacturing in their respective GSDP. Disparities in the extent of industrialisation have somewhat decline during 1981–2009.
2. Most states have experienced significant shift from agriculture to other sectors, the shift has been the largest in Orissa, Karnataka, Gujarat and Kerala and relatively small in Punjab and West Bengal. Major shift has been in favour of manufacturing particularly in Gujarat, Rajasthan and Orissa. Larger structural changes have generally been accompanied by faster GSDP growth and shift to manufacturing more often than shift to services has contributed to faster growth.
3. Growth rates of manufacturing GSDP have been quite divergent throughout 1981–2009, but especially since 2001. Rates of growth have, however, not necessarily been higher in states with initially high level of industrialisation, except during the period 2001–09. Thus, industrial growth in recent years has led to increasing divergence.

4. The four states with largest share in national manufacturing GDP, namely Maharashtra, Tamil Nadu, West Bengal and Gujarat, have continued to account for over half of the national GVA in manufacturing—Maharashtra remaining at the top, Gujarat replacing Tamil Nadu in the second position and West Bengal receding from third to fourth position. Overall disparity in the shares of different states has slightly declined in 2007–08 from 1980–81. In employment terms, Uttar Pradesh replaces Gujarat among the top four states, which account for 48 per cent in 2004–05, Uttar Pradesh alone accounts for 16 per cent of employment, the other three, namely Maharashtra, Tamil Nadu and West Bengal account for 11 per cent each.
5. Organised sector accounts for major share of the GSDP in manufacturing, in most states, the highest being in Orissa (87%). It is generally higher in less industrialised states. West Bengal is the only state with unorganised sector contributing the major share; it has also seen, along with Haryana, Punjab and Gujarat, a decline in the share of organised sector over the period 1981–2009. Across the states, the shares of organised and unorganised sector in all India are found to be highly correlated.
6. Agro-based industries have declined in importance in most states, except in Kerala with 77 per cent share in employment and 50 per cent in GVA, Karnataka with 60 and 34 per cent, West Bengal with 59 and 32 per cent and Punjab with 46 and 57 per cent of two respectively. These industries generally have lower productivity than others except in Punjab where agro-industries have higher productivity than in other industries. Share of different states in total agro- and non agro-industries are strongly correlated with each other, both in respect of employment and GVA.
7. There is a significant similarity among the states in the pattern of manufacturing industries in terms of presence and importance of different 2-digit product group. Not only most industries are found in all the states, but many of them hold similar importance in the product structure of different states. Thus, the top five industries in terms of employment are common in 23 out of 35 states/UTs. The same five industries are the largest at the

aggregate national level. Thus the industrial structure of most states is similar to that of the country as a whole, indicating a low degree of specialization by individual states. Specialization coefficient is lower than 0.30 for 13 out of 17 major states. Small states, Jharkhand and Orissa and those in the North East, and most UTs show a high degree of specialization.

8. As pointed out earlier, most industries are quite ubiquitous: they are found in most states. Yet, quite a few of them have over 70 per cent of their employment concentrated in just five states. Industrial base of most states is rather narrow, except in few cases (notably Maharashtra and Haryana) where a relatively large number (16 and 14 out of 23) of industries have larger weight in the state's than in the country's industrial structure. Surprisingly, Gujarat and Tamil Nadu with only 7 industries in this category also have narrow industrial bases.
9. Large differences are observed in productivity across states, more so in the organised than in the unorganised sector. Variations in GVA per worker in aggregate among states in the organised sector are largely explained by the composition of the industries and those in individual industries by technology (capital intensity). In the unorganised sector productivity differences seem to be more influenced by local market and work environment rather than technological character and composition of industries.

