Inter-state Analysis of Manufacturing Industries in India: 2004-05 to 2019-20

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Since the development strategy adopted by India after Independence could not lead to the expected results, the country witnessed a reorientation of policies with mild doses of liberalization in the 1980s and a partial lifting of controls, finally giving way to a liberalized and privatized regime in 1991. However, in the post-liberalization era, notwithstanding India's higher economic growth performance, interstate industrial growth disparities persisted. The results of this study showed that either the customary port states or those where heavy dosages of subsidies and subventions have been doled out have performed better in terms of industrialization in comparison to their counterparts. This study offers vigorous inputs for industrial policies that can catalyze the achievement of balanced industrial growth.

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Introduction

At the time of Independence in 1947, the size of India's population was 340 million and nearly 75 percent of them were engaged in agriculture either as landless laborers or as small landowners with meager plots of land. GDP was merely Rs. 2.7 lakh crore and the literacy rate stood at almost 12 percent. Average life expectancy was 32 years and a large chunk of the population was engrossed in poverty. Policymakers in free India adopted the concept of Five Year plans as originated in the Soviet Union but altered it to suit India's mixed economy model by promoting the private sector.

Fundamentally, India focused on the strategy of rapid industrialization by having an economic structure with both private as well as state enterprises. It was anticipated that the growth of the industrial sector can not only lead to the expansion and progress of the agricultural sector, rather it may also help generate more employment, earn and save foreign exchange besides improve the standard of living of

the people. In other words, the growth of the industrial sector was seen as a means to solve the problems of economic and social progress in India. Scholars like Myrdal (1956), Hoffmann (1958), Bryce (1960), Kuznets (1966) and Kaldor (1978) in their empirical studies established a positive relationship between the industrial development and economic growth of a nation.

The growth of the industry was purposely given precedence over agriculture since policymakers opined that progression through the agricultural course cannot easily eject the economy out of backwardness. In the industrial sector too, state-owned enterprises were given priority in order to achieve the twin objectives of socialistic pattern of society and growth with equity. India's industrial policies till the 1970s were oriented towards the objectives of achieving a higher growth rate, self-reliance, lesser dependence on foreign countries, balanced regional development, reducing inequalities and weeding out poverty. However, when the state-dominant industrialization growth could not yield expected results and largely remained unsuccessful in accelerating the pace of capital accumulation, the policymakers moved to the objective of growth with redistribution (Weiner, 1986). Hence, the 1980s saw a reorientation of our policies with mild doses of liberalization focusing on the partial lifting of controls. The strategy clicked as industrial growth remained high in the 1980s, particularly after 1985 (9.2 percent between 1988 and 1991) which motivated the policymakers to look beyond the inward-looking models of development (Nagaraj, 2003; Panagariya, 2004). Subsequently, in 1991, liberalization, privatization and globalization turned out to be the new principles replacing the outdated socialistic and protectionist standards, of course, under compelling economic circumstances since India was grappling with a foreign exchange crisis. In addition to this, the waves of liberalization in Asian economies like Malaysia, Indonesia and the Philippines etc. along with the breakup of the communist Soviet Union too led to the belief that the time was ripe to move away from centralized planning and import-substituting policies. The so-called License Raj, Inspector Raj, price control, restrictive entry of firms and heavy import duties were subverted to give way to a less restraining, hassle-free and decontrolled regime. Panagariya (2004) brought out that the average growth (5.9 percent) in the first decade (1992-93 to 2002-03) since the commencement of economic reforms, superseded the average growth (5.3 percent) in the immediate decade before reforms (1981-82 to 1990-91). World Bank database (https://www.macrotrends.net/countries/IND/india/economic-growth-rate accessed on 15 November 2023) suggests that India's GDP growth rate between the years 2001 to 2010

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(6.75 percent) and 2011 to 2019 (6.43 percent) also remained high. However, the growth at the level of the economy as a whole does not connote homogenous growth in all the regions. In other words, in an economy like India which is a union of states, there can be growth disparities across states. These disparities may range from economic, technical and social to cultural, too. The present study intends to find out the inter-state variations in manufacturing industries in India. Specifically, the objectives of this study are to examine the performance of manufacturing industries in selected states of India and to find out the nature of manufacturing industries in selected states of India

