

Inter-state Analysis of Manufacturing Performance in India: 2001-02 to 2013-14

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Regional industrial growth has been a key area of interest for both scholars and policymakers. The literature argues that uneven regional industrial growth aggravates the regional disparities in overall economic growth and development. This paper examines the state-level manufacturing performance of India by analyzing the growth in manufacturing employment, value-added and labor productivity in the 20 states during the period from 2001-02 to 2013-14. The paper finds that regional industrial disparities continue to persist but show a declining trend in the post 2007-08 period. This decline is due to the relatively improved performance of states such as Uttarakhand, Himachal Pradesh and Assam. The improvement appears to be an outcome of the effective implementation of industrial policies in these states.

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Introduction

Achieving balanced regional growth and development forms a policy objective of all countries in the world. Policymakers attempt to achieve a balanced economic growth of all regions by reducing the extent of inter-regional disparities. The problem of regional disparities is pervasive, and its extent differs in various economies (Dholakia, 1985). These disparities are significantly greater in the case of less-developed countries, and hence the need to balance growth with equity is more important in these countries. Moreover, the serious social and political implications of regional disparities in growth and development have forced governments to intervene and formulate economic policies (Dholakia, 1985; Papola, Maurya & Jena, 2011).

In the case of India, several studies have documented the existence of wide inter-state disparities in economic growth and development (e.g., Sachs, Bajpai & Ramiah, 2002; Cherodian & Thirlwall, 2015; Lolayekar & Mukhopadhyay, 2016). The regional disparities in industrial development may further widen the overall regional disparities in economic

growth and development. This widening may happen as there exists a high correlation between the economic growth of regions and industries (Rosenbloom & Sundstorm, 1997; Lall & Chakravorty, 2005). Therefore, it becomes imperative to examine the disparities in industrial growth and development at the regional level.

Economic theory does not provide clear-cut answers to the question of convergence or divergence in regional disparities in industrial growth and development. On the one hand, some scholars argue that regional disparities in industrial development may widen due to agglomeration externalities as some regions grow faster than the others (Papola et al., 2011). This may happen because of a close link between regional industrial growth and agglomeration of economic activities (Baldwin & Martin, 2004). Studies have established that agglomeration of industries in a region has a favorable effect on the growth of employment and productivity (e.g. Sveikauskas, 1975; Ciccone & Hall, 1996; Martin, Mayer & Mayneris, 2011). As a result, the regions with such industrial concentration of activities experience faster growth. On the other hand, regions, where such industrial agglomeration does not exist, may experience slower growth. Thus, regional divergence in industrial growth may result. Additionally, in the post-reform period, the decisions on industrial location are not guided by concerns of equity but rather by considerations of profit (Lall & Chakravorty, 2005; Gao, 2004). Regions with relatively better transport, in-

frastructure, and market access gain more than other regions (Lall & Chakravorty, 2005). Thus, regional industrial disparities may widen overtime.

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The process of convergence in regional industrial and economic growth may result when industrial activities shift to less developed regions (Papola et al., 2011). This shift may occur because the concentration of industrial activities in a region may give rise to agglomeration diseconomies in the form of high rents, congestion and pollution costs. These diseconomies may cause the industries to move to other regions which then experience faster growth. This movement of industries leads to convergence in industrial growth among regions. Several economists like Kuznets (1958), Williamson (1965) and Barro and Sala-i-Martin (1992) also provide support for regional convergence hypothesis in their empirical studies.

The examination of regional disparities in industrial development in India is relevant in the phase of high industrial growth witnessed in post-2000 period. This paper examines the growth of manufacturing employment, value-added and labor productivity across 20 major states during 2001-02 to 2013-14. The paper also attempts to explain the reasons for the inter-state variations in the manufacturing performance.