Explaining Interstate Variations

Amidst varied findings, as noted above, it is quite clear that states have performed differently from each other in terms of growth of manufacturing industries and changes in their structure. What factors account for such differential performance? It may not be difficult and may even not be very useful to try to explain the differences in the levels of industrial development that have historically existed. What may be more interesting and also useful is to attempt an explanation of the changes that have taken place in the period of last two to three decades, especially since the introduction of economic reforms which removed government regulations on investment and industrial location and which, on the one hand, gave freedom and opportunity to states to base their industrial development on

specialisation (See Dholakia, 2009), and on the other, did away with the central government's use of its control and instrumentality to influence investment and industrial location in favour of industrially less advanced states and regions.

Various factors that could have influenced the differential performance of states in industrial growth during the post-reform period can broadly be divided into the following four broad heads: capital investment, human resources, regulatory framework and infrastructure. A study (Chakravorty and Lall, 2007, Pp. 99–102) looking at the trends in industrial investment in different states over a seven-year period immediately after the economic reforms in 1991 found that the process of cumulative causation was in operation insofar the existing level of industrial investment and activity attracted the new investment. Continuity and clustering were thus found to lead to increasing divergence. This observation is supported by findings of our study, especially for the period 2001–2009.

That, however, does not mean that other factors may have had no influence on the growth of industrial activity in different states—particularly if there was differential progress, in respect of them among states. Let us look at changes in human resource development and regulatory and promotional framework and see if there have been significant differences in terms of changes in them. Going by Human Development Index (HDI) as the summary indicator of development of human resources, there is a general trend towards an improvement: HDI for country as a whole was estimated to be 0.387 in 1999–2000 and to have been improved to 0.467 in 2007–08 (IAMR, 2011, p. 24). Similar improvements have taken place in all the states, so much so that eight states have retained the same ranking in 2007–08, as in 1999–2000, 11 states have changed ranks but only by one or two positions. Only Rajasthan has lost by three positions and Jharkhand and North East (excluding Assam) have gained by 4 and 3 positions respectively. Similarly there has been a general trend towards easing of regulations and promotion of investment-friendly climate in all the states. Various exercises by the World Bank and industry organisations have attempted measurement of the ease and difficulty of “Doing Business” in different states and have found significant differences among states. It is, however, not clear whether the degree of ‘ease’ has changed at different speeds in the post-reform period. In general, states have competed among themselves in

projecting an investment-friendly image and it appears that it has been a zero-sum game rather than any advantage of one over the others. Gujarat and Maharashtra have, no doubt, offered 'best' and Uttar Pradesh and West Bengal 'poor' investment climates (World Bank, 2004). But that is true both of the pre- and post-reform periods. In fact, some other states like Andhra Pradesh and Karnataka have improved their image as investment-friendly. Karnataka has also experienced faster industrial growth, but Andhra Pradesh has not.

One aspect of regulatory framework that has been studied most is labour regulation. A number of studies (e.g., Besley and Burgess 2004; Hasan *et. al.* 2003) conclude that states with 'flexible' labour regions, specially those having amended laws and rules to give greater freedom to employers in modes of use of labour have performed better in respect of industrial growth than others. Several other studies, however, argue that most of these studies are methodologically faulted insofar as they are often based on single legislation and changes in it or on answer to a leading question of impact of labour laws to the complete neglect of other factors such as infrastructure, market, credit, etc. (Bhattacharjea, 2006; Reddy, 2008; Nagraj, 2011). It appears that better industrial relations climate, no doubt, helped some states (e.g. Gujarat Andhra Pradesh and Karnataka) to perform better, but significance of this factor was far overshadowed by other factors, particularly infrastructure. In any case, labour market and industrial relations regulation were a part of the overall governance and regulatory system which, as a whole, was an important factor in encouraging or stifling industrial growth.

Infrastructure is most widely accepted as the reason for differential status and growth of manufacturing industry among the states. Analysis has been attempted to explain such difference in terms of a single infrastructure item such as banking facilities (Burgess and Pande, 2003) and power (Adil, 2010).