Database & Methodology

For the purpose of this study, secondary data was collected from various issues of the Annual Survey of Industries (ASI) published by the Central Statistical Organization, Ministry of Planning, Department of Statistics, Government of India for the years 2004-05 to 2019-20 i.e. for fifteen years when there have been stable governments with clear industrial policies continued to rule the state, before the onslaught of Covid 19. Initially, the assessment of the shares of different states in the manufacturing industries of India in terms of output, net value added, number of factories and number of workers were computed for three time periods i.e. 2004-05 to 2009-10, 2010-11 to 2019-20 and overall 2004-05 to 2019-20. To study the growth of manufacturing industries in different states, the compound growth rate of each of the selected indicators i.e. output, net value added, number of factories and number of workers have been calculated for the time periods selected. Trends in growth are studied by computing the compound growth rate through the method of least squares, using the following formula

$$Log\ Y = Log\ a \quad + \quad (Log\ b)t$$

For proper comparison, values are deflated with the help of appropriate price deflators (1979-80 to 1981-82 = 100). To study the performance of manufacturing industries in India, the structural and technical ratios have been computed. These ratios pertained to net value added per unit of invested capital, profit per unit of invested capital, net value added per worker and workers per factory.

To understand the nature of the growth of manufacturing industries, the Cobb-Douglas production function has been computed the formula of which has been:

$$Y = A K^{\alpha} L^{\beta}\ e^{u}$$

Where Y is output, L is labor, K is capital, and u is the stochastic term.

The coefficient of determination between Log Y and the joint effects of Log L and Log K has been computed and to test the overall significance, the F-test is used. To test the significance of output elasticities of labor (α) and capital (β), the t-test is applied.

Table 1 Shares of Different States in India's Industrial Sector

(percent)

States Year	Output			Net Value Added			Factories			Workers		
	2004-05	2010-11	2019-20	2004-05	2010-11	2019-20	2004-05	2010-11	2019-20	2004-05	2010-11	2019-20
Andhra Pradesh	6.12	7.35	4.46	6.13	8.20	3.13	11.42	12.42	6.87	11.88	10.51	4.15
Assam	1.32	0.91	0.86	1.43	0.95	1.25	1.25	1.32	2.11	1.53	1.43	1.68
Bihar	0.73	0.77	0.85	0.35	0.63	0.50	1.23	1.33	1.39	0.78	0.92	0.83
Chhattisgarh	1.66	1.70	1.84	3.35	1.83	1.59	0.98	1.11	1.58	1.18	1.36	1.42
Delhi	1.05	1.04	0.52	0.94	0.83	0.48	2.31	1.85	1.32	1.23	0.80	0.55
Gujarat	15.59	17.25	18.14	13.86	12.70	15.69	9.98	10.05	11.55	9.20	10.02	12.17
Haryana	4.53	4.60	6.64	4.50	3.50	5.43	3.18	2.82	4.56	4.07	4.32	6.17
Himachal Pradesh	0.55	1.54	1.30	0.84	2.58	2.34	0.48	1.04	1.09	0.51	1.21	1.28
Jammu & Kashmir	0.24	0.41	0.33	0.22	0.39	0.54	0.31	0.38	0.41	0.37	0.44	0.40
Jharkhand	2.25	2.08	1.53	6.46	2.77	1.82	1.18	1.18	1.17	1.78	1.30	1.30
Karnataka	6.51	6.11	6.20	7.90	5.80	7.25	5.57	5.07	5.75	6.53	6.15	6.43
Kerala	2.16	1.75	2.39	1.56	1.24	1.54	4.03	3.27	3.16	4.16	3.31	2.00
Madhya Pradesh	2.81	2.48	3.22	2.14	2.48	2.72	2.22	1.99	1.94	2.48	2.34	2.42
Maharashtra	21.46	16.79	13.80	19.74	21.25	14.67	13.87	13.18	10.39	12.34	12.15	11.14
Odisha	1.39	1.97	3.08	2.33	2.40	2.25	1.28	1.20	1.25	1.77	2.32	1.79
Punjab	3.17	3.18	2.38	2.23	2.89	2.40	5.56	6.03	5.31	4.69	4.90	4.05
Rajasthan	2.68	3.21	3.67	2.53	2.45	4.23	4.21	3.86	3.93	3.15	3.41	3.64
Tamil Nadu	9.54	10.10	10.32	8.30	10.22	10.91	15.44	17.41	15.76	15.86	16.08	16.92
Telangana	-	-	2.84	-	-	4.06	-	-	6.20	-	-	5.03
Uttar Pradesh	6.53	6.25	6.26	5.50	6.30	5.97	7.03	6.50	6.57	6.86	6.33	6.79
Uttarakhand	0.60	2.26	2.68	0.75	3.74	4.01	0.55	1.29	1.20	0.54	2.36	2.63
West Bengal	4.33	4.41	3.98	4.06	2.96	3.07	4.48	3.89	3.91	6.33	5.19	4.44
Others	4.80	3.84	2.71	4.88	3.90	4.14	3.44	2.81	2.58	2.75	3.16	2.78
All India	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Calculated from supplement to Annual Survey of Industries, various years