Related Studies

Empirical analysis of inter-state manufacturing growth performance has been the subject of great interest among scholars. These empirical studies differ with respect to the level of industrial disaggregation, methodologies, and time-period. Trivedi (2004) analyzes the growth of output, employment, and total factor productivity in the organized manufacturing sector for ten major states from 1980-81 to 2000-01. This study examines the performance of five industry groups and the whole manufacturing sector among the major states. The study finds a slowdown in the growth of TFP for majority of the industries in the post-reform period. The study also finds that the inter-state disparities in manufacturing performance have persisted during the study period. Trivedi (2004) finds that Bihar and West Bengal exhibit a dismal manufacturing performance whereas Andhra Pradesh, Madhya Pradesh, Rajasthan, and Karnataka show relatively better manufacturing performance. Mukherjee and Ray (2005) also arrive at a similar conclusion and argue that the economic reforms have not led to significant improvements in productivity growth at the regional level. They find that inter-state disparities continue to prevail in the post-reform period. On the other hand, Kumar (2006) finds a tendency for convergence in the TFP growth rates in the post-reform period. He argues that reforms have had a

Reforms have had a productivity-augmenting effect on the manufacturing sector.

productivity-augmenting effect on the manufacturing sector. Using data envelopment analysis, Deb and Ray (2014) analyze the TFP growth of selected two-digit industries at the state level during 1979-80 to 1997-98. They find improvement in productivity growth for most industries at the state level in post-reform period. Decomposition of TFP shows that technical progress was the driving factor for improvement in productivity. Thus, it is difficult to arrive at any unambiguous conclusion on the effects of economic reforms on the growth of manufacturing productivity. One of the important reasons for this conflicting evidence is the application of different methodologies used for estimating TFP growth (Trivedi et al., 2011; Kathuria, Raj & Sen, 2013).

Several studies in recent years have also examined the manufacturing performance using different approaches (e.g. Sharma & Khosla, 2013; Burange & Ranadive, 2014; Padhi, 2014; Jain, 2015). Sharma and Khosla (2013) explain the regional industrial performance from 1980-81 to 2009-10. Using the discriminant function approach, they find significant disparities in industrial performance. Papola et al. (2011) examine the impact of economic reforms on regional manufacturing performance from 1980-81 to 2008-09. The study finds declining inter-state disparities in the extent of industrialization from 1980-81 to 2008-09. However, the study also suggests wide-spread interstate differences in labor productivity in the organized sector. According to Papola et al. (2011) differences in aggregate labor productivity are due to the industrial composition in a state. Another recent study by Babu and Natarajan

(2013) analyzes the growth of labor productivity and TFP for 15 states from 1980-81 to 2007-08. They find that productivity improvements have taken place at a faster pace in the post-2000 period as compared to the 1990s. They also find a significant variation in labor productivity and TFP growth rates among the states. This study argues that infrastructure explains the observed differentials in productivity among the states. Burange and Ranadive (2014) examine in detail the inter-state manufacturing performance during the period 1998-99 to 2011-12 and find that a dominant share in manufacturing output and employment is accounted by major states like Maharashtra, Tamil Nadu, and Gujarat. They also find an improvement in the growth performance of smaller states like Uttarakhand, Himachal Pradesh, and Jammu & Kashmir. The paper finds that regional disparities in industrial development have declined in the study period.

The present study analyses the manufacturing performance for 20 major states from 2001-02 to 2013-14. These states account for about 96 percent manufacturing value added and 98 percent of the

manufacturing employment in 2013-14. The study also tests for convergence of labor productivity at the state level.

Data Sources & Measurement of Variables

In this paper, the growth of value added, employment and labor productivity in the manufacturing sector is calculated using the state-level data obtained from Annual Survey of Industries (ASI). ASI is a comprehensive database for the organized manufacturing sector and covers all the factories registered under the Factories Act. It provides data on value added, output, employment, fixed assets and other inputs used in the production process. Real value added is calculated by deflating the gross value added by wholesale price index (WPI) of manufactured products. Total number of persons engaged is taken as a measure of employment in the present study. Nominal data is deflated by taking deflators from the Office of Economic Adviser, Ministry of Commerce and Industry. Table 1 summarizes the measurement of key variables used in this study.