Some studies have taken several items of infrastructure as independent variables to explain variations in some indicator (e.g., total factor productivity – TFP – in Mitra *et. al.*, 2002) of industrial performance and found some of them more important than others. For example, the study mentioned above found investment in primary education, financial mobilisation as reflected in deposits and credit disbursal

and power production capacity as the factors significantly influencing industrial productivity. Paul (2011) looked at the impact of banking outreach, physical infrastructure and labour market flexibility on growth of manufacturing industries across 14 major states of India in the post-liberalisation period (1991–92/2002–03) and found that while the first two influenced industrial growth significantly the last had no significant impact.

Often infrastructure items, including physical, economic and social items (like road length and railway length per unit of geographical area, energy consumption, educational facilities, hospitals, banking facilities, post and telecommunications) have been clubbed together to construct an overall “infrastructure index”. Utilising on such index [constructed by Centre for Monitoring Indian Economy (CMIE)] to examine the relationship between infrastructure and the extent of industrialisation (share of manufacturing in the state gross domestic product), it is observed that there is a fairly significant relation between the two. The rank correlation coefficient between the two was 0.36 for the year 1980–81. It was stronger in 1990–91 at 0.42, but grew weaker at 0.33 in 2000–01 (*Table 34*). Yet it was statistically significant in all three years.

Table 34
Infrastructure and Level of Industrialisation

States	1980–81 Rank	% share of manufacturing in GSDP	1990–91 Rank	% share of manufacturing in GSDP	2000–01 Rank	% share of manufacturing in GSDP
	Infrastructure Development Index		Infrastructure Development Index		Infrastructure Development Index	
Andhra Pradesh	8	6	8	8	12	12
Assam	15	11	13	15	11	16
Bihar	12	10	15	11	17	15
Gujarat	5	4	5	2	6	1
Haryana	4	7	4	4	5	4
Himachal Pradesh	13	16	10	16	10	10
Jammu and Kashmir	11	17	14	17	16	17
Karnataka	10	5	9	5	9	6
Kerala	3	12	2	14	3	14
Madhya Pradesh	17	9	17	7	20	7
Maharashtra	6	2	6	3	8	3
Orissa	14	14	12	13	14	13
Punjab	1	13	1	10	1	9
Rajasthan	16	8	16	12	19	8
Tamil Nadu	2	1	3	1	4	2
Uttar Pradesh	9	15	7	9	7	11
West Bengal	7	3	11	6	13	5
Rank Correlation	0.36		0.42		0.33	

Source: CMIE and ASI

Composite indicators are good for summary description, but not for identifying the relative importance of different infrastructure items. In most studies, transport and power have been identified as the most critical elements of infrastructure influencing the pace of industrial growth in a region or state. We, therefore, attempted an analysis to explain interstate variations in the level of industrialisation and growth of manufacturing GSDP, focussing on railways and road length per square kilometre of area as indicator of transport infrastructure and electricity consumption per capita as the indicator of availability of power. Taking share of manufacturing in GSDP as the indicators of levels of industrialisation of a state we found that it was only the power consumption which had a positive and significant relationship with it, in all the three time points, 1981, 1991 and 2001 for which regression analysis was undertaken. Length of railway line had a positive but not significant coefficient. Road length, surprisingly, came up with a negative coefficient in all the three years. Similar results were obtained when the indicator of the level of industrialisation was changed to per capita manufacturing GSDP, except that the explanatory power of the model improved as also the value of the coefficient of power consumption; and, the coefficient of road length turned out to be positive in one case, that is, in 1981 (*Table 35*). Our attempts to establish

Table 35
Transport and Power Infrastructure and Level of Industrialisation: Regression Results