Industries in Indian States

Tables 1 and 2 show the dominance of different states in India's industrial sector and their growth over time respectively. To be precise, Table 1 demonstrates the shares of different states in India's industrial sector in output, net value added, number of factories and workers for three time periods, viz. 2004-05, 2010-11 and 2019-20. It can be observed that in terms of output, top three states that dominated India's.

In terms of output, top three states that dominated India's Industrial sector turned out to be Gujarat, Maharashtra and Tamil Nadu in all the three time periods.

industrial sector turned out to be Gujarat, Maharashtra and Tamil Nadu in all the three time periods. The collective share of these three states for the years 2004-05, 2010-11 and 2019-20 remained 46.59 percent, 44.14 percent and 42.26 percent respectively. It indicates the declining dominance (output-wise) of these states over the period. Diagonally opposite is the case of the bottom three states whose combined share in terms of output for the years 2004-05, 2010-11 and 2019-20 remained 1.39 percent, 2.09 percent and 1.7 percent respectively. Uttarakhand, Himachal Pradesh and Jammu & Kashmir remained the laggard states in 2004-05. However, for the years 2010-11 and 2019-20 where Jammu & Kashmir continued to be the sluggishly performing state in terms of output, with Assam, Delhi and Bihar. Uttarakhand and Himachal Pradesh improved their position thanks to the tax holiday scheme, brought in by the Vajpayee government in 2002 to boost the sagging industrial activity in the hill states.

In the context of the dominance of the states in terms of net value added, Maharashtra, Gujarat and Tamil Nadu again have kept their ascendency during the period. The combined shares of these three states for the years 2004-05, 2010-11 and 2019-20 remained at 41.9 percent, 44.17 percent and 41.27 percent respectively. Karnataka and Uttar Pradesh remained the other two promising states in net value addition in the industrial sector at the all-India level. In the context of poorly performing states in terms of net value added, it is Jammu & Kashmir, Bihar and Delhi in all three periods with a collective share of 1.32 percent, 1.85 percent and 1.52 percent for the years 2004-05, 2010-11 and 2019-20 respectively. As far as the dominance of states in the number of factories is concerned, the table shows that for the years 2004-05 and 2010-11, Tamil Nadu, Maharashtra and Andhra Pradesh remained at the top with a collective share of 40.73 percent and 43.01 percent respectively. The combined share of the bottom three states for the years 2004-05, 2010-11 and 2019-20 remained 1.34 percent, 2.53 percent and 2.67 percent respectively.