Table 1 Measurement of Key Variables

Variables	Measurement
Measure of output	Gross value added (Single deflation method)
Measure of labor input	Total number of persons engaged
Labor productivity	Real value added per person (VA/Employment)

Source: Author's compilation

Manufacturing Growth

The share of manufacturing sector in the GDP has been stagnant since last few years. At present, this share is around

16 percent. The National Manufacturing Policy targets to raise this share to 25 percent by 2022 (Department of Industrial Policy & Promotion, 2011). According to estimates by Goldar (2013), this

would require a growth of about of 15 percent per annum in real manufacturing output if GDP grows at about 10 percent per annum and a growth of about 13 percent if the GDP growth averages around 8 percent per annum. Moreover, the role of productivity growth assumes considerable importance in this regard. Faster regional growth in output and pro-

ductivity would help in achieving this high target rate of 25 percent. Therefore, it is interesting to examine the regional industrial performance of states. Before proceeding to the discussion of industrial performance at the state-level, we present an overview of manufacturing growth at the all-India level in terms of employment and real GDP.

Table 2 Growth Rate in Real Manufacturing GDP (per cent)

Time-Period	Total Manufacturing	Registered Manufacturing	Unregistered Manufacturing
2001-02 to 2007-08	9.18	10.06	7.58
2008-09 to 2012-13	9.18	11.18	4.79
2001-02 to 2012-13	8.68	9.97	6.09

Source: Computed based on data from National Accounts Statistics

Registered manufacturing sector has been the driver of growth in total manufacturing sector in India.

Table 2 shows the growth rate in real GDP in total, registered and unregistered manufacturing. Overall, during the period from 2001-02 to 2012-13, the growth in real GDP in registered manufacturing averaged about 9 percent and that in unregistered manufacturing averaged about 5.6 percent. It is clear that registered manufacturing sector has been the driver of growth in total manufacturing sector

in India. Table 3 shows the growth of employment (measured by number of workers and total persons engaged) in registered manufacturing at the all-India level. The employment in registered manufacturing witnessed a relatively faster growth from 2001-02 to 2007-08 as compared to from 2008-09 to 2013-14. Overall, the employment growth of workers and total persons engaged from 2001-02 to 2013-14 stood at 4.71 and 4.64 percent respectively. In contrast, Goldar (2013) finds that employment in unregistered manufacturing witnessed a decline, and it decelerated at the rate of -3 percent from 2005-06 to 2011-12. Therefore,

Table 3 Registered Manufacturing Employment Growth in India (per cent)

Year	Number of workers	Total persons engaged
Compound annual growth rate (%)		
2001-02 to 2007-08	5.46	5.07
2008-09 to 2013-14	3.42	3.46
2001-02 to 2013-14	4.71	4.64

Source: Author's calculation based on Annual Survey of Industries (ASI) data, CSO.

registered manufacturing employment growth was responsible for the growth of overall manufacturing employment growth during this period.

State Level Performance

This section analyses the performance of manufacturing sector at the state-level. The growth rates of state domestic product (GSDP) in manufacturing in different states are presented in Table 4. The figures show growth rates over the previous year. The average rate of growth of GSDP in manufacturing was the highest in the case of Uttarakhand at 24.44 per cent and lowest in the case of Assam at 1.92 percent. The main observations that emerge from this table are: (a) The

fastest growth rates have occurred in the smaller, neighboring north Indian states such as Uttarakhand, Himachal Pradesh and Punjab; (b) no linear relationship between a state's mineral base and growth of manufacturing GSDP can be deduced with mineral-rich Odisha among the top states and mineral-rich Chhattisgarh among the laggards and (c) the growth rate in the neighboring eastern states of Assam and West Bengal were among the lowest. The high growth rates of the neighboring north Indian states such as Uttarakhand, Himachal Pradesh and Punjab and the low growth rates of neighboring eastern states such as West Bengal and Assam indicate the effects of geography and state-specific policies on manufacturing growth.