Dependent Variable: % Share of Manufacturing GSDP to Total GSDP					
Independent variable/ Time period	Constant	Coefficient	t-value	p-value	R-square
Railways length_1981	9.696	0.171	1.0200	0.3300	0.0690
Railways length_1991	13.264	0.117	0.7800	0.4500	0.0410
Railways length_2001	12.727	0.157	1.1000	0.2900	0.0750
Road length_1981	14.007	-0.0003	-0.0800	0.9360	0.0005
Road length_1991	17.282	-0.002	-0.4600	0.6520	0.0149
Road length_2001	16.883	-0.001	-0.4500	0.6570	0.0135
Power consumption_1981	7.251	0.044	2.0200	0.0630	0.2258
Power consumption_1991	10.691	0.021	2.0000	0.0660	0.2219
Power consumption_2001	8.251	0.019	3.7700	0.0020	0.4865
Power consumption_2004	9.913	0.015	3.4300	0.0040	0.4399
Dependent Variable: Per capita Manufacturing GSDP					
Railways length_1981	401.280	18.930	1.6900	0.1120	0.1600
Railways length_1991	967.310	16.890	0.8500	0.4080	0.0490
Railways length_2001	1297.850	27.020	1.0200	0.3230	0.0650
Road length_1981	401.280	18.930	1.6900	0.1120	0.1600
Road length_1991	1492.590	-0.140	-0.3300	0.7480	0.0080
Road length_2001	2055.700	-0.120	-0.3100	0.7620	0.0060
Power consumption_1981	401.280	18.930	1.6900	0.1120	0.1600
Power consumption_1991	275.280	4.260	3.9100	0.0020	0.5220
Power consumption_2001	109.550	4.560	5.4500	0.0000	0.6640
Power consumption_2004	80.470	5.080	5.5200	0.0000	0.6700

dynamic relationships between these items of infrastructure and growth of manufacturing industry in different states by estimating regression of base year infrastructure with growth over the next decade or to relate growth in infrastructure with growth in manufacturing GSDP over each of the three periods, however, yielded no significant results.

Outcomes of our statistical exercises, however, do not imply that various items of infrastructure do not influence the pace of industrial development in different states. There could be several reasons for the relationship not showing up significantly. *One*, the specification of the variables may not be the most appropriate. *Two*, the quality of data may vary among states. *Three*, some items may not have significantly large variations across states as over the years a larger degree of convergence has emerged in respect of items like facilities for human development, banking, transport and communications among the states. *Fourth*, where variations are significant, the relationship is also significant. Power availability is one example which is probably a good proxy for all items of infrastructure directly relevant for industry; and it could overshadow the influence of other items. *Five*, after the initial phase of industrialisation, infrastructure may continue to be important but its influence is intermixed with that of agglomeration economies. In other words, new industries go where industries exist which are also the states that have better developed infrastructure. Between states with developed infrastructure but very little industry and those with both developed infrastructure and a good industrial base, the latter attracts more industry than the former. Thus, Kerala with good infrastructure does not attract industry while Gujarat also with high level of industrialisation does. Punjab with highly developed infrastructure has a relatively lower level of industrialisation, but Maharashtra with relatively lower level of infrastructure development has a high level of industrialisation (See *Table 34*). It appears that the pattern of location of new industrial activity is becoming increasingly complex and requires fresh approaches that go beyond the traditional theory of industrial location, to explain it.