In the case of dominance of states in terms of the number of workers, Tamil Nadu, Maharashtra and Andhra Pradesh remained at the top for the years 2004-05 and 2010-11 with a collective share

Table 2 Growth of Industries in Different States of India

(percent)

States Year	Output			Net Value Added			Factories			Workers		
	2004-05 to 2019-20	2004-05 to 2009-10	2010-11 to 2019-20	2004-05 to 2019-20	2004-05 to 2009-10	2010-11 to 2019-20	2004-05 to 2019-20	2004-05 to 2009-10	2010-11 to 2019-20	2004-05 to 2019-20	2004-05 to 2009-10	2010-11 to 2019-20
Andhra Pradesh	4.62	3.16	-4.77	1.43	4.40	-10.07	0.52	1.62	-4.31	-2.28	3.10	-6.32
Assam	3.92	-2.19	-0.38	4.91	-5.41	1.84	7.19	4.66	6.40	4.94	3.68	4.49
Bihar	7.71	3.32	1.07	8.12	5.03	-3.24	4.58	2.29	2.03	4.77	6.12	1.77
Chhattisgarh	7.40	4.24	0.91	0.96	-3.59	-2.35	6.88	6.65	5.14	5.57	6.90	3.25
Delhi	2.14	-0.33	-6.61	1.41	-3.38	-6.39	0.20	-1.53	-1.83	-0.78	0.71	-1.02
Gujarat	7.73	4.43	0.61	6.60	4.68	1.14	4.73	2.28	2.96	6.20	6.60	4.83
Haryana	9.29	3.53	3.84	7.03	3.91	3.46	6.14	1.12	6.55	7.11	9.52	6.55
Himachal Pradesh	12.65	19.23	-1.51	12.77	22.10	-1.96	9.24	15.43	1.97	10.51	19.75	3.37
Jammu & Kashmir	9.04	9.83	-1.82	11.86	15.74	2.22	5.65	6.71	2.54	4.77	10.31	1.64
Jharkhand	4.17	-1.02	-2.92	-2.27	-11.71	-5.06	3.70	3.99	1.39	2.31	-1.86	2.80
Karnataka	6.39	2.03	0.25	5.21	-1.01	1.25	3.97	1.97	2.83	4.25	5.19	3.26
Kerala	7.39	14.60	3.26	5.66	-1.17	1.17	2.21	1.22	1.20	-0.30	2.34	-2.23
Madhya Pradesh	7.63	-0.43	2.77	7.38	6.46	-0.05	2.88	2.56	1.25	4.18	4.17	3.12
Maharashtra	3.81	-1.47	-1.84	3.83	3.22	-4.58	1.91	0.47	-0.85	3.69	4.53	1.92
Odisha	12.14	6.80	4.68	5.55	4.31	-1.64	3.60	2.70	1.96	4.43	8.25	0.18
Punjab	4.81	2.60	-2.76	6.24	4.94	-2.82	3.48	5.19	0.25	3.40	6.59	0.87
Rajasthan	8.81	4.11	1.45	9.22	8.39	4.59	3.33	2.89	1.72	5.31	6.80	3.47
Tamil Nadu	7.24	3.65	0.33	7.60	6.31	-0.33	3.90	4.10	0.53	4.78	6.67	3.33
Telangana	-1.88	-	-	-1.01	-	-	1.41	-	-	1.43	-	-
Uttar Pradesh	6.44	1.42	0.13	6.32	2.21	-1.51	3.33	2.35	1.64	4.29	4.53	3.54
Uttarakhand	17.14	26.74	1.81	17.47	29.82	-0.29	8.96	20.86	0.81	15.27	32.22	3.91
West Bengal	6.15	2.23	-0.91	3.95	-0.61	-0.62	2.90	1.86	1.60	2.07	1.84	1.21
Others	6.71	2.72	0.11	1.43	4.40	-10.07	3.77	2.58	1.54	4.36	5.61	2.81
All India	2.96	0.14	-3.33	4.91	-5.41	1.84	1.93	0.28	0.69	4.44	9.02	1.51