Table 4 Growth Rate of GSDP in Manufacturing Sector (At constant 2004-05 prices) (percent)

States	2005-06	2007-08	2009-10	2011-12	2013-14	Average (2005-06 to 2013=14)	Rank
A.P.	5.21	7.44	2.55	16.55	3.48	8.73	8
Assam	-6.77	-6.52	22.1	3.83	3.60	2.10	20
Bihar	-6.28	24.68	-4.07	-9.2	3.64	6.65	13
Chhattisgarh	-18.39	12.65	-10.86	-7.62	5.31	3.39	19
Delhi	8.3	10.76	3.4	-1.04	1.68	4.77	18
Gujarat	18.47	7.87	25.67	2.78	N.A.	9.57	5
Haryana	7.66	8.44	10.6	2.62	2.52	6.22	14
H.P.	6.8	7.18	35.46	7.18	2.58	12.68	2
Jharkhand	3.21	0.84	7.26	17.27	8.39	8.98	7
Karnataka	3.61	6.54	-5.93	3.8	1.8	5.93	15
Kerala	2.08	17.76	0.33	4.34	N.A.	6.84	11
M.P.	7.16	4.54	6.75	3.89	-0.13	7.80	10
Maharashtra	24.92	8.7	7.04	-4.17	6.77	7.93	9
Odisha	2.53	33.04	-6.74	12.44	7.10	11.62	3
Punjab	10.12	20.19	12.04	3.08	3.08	9.78	4
Rajasthan	10.16	2.91	13.26	3.8	-0.61	6.78	12
Tamil Nadu	15.11	0.59	29.18	1.42	4.58	9.08	6
U.P.	5.33	9.33	15.36	-0.97	-0.73	5.54	17
Uttarakhand	46.66	46.05	24.43	10.59	3.10	22.07	1
W.B.	-2.32	12.98	11.83	-3.24	5.45	5.60	16
India	10.1	10.28	11.3	7.41	-0.41	7.45	

Source: Central Statistics Office, New Delhi.

Table 5 presents the share of states in manufacturing value added during the period from 2001-02 to 2013-14. The value-added data needs to be interpreted taking into account the relative size and population of the states. Historically, the highest share in manufacturing GVA is observed in states like Maharashtra, Gujarat and Tamil Nadu. These three states account for about 40 percent of total gross value added in manufacturing in 2001-02. The share

of these states has increased to about 47 percent in 2013-14, thereby indicating the regional concentration and dominance of manufacturing activities in these states.

Historically, the highest share in manufacturing GVA is observed in states like Maharashtra, Gujarat and Tamil Nadu.

Table 5 Share of States in Manufacturing Value Added and Employment

States	2001-02		2004-05		2007-08		2013-14	
	Share in VA	Share in Employment	Share in VA	Share in Employment	Share in VA	Share in Employment	Share in VA	Share in Employment
A.P.	5.94	11.39	6.26	10.77	6.60	9.75	5.59	9.13
Assam	0.55	1.46	1.39	1.44	0.73	1.30	0.90	3.69
Bihar	0.36	0.81	0.38	0.73	0.26	0.70	0.56	0.83
Chhattisgarh	1.63	1.23	2.61	1.30	2.32	1.51	2.42	1.23
Delhi	1.12	1.50	0.81	1.42	0.66	1.20	0.64	0.74
Gujarat	11.48	9.14	14.53	9.43	13.60	9.89	14.86	10.18
Haryana	3.87	3.79	4.57	4.28	3.85	4.98	3.92	4.65
H.P.	0.75	0.48	0.74	0.53	1.92	0.93	2.23	1.46
Jharkhand	2.06	2.07	5.79	1.84	4.07	1.49	2.22	1.39
Karnataka	5.44	6.30	7.40	6.55	6.90	6.89	6.26	6.82
Kerala	1.87	4.02	1.54	3.89	1.23	3.52	1.39	2.56
Maharashtra	16.84	14.84	19.73	13.70	22.56	12.85	22.21	13.75
M.P.	3.12	2.53	2.18	2.47	2.65	2.33	2.25	2.34
Odisha	1.31	1.52	2.44	1.76	2.88	1.80	2.77	1.93
Punjab	3.00	4.56	2.27	4.68	2.95	5.28	2.38	4.55
Rajasthan	2.88	3.01	2.64	3.21	2.69	3.59	3.03	3.46
T.N.	8.39	14.25	8.67	15.13	8.51	15.02	10.20	15.33
Uttarakhand	0.48	0.54	0.73	0.61	1.58	1.25	4.05	2.86
U.P.	5.93	6.65	5.77	6.96	5.64	7.20	5.41	6.70
W.B.	3.61	7.04	4.05	6.11	3.03	4.95	2.49	4.78

Source: Same as Table 3.