Appendix A

	Percentage Share												Trend Growth Rate																										
	Agriculture & Allied						Manufacturing						Services						Total GDP																				
	1980-81		1990-01		2000-09		1980-81		1990-91		2000-01		1980-81		1990-91		2000-01		1980-81		1990-91		2000-01		1980-81		1990-91		2000-01										
	81	91	01	09	08	09	81	91	01	09	2000-01	2008-09	81	91	01	09	2000-01	2008-09	81	91	01	09	2000-01	2008-09	81	91	01	09	2000-01	2008-09									
Major States																																							
1	Andhra Pradesh	38.66	33.31	28.61	22.23	13.86	15.32	13.69	12.05	39.26	41.71	46.54	51.25	5.36	5.2	6.92	5.1	4.11	5.31	8.57	5.43																		
				38.43	25.74		9.17		13.27			39.76(4)	45.41			13.95																							
		52.45	43.84	(46.56)	(31.62)	9.92	12.56	(3.73)	(2.50)	28.02	31.95	3.39	(51.28)	6.24	3.18	(1.44)	3.94	4.57	3.2	7.36	(7.17)	3.81																	
3	Bihar(+)	38.21	27.02	15.19	16	18.92	26.14	30.41	29.94	33.22	37.34	44.18	44.38	8.29	9.48	11.71	8.17	3.82	7.69	10.24	6.64																		
4	Gujarat*	49.09	42.94	32.07	23.1	13.65	19.1	20.59	20	25.39	29.81	40.18	46.43	10.42	6.8	8.13	7.33	5.97	5.13	8.6	5.94																		
6	Haryana**	43.56	33.45	26.37	13.83	15.25	18.63	17.26	19.85	31.59	39.17	46.13	54.53	7.07	6.9	10.51	7.42	4.84	7.07	8.73	6.34																		
9	Karnataka	41.7	31.16	23.64	15.68	9.52	11.11	11.68	9.96	40.92	50.35	56.09	60.73	3.26	5.92	6.19	5.12	2.46	5.57	8.38	5.27																		
10	Kerala *			24.03	23.99		16.46	15.35				39.82	38.22			5.44																							
		47.3	38.01	(25.87)	(26.23)	11.11	15.5	(15.08)	(12.73)	27.99	33.36	(40.55)	(39.71)	6.52	6.58	(2.26)	5.82	3.43	4.63	(5.04)	4.43																		
11	Madhya Pradesh (+)	25.53	20.73	15.49	13.35	24.92	26.08	23.93	23.46	39.94	43.86	53.36	57.2	6.79	6.27	8.64	6.29	5.84	6.49	8.39	6.44																		
12	Maharashtra*	54.59	38.69	28.22	19.24	9.08	11.29	12.13	17.04	27.16	34.76	43.38	45.07	8.78	4.17	15.6	6.68	4.03	4.02	9.19	4.42																		
13	Orissa	46.41	46.02	39.21	32.55	9.21	13.61	15.96	16.05	36.18	33.48	36.92	41.27	8.98	6.43	6.18	6.49	5.02	4.69	5.39	4.67																		
14	Punjab	43.8	41.11	26.73	24	12.43	12.36	16.5	15.63	33.94	35.12	41.15	41.9	6.66	9.37	7.84	6.96	6.5	6.22	7.66	6.23																		
15	Rajasthan	25.25	22.75	17.62	10.99	31.47	28.54	24.36	23.32	36.73	39.98	47.93	57.1	4.06	5.06	7.7	4.56	5.06	6.48	7.59	5.88																		
16	Tamil Nadu			35.60	27.72		13.85	14.02				40.30	42.00			6.26																							
		48.05	39.27	(35.65)	(28.37)	9.01	13.87	(14.00)	(14.01)	33.94	37.9	(40.34)	(42.44)	9.53	4.8	(5.85)	5.65	4.65	3.97	(3.91)	4.35																		
17	Uttar Pradesh (+)	31.94	30.95	26.06	20.7	20.31	17.8	17.28	16.37	40.38	43.34	49.35	53.5	3.32	6.36	6.07	5.21	4.65	6.66	6.57	5.81																		
18	West Bengal*			18.25	18.33		18.5	21.94				37.55	34.44			11.66																							
		-	-	23.49	15.48		19.17	32.02				33.09	35.17			16.88																							
19	Chhattisgarh			34.88	28.37		11.74	14.12				39.81	37.07			12.15																							
20	Jharkhand																																						
21	Uttarakhand																																						
New States																																							
19	Chhattisgarh			18.25	18.33		18.5	21.94				37.55	34.44			11.66																							
20	Jharkhand			23.49	15.48		19.17	32.02				33.09	35.17			16.88																							
21	Uttarakhand			34.88	28.37		11.74	14.12				39.81	37.07			12.15																							