Source: Calculated from Supplement to Annual Survey of Industries, various years

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of 40.08 percent and 38.74 percent. In the year 2019-20, Gujarat replaced Andhra Pradesh in the list of top three employment providers in India in the manufacturing sector. The collective share of the top three states in employment remained at 40.23 percent in the year 2019-20. In the context of poorly performing states in terms of the number of workers, Jammu & Kashmir, Bihar and Delhi performed very low. The collective share of these three performing states remained 1.42 percent, 2.16 percent and 1.78 percent for the years 2004-05, 2010-11 and 2019-20 respectively. Summarily, port states i.e. Tamil Nadu, Gujarat, Maharashtra and Andhra Pradesh have dominated India's industrial sector, whereas, Jammu and Kashmir, Bihar, and Delhi are the laggard states in industrialization. A state performing well in terms of dominance in one or all the selected parameters may not necessarily be amongst the fastest-growing states of India. Hence to assess the fastest growing states of India in terms of selected parameters, compound growth rates have been computed and results are shown in Table 2.

It is evident that in the case of output for the period 2004-05 to 2019-20, the five fastest-growing states turned out to be Uttarakhand, Himachal Pradesh, Odisha, Haryana and Jammu & Kashmir. Similarly for the period 2004-05 to 2009-10, Uttarakhand, Himachal Pradesh, Kerala, Jammu & Kashmir and Odisha remained the top five fastest-growing states. For the period 2010-11 to 2019-20, Odisha, Haryana, Kerala, Madhya Pradesh and Uttarakhand remained the fastest-growing states. When these top fastest-growing states in terms of output are compared with the dominating states identified in Table 1, hardly any consistency amongst the states could be established. Similarly, a commonality was tried to be established between the states where growth remained sluggish in terms of output. Primarily, Delhi, Maharashtra and Jharkhand witnessed slow growth in all the periods framed for this study. Assam and Andhra Pradesh too remained the slow-progressing states in terms of output. When this set of slow-growing states is compared with the less dominating states identified in Table 1, Delhi and Assam turned out to be common.

The five fastest-growing states in terms of value addition in the manufacturing sector of India for the years 2004-05 to 2019-20 remained Uttarakhand, Himachal Pradesh, Jammu & Kashmir, Rajasthan and Bihar. Jammu & Kashmir and Rajasthan also figured amongst top five fastest-growing states in terms of net value added during 2004-05 to 2009-10 and 2010-11 to 2019-20. A comparison of the fastest-growing states in net value addition with the dominant states shows no correlation between the states. In the case of slow-growing states, Jharkhand and Delhi performed sluggishly in all the periods. When a comparison of laggard

states in terms of growth is made in dominance, Delhi turns out to be common.

It is evident that the growth of factories between the years 2004-05 and 2009-10 took place in those states that either provided low-cost land, subsidized electricity, or tax concessions to the industrialists. Precisely, Himachal Pradesh, Uttarakhand and Chhattisgarh turned out to be the beneficiaries owing to the doling out of sops to the industrialists. However, Himachal Pradesh and Uttarakhand failed to keep the momentum going between the years 2010-11 and 2019-20 and got replaced from the list of top three states with the fastest growth of factories in the manufacturing sector in India. Top slots were filled by Haryana and Assam besides Chhattisgarh. Interestingly, Haryana which used to be amongst the slowest growing states in the number of factories between the years 2004-05 and 2009-10 transformed itself to be amongst the fastest growing states between 2010-11 and 2019-20. The slowest growth was recorded by Delhi, Maharashtra besides, Andhra Pradesh and Kerala. Although, Maharashtra and Andhra Pradesh figured among the dominating states in terms of the number of factories, yet, the slow growth of factories in the recent past has altered the status of these two states into the laggard ones.

As far as employment is concerned, it is apparent that the states experiencing high growth of factories also employed more workers. Uttarakhand, Himachal Pradesh, Haryana, Assam and Gujarat observed the fastest growth of factories as well as workers. The states that could not perform well in terms of employment of workers included Andhra Pradesh, Delhi, and Kerala which witnessed slow growth of workers as well as factories. On the whole, Uttarakhand, Haryana and Himachal Pradesh witnessed the fastest growth of industries whereas Delhi, Jharkhand and Kerala observed slow industrial growth during the period studied.