Note: All figures are in percentages; For comparability, Telangana has been merged with Andhra Pradesh in the data of 2013-14.

The lowest shares in manufacturing GVA are observed in the case of Bihar, Assam, Delhi, Kerala and

Chhattisgarh. Controlling for population, Bihar has the lowest amount of GVA. Other large states like U.P., M.P. and

West Bengal, have lower manufacturing GVA as compared to their population. Their manufacturing GVA, as percentage of overall Indian GVA, is declining which indicates increasing inequalities in manufacturing. Overall manufacturing in India seems concentrated in the western region with the eastern states (West Bengal, Bihar, Assam, and Odisha) lagging significantly behind in the all-India average GVA per person.

Manufacturing Employment

Shares of the states in manufacturing employment during the period from 2001-02 to 2013-14 are also shown in Table 5. Tamil Nadu, Maharashtra, Gujarat and Andhra Pradesh account for the dominant share of manufacturing employment. These four states account for about 48 percent of the total manufacturing employment in 2013-14. This highlights the concentration of manufacturing employment in a few major states. The lowest shares in manufacturing employment are observed in Bihar, Delhi, Assam, and Jharkhand. Overtime, states such as West Bengal, Kerala, Jharkhand, and Delhi have recorded a steep decline in their employment shares. Therefore, it is clear that

manufacturing activity is concentrated in few states that account for a significant share of value added and employment.

Tamil Nadu, Maharashtra, Gujarat and Andhra Pradesh account for the dominant share of manufacturing employment.

Table 5 also shows the nature of manufacturing activities in different states. If a state's share in value added exceeds its share in employment, that state is said to have a 'capital-intensive' manufacturing. If the reverse is true, the nature of manufacturing in a state is characterized as 'labor-intensive.' Out of the 20 states, 14 have a labor-intensive manufacturing process in 2001-02. This remained fairly unchanged in 2013-14, with 13 states exhibiting a labor-intensive manufacturing. Table 5 shows that the nature of manufacturing in Gujarat and Maharashtra is highly capital intensive for the entire period from 2001-02 to 2013-14. These states are joined by Karnataka, H.P. and Uttarakhand in the recent period. Highly labor intensive manufacturing is observed in A.P., T.N., Kerala, and West Bengal. This remains true for the entire study period with

Table 6 Nature of Manufacturing: Capital or Labor Intensive

Nature of Manufacturing	2001-02	2004-05	2007-08	2013-14
Highly K-intensive	GJ, MH,	GJ, MH, C'garh, Jharkhand	GJ, HP, MH, Jharkhand, C'garh	GJ, MH, Karnataka, U'khand, HP
Highly L-intensive	AP, KER, TN, WB	AP, KER, TN, PB, WB	AP, KER, TN, PB, WB, UP'	AP, KER, TN, WB, U.P.

Source: Based on Table 5.

some states like Punjab and U.P. joining this list for some of the years. Table 6 summarizes the nature of manufacturing in different states during the studied period.

Table 7 presents the compound annual growth rates of real value added and employment in registered manufacturing at the state-level. The entire time-period is divided into two parts: phase 1 (2001-02 to 2007-08) and phase 2 (2008-09 to 2013-14). Except for Delhi and Kerala, all other states have shown a faster

growth in real value added during phase 1. The slowdown in value added growth in the later period could be attributed to the financial recession which may have led to a decrease in aggregate demand. Overall, growth in value added has been driven by states such as Uttarakhand, Himachal Pradesh and Odisha. On the other hand, Delhi, West Bengal and Kerala have shown a relatively sub-optimal performance in value added growth. It should be noted that manufacturing activities in these three states are highly labor-intensive.