	Percentage Share												Trend Growth Rate																										
	Agriculture & Allied						Manufacturing						Services						Manufacturing						Total GDP														
	1980-81	1990-91	2000-01	2008-09	1990-91	2000-01	2008-09	1980-81	1990-91	2000-01	2008-09	1980-81	1990-91	2000-01	2008-09	1980-81	1990-91	2000-01	2008-09	1980-81	1990-91	2000-01	2008-09	1980-81	1990-91	2000-01	2008-09	1980-81	1990-91	2000-01	2008-09								
North Eastern States																																							
21	Assam	44.96	31.79	28.99	16.31	3.8	2.6	3.43	2.03	29.04	23.08	34.24	23.31	8.14	7.1	2.85	6.56	11.82	3.67	9.79	6.49																		
22	Assam	49.21	41.48	34.02	23.93	9.55	9.17	7.67	10.74	31.57	35.34	44.58	51.05	2.96	1.87	8.86	3.91	3.4	2.4	5.4	3.31																		
23	Manipur	28.76	35.44	32.89	26.36	6.41	13.53	7.93	7.48	23.13	41.59	46.24	41.03	7.81	3.37	5.19	4.46	2.82	9.98	5.43	5.52																		
24	Meghalaya	41.75	29.45	25.06	21.03	1.8	2.42	2.07	8.49	42.46	49.88	53.45	50.79	7.5	7.74	14.85	11.22	4.92	10.48	6.84	7.82																		
25	Mizoram	26.96	21.14	19.67	15.38	1.49	2.87	1.73	2.13	59.1	46.15	64.42	62.46	9.85	5.42	9.27	13.13	20.71	12.84	4.97	12.34																		
26	Nagaland**	27.57	24.7	33.94	35.51	5.09	3.65	1.12	1.4	52.78	59.14	53.46	48.7	11.73	-0.55	8.38	6.11	18.8	8.81	6.36	12.96																		
27	Sikkim	41.08	34.75	21.86	16.66	0	4.13	3.48	41.63	51.34	52.91	50	50	N.E.	N.E.	6.55	8.44	17.18	9.85	8.36	11.25																		
28	Tripura*	56	42.09	32.05	28.59	3.44	2.78	4.85	2.82	39.37	49.84	59.23	58.42	3.05	12.82	4.52	8.44	5.58	12.76	8.03	9.1																		
Union Territories And Other States																																							
29	A&N Islands*	43.69	47.39	29.32	11.9	7.27	6.39	4.8	3.35	34.16	29.64	50.31	34.39	2.63	3.87	7.56	2.8	5.6	5.05	13.52	6.76																		
30	Chandigarh	N.A.	N.A.	1.1	0.53	N.A.	N.A.	15.63	12.72	N.A.	N.A.	72.74	72.2	N.E.	N.E.	9.2	N.E.	N.A.	N.A.	11.1	NE																		
31	Delhi	4.28	2.98	1.31	0.63	8.25	8.94	11.49	8.8	82.32	83.06	78.72	81.88	8.04	3.35	5.83	5.47	8.67	0.13	9.84	4.57																		
32	Dadar and Nagar Haveli	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.E.	N.E.	N.E.	N.E.	N.E.	N.A.	N.A.	N.A.																		
33	Daman and Diu	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.E.	N.E.	N.E.	N.E.	N.E.	N.A.	N.A.	N.A.																		
34	Lakshadweep	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.E.	N.E.	N.E.	N.E.	N.E.	N.A.	N.A.	N.A.																		
35	Pondicherry	29.08	18.9	6.95	3.52	20.39	28.74	49.1	65.49	34.56	37.44	40.77	29.38	7.44	19.53	14.02	13.05	4.15	12.18	10.63	8.38																		
5	Goa*	20.55	14.53	8.44	4.46	24.24	22.29	33.26	30.08	39.53	50.61	47.94	55.88	0.71	10.68	8.68	8.08	4.65	7.15	11.2	6.4																		
7	Himachal Pradesh*	44.21	35.51	23.41	18.99	3.01	7.32	15.02	13.64	33.65	38.69	41.57	40.95	14.52	14.9	6.65	12.46	4.85	6.35	7.74	5.98																		
8	Jammu & Kashmir*	N.A.	N.A.	32.17	28.57	N.A.	N.A.	5.86	8.1	N.A.	N.A.	51.44	48.76	NE	NE	11.03	NE	NE	NE	5.16																			
India		38.92	31.86	24.76	21.43	15.32	17.58	17.75	16.7	36.45	40.9	46.86	47.06	7.44	7.02	8.2	6.77	5.52	6.12	8.26	6.09																		