Table 7 State-wise Growth of Value added & Employment: 2001-02 to 2013-14

States/UTs	Growth of Value Added		Growth of Employment			
	2001-02 to 07-08	2008-09 to 13-14	2001-02 to 13-14	2001-02 to 07-08	2008-09 to 13-14	2001-02 to 13-14
A.P.	13.59	2.17	8.02	2.39	2.76	2.73
Assam	17.04	14.55	13.10	3.00	4.66	4.33
Bihar	5.83	4.88	12.60	2.61	8.96	4.92
Chhattisgarh	27.23	0.76	13.71	8.63	-0.93	4.65
Delhi	2.29	7.54	3.68	1.22	-4.05	-1.37
Gujarat	14.82	10.25	10.94	6.47	4.11	5.58
Haryana	11.55	5.21	8.70	10.13	0.01	6.43
H.P.	30.42	7.07	18.83	17.23	12.11	14.81
Jharkhand	25.07	2.51	9.28	-0.55	2.25	1.24
Karnataka	16.13	2.91	9.86	6.65	3.56	5.33
Kerala	4.11	5.61	5.91	2.28	-1.94	0.79
Maharashtra	17.21	7.02	11.11	2.57	4.60	3.97
M.P.	8.61	1.84	5.51	3.67	3.75	3.97
Odisha	27.34	2.74	15.59	8.05	3.47	6.73
Punjab	11.32	5.22	6.52	7.70	2.11	4.62
Rajasthan	10.34	4.47	9.01	8.21	5.61	5.86
T.N.	11.89	11.25	10.36	6.00	2.82	5.28
Uttarakhand	36.20	1.45	29.71	20.92	10.33	20.26
U.P.	10.71	8.23	7.74	6.48	4.02	4.70
W.B.	8.40	1.61	5.25	-0.91	3.06	1.32
India	11.63	6.07	8.58	5.07	3.46	4.64

Source: Same as Table 3.

Note: All figures are percentages. For comparability, Telangana has been merged with Andhra Pradesh in the data of 2013-14.

In contrast, the growth of manufacturing employment among the states shows a greater divergence. Like the growth of value added, employment growth in the majority of the states was relatively higher in phase 1 (2001-02 to 2007-08); high employment growth was observed in Uttarakhand, Himachal Pradesh, Haryana, and Odisha. Except in Jharkhand and West Bengal, all the states witnessed positive growth in employment during phase 1. During phase 2, high employment growth was observed in Uttarakhand, Himachal Pradesh, and Bihar. The poor performing states during phase 1 (Jharkhand and West Bengal) showed an improved performance with a positive employment growth. However, states such as Delhi, Haryana, Kerala, and Tamil Nadu recorded a decline in employment growth during phase 2 as compared to phase 1. Overall, the differential performance in terms of employment growth becomes clear with states such as Delhi, Kerala, West Bengal and Jharkhand showing a dismal growth in manufacturing employment during the period 2001-02 to 2013-14.

Labor Productivity Growth

Table 8 shows the growth of labor productivity across the states during 2001-02 to 2013-14. Clearly, the growth of labor productivity in majority of the

Faster growth in labor productivity observed in the case of Chhattisgarh, Jharkhand, and Assam was primarily due to a decline in employment growth.

states was faster in Phase 1 (2001-02 to 2007-08). In phase 1, states with the fastest growth in productivity were Jharkhand, Odisha, Chhattisgarh, Assam, and Uttarakhand. However, as Babu and Natarajan (2013) observed, these figures should be viewed together with the growth of employment in these states during phase 1. It becomes clear that faster growth in labor productivity observed in the case of Chhattisgarh, Jharkhand, and Assam was primarily due to a decline in employment growth. Keeping employment growth in the picture, the states which showed a dismal performance in labor productivity during Phase 1 were Delhi, Kerala and Bihar.

The growth of labor productivity deteriorated in Phase 2 with several states witnessing a negative growth.

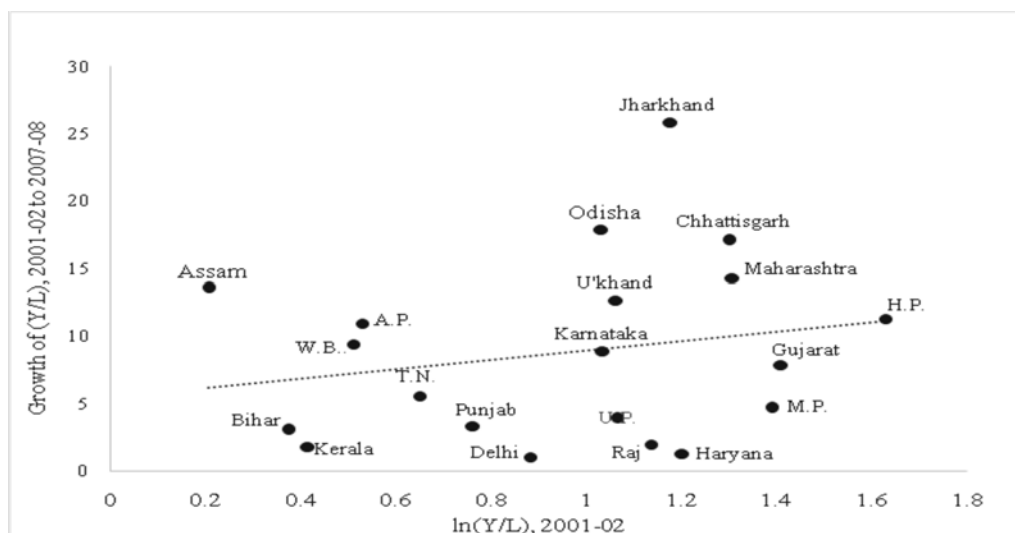
Following Babu and Natarajan (2013), we test for convergence of labor productivity across states during phase 1 (2001-02 to 2007-08) and phase 2 (2008-09 to 2013-14). Fig. 1 shows that there was a tendency for divergence in labor productivity. States, where the level of labor productivity was high in 2001-02, witnessed faster growth in productivity. This was the case for Jharkhand, Chhattisgarh, Odisha and Maharashtra. On the other hand, states such as Delhi, Kerala, West Bengal and Uttar Pradesh lagged behind in the growth of labor productivity. Fig. 2 shows the reversal of this trend and convergence in labor productivity across the states during phase 2 (2008-09 to 2013-14). This reversal appears to be on account of deceleration in states such as Uttarakhand, Himachal Pradesh, Bihar, and Madhya

Table 8 State-wise Growth in Labor Productivity: 2001-02 to 2013-14

States/UTs	2001-02 to 07-08	2008-09 to 13-14	2001-02 to 13-14
A.P.	10.94	-0.57	5.16
Assam	13.63	9.45	8.44
Bihar	3.14	-3.75	7.32
Chhattisgarh	17.13	1.70	8.66
Delhi	1.05	12.08	5.12
Gujarat	7.85	5.89	5.07
Haryana	1.29	5.20	2.13
H.P.	11.25	-4.50	3.50
Jharkhand	25.76	0.26	7.94
Karnataka	8.89	-0.63	4.30
Kerala	1.78	7.70	5.09
Maharashtra	14.27	2.32	6.86
M.P.	4.76	-1.84	1.49
Odisha	17.85	-0.71	8.30
Punjab	3.36	3.05	1.81
Rajasthan	1.97	-1.08	2.98
T.N.	5.56	8.20	4.83
Uttarakhand	12.64	-8.04	7.86
U.P.	3.98	4.05	2.90
W.B.	9.40	-1.41	3.88
India	6.24	2.53	3.77