Appendix B
Classification at 2-digit level (NIC 1987)

Division	Classification at 2-digit level (NIC 1987)
20-21	Manufacture of Food Products
22	Manufacture of Beverages, Tobacco and Related Products
23	Manufacture of Cotton Textiles
24	Manufacture of Wool silk and manmade fibre textiles
25	Manufacture of jute and other vegetable fibre textiles (except cotton)
26	Manufacture of textile product (including wearing apparel)
27	Manufacture of wood and wood product; furniture and fixtures
28	Manufacture of paper products and printing publishing & Allied industries
29	Manufacture of leather and product of leather, fur & substitutes of leather
30	Manufacture of basic chemicals and chemical product (except product of petroleum and coal)
31	manufacture of rubber, plastic, petroleum and coal product; processing nuclear fuels
32	Manufacture of non-metallic mineral product
33	Basic metal and alloys industries
34	Manufacture of metal product and parts, except machinery and equipment
35-36	Manufacture of machinery and equipment other than transport equipment (manufacture of scientific equipment, clock is classified in division 38) photographic/cinematography equipment and watches
37	Manufacture of transport equipment and parts
38	Other manufacture industries
39	Repair of capital goods

Appendix C
Concordance between 2-digit level of NIC-87 & appropriate level of NIC-98
(for converting NIC-98 based data in terms of NIC-87)

NIC-87 Code	NIC-98 Code
20-21	151 + 152 + 153 + 154
22	155 + 16
23 + 24 + 25	171
26	172 + 173 + 181
27	20 + 361
28	21 + 22
29	182 + 19
30	24
31	23 + 25
32	26
33	27 + 371
34	2811 + 2812 + 289
35-36	2813 + 29 + 30 + 31 + 32
37	34 + 35
38	33 + 369
39	725

Source: National Industrial Classification-1998, CSO

Appendix D
Classification at 2-digit level (NIC 04)

Division	Classification at 2-digit level (NIC 04)
15	Manufacture of Food Products and Beverages
16	Manufacture of Tobacco Products
17	Manufacture of Textiles
18	Manufacture of Wearing Apparel Dressing and Dyeing of Fur
19	Tanning and Dressing of Leather Manufacture of Luggage, Handbags, Saddler, Harness and Footwear
20	Manufacture of Wood and Products of Wood and Cork, Except Furniture, Manufacture of Articles of Straw and Plating Materials
21	Manufacture of Paper and Paper Products
22	Publishing, Printing and Reproduction of Recorded Media
23	Manufacture of Coke, Refined Petroleum Products and Nuclear Fuel
24	Manufacture of Chemicals and Products
25	Manufacture of Rubber and Plastic Products
26	Manufacture of Other Non-Metallic Mineral Products
27	Manufacture of Basic Metals
28	Manufacture of Fabricated Metal Products, Except Machinery and Equipments
29	Manufacture of Machinery and Equipments N.E.C
30	Manufacture of Office, Accounting and Computing Machinery
31	Manufacture of Electrical Machinery and Apparatus N.E.C.
32	Manufacture of Radio, Television and Communication Equipments and Apparatus
33	Manufacture of Medical, Precision and Optical Instruments, Watches and Clocks
34	Manufacture of Motor Vehicles, Trailers and Semi-Trailers
35	Manufacture of Other Transport Equipment
36	Manufacture of Furniture; Manufacturing N.E.C.
37	Recycling

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