Source: Same as Table 3

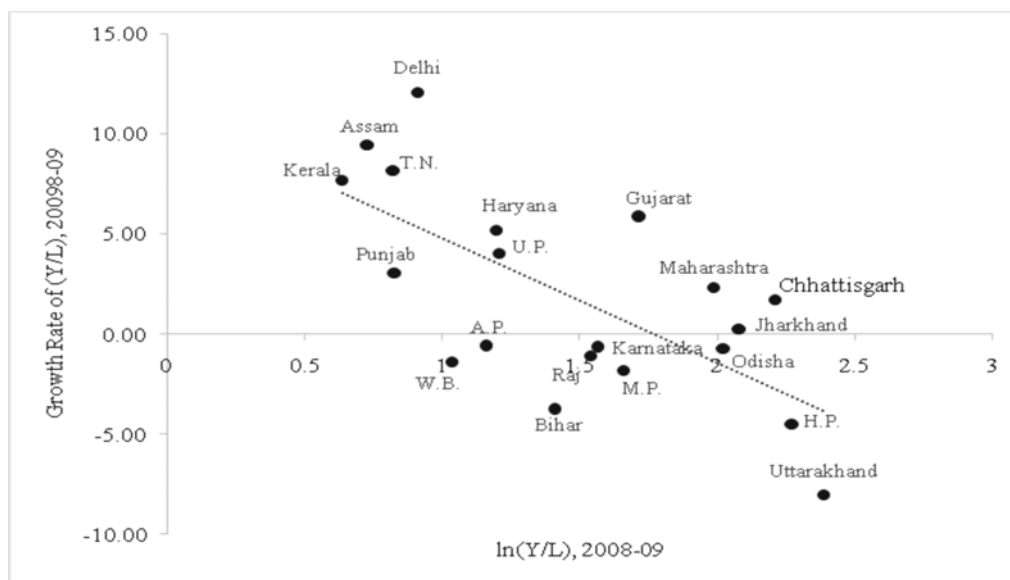
Note: All figures are in percentages. For comparability, Telangana has been merged with Andhra Pradesh

Fig.1 Testing Convergence of Labor Productivity: 2001-02 to 2007-08

Source: Same as Table 3.

Note: For comparability, Telangana has been merged with Andhra Pradesh in the data of 2013-14.

Fig.2 Testing Convergence of Labor Productivity: 2007-08 to 2013-14



Source: Same as Table 3.

Note: For comparability, Telangana has been merged with Andhra Pradesh in the data of 2013-14.

Pradesh. Faster growth in states such as Kerala, Delhi, Tamil Nadu, and Assam contributed to the convergence in labor productivity growth during phase 2.

Conclusion & Policy Implications

This paper examines the extent of inter-state disparities in manufacturing value-added, employment, and productivity growth. The major findings are: (a) industrialized states like Gujarat, Maharashtra, Tamil Nadu and Andhra Pradesh still occupy a dominant share in manufacturing employment and value added. This share has remained nearly stagnant during the study period, 2001-02 to 2013-14; (b) less industrialized states such as Uttarakhand, Himachal Pradesh, Chhattisgarh, Assam, and Bihar have experienced

relatively higher growth (more so in phase 1); (c) some of the less industrialized states such as West Bengal, Kerala, Uttar Pradesh have shown a dismal manufacturing performance; (d) regional disparities in manufacturing performance continue to persist, however, post 2007-08 period has witnessed a decline in these disparities.

The best performing states in terms of growth of employment, value added, and productivity are Uttarakhand and Himachal Pradesh. These two states share certain commonalities with respect to size, geographical location, and natural resources. Their relatively superior performance can be attributed to the “small base” of manufacturing sector in these states (Burange & Ranadive, 2014). The favorable industrial policies

in these states may also explain their improved performance. However, there is a similarity in the industrial policies across states in India. Some of these policies include tax concessions, granting subsidies, and setting up of industrial parks. Because of the uniformity of the policies across states, the differential manufacturing performance across states could be attributed to the effective implementation of policies rather than policies per se. Effective implementation of policies in a state depends on the ruling party's ideology, pro-activeness of the executive and overall political stability. Therefore, states need to create a conducive environment where policies could be implemented in an effective manner.

The differential manufacturing performance across states could be attributed to the effective implementation of policies rather than policies per se.

In this context, the role of business environment has an important role in influencing an economy's growth and development (Xu, 2011), and in particular, it has important implications for the manufacturing sector. A recently released report by World Bank ranks Gujarat as the most favorable state in terms of 'ease of doing business' (DIPP, 2015). It can be inferred from the consistent manufacturing performance of Gujarat over the studied period that investor-friendly policies have provided a boost to its manufacturing growth. In contrast, states such as Kerala, Delhi, and West Bengal have not performed well in these rankings. The

present study also finds that these states have shown relatively poor performance in terms of manufacturing employment and productivity growth. Therefore, states should effectively implement policies that enable an investor-friendly climate, and reduce administrative and legal complexities thereby enabling the lagging states to achieve higher manufacturing growth.

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