Uttarakhand, Himachal Pradesh, Haryana, Assam and Gujarat observed the fastest growth of factories as well as workers.

A sound industrial performance is a prerequisite for sustaining the cutthroat competition in this competitive era. Table 3 strives to identify both the industrially strong states and those that need improvement with the help of structural and technical ratios. Since there have been continuous changes taking place in the slots of different states in different years, hence no firm results could be deduced. In other words, the ranking of the states continued to change in different years that failed to offer any straightforward inferences. In terms of net value added per unit of invested capital top five states that performed well in the year 2004-05 were Jharkhand, Chhattisgarh, Delhi, Haryana and Jammu and Kashmir. For the year 2010-11 top five states were Bihar, Uttarakhand, Delhi, Jammu and Kashmir and Maharashtra. Similarly, Uttarakhand, Jammu and Kashmir, Himachal Pradesh, Delhi and Assam were

Table 3 Structural Ratios of Industries in Different States

(in percent)

States Year	Net Value Added per unit of invested capital			Profit per unit of invested capital			Net Value Added per worker			Workers per factory		
	2004-05	2010-11	2019-20	2004-05	2010-11	2019-20	2004-05	2010-11	2019-20	2004-05	2010-11	2019-20
Andhra Pradesh	0.31	0.26	0.14	0.29	0.24	0.12	2.03	5.55	7.01	50.35	39.58	32.01
Assam	0.36	0.38	0.36	0.36	0.35	0.33	3.67	4.72	6.94	59.22	50.55	42.18
Bihar	0.15	0.50	0.26	0.15	0.45	0.23	1.77	4.85	5.56	30.72	32.44	31.62
Chhattisgarh	0.54	0.27	0.14	0.51	0.25	0.13	11.17	9.54	10.39	58.01	57.17	47.68
Delhi	0.46	0.48	0.41	0.35	0.35	0.20	3.00	7.44	8.09	25.64	20.16	21.89
Gujarat	0.29	0.22	0.20	0.31	0.23	0.18	5.93	9.02	11.97	44.61	46.61	55.82
Haryana	0.44	0.28	0.31	0.41	0.24	0.22	4.35	5.77	8.17	61.89	71.62	71.65
Himachal Pradesh	0.29	0.39	0.46	0.31	0.39	0.41	6.47	15.20	17.01	51.68	54.22	62.13
Jammu & Kashmir	0.44	0.45	0.54	0.35	0.42	0.47	2.35	6.32	12.70	57.92	55.34	50.66
Jharkhand	0.80	0.22	0.18	0.76	0.21	0.16	14.28	15.20	13.04	73.10	51.28	58.87
Karnataka	0.38	0.27	0.28	0.36	0.23	0.22	4.76	6.71	10.47	56.77	56.80	59.27
Kerala	0.32	0.32	0.24	0.25	0.23	0.18	1.48	2.67	7.13	49.97	47.37	33.53
Madhya Pradesh	0.23	0.25	0.14	0.21	0.22	0.14	3.39	7.52	10.45	54.11	55.12	66.14
Maharashtra	0.36	0.42	0.29	0.33	0.38	0.21	6.30	12.44	12.23	43.07	43.13	56.81
Odisha	0.30	0.12	0.08	0.31	0.12	0.09	5.18	7.38	11.68	66.73	90.46	75.82
Punjab	0.30	0.32	0.30	0.25	0.27	0.21	1.87	4.20	5.49	40.90	37.98	40.40
Rajasthan	0.31	0.23	0.29	0.30	0.22	0.25	3.17	5.10	10.79	36.17	41.34	49.03
Tamil Nadu	0.28	0.31	0.29	0.25	0.26	0.21	2.06	4.52	5.99	49.72	43.22	56.88
Telangana	-	-	0.34	-	-	0.27	-	-	7.50	-	-	42.98
Uttar Pradesh	0.28	0.36	0.29	0.26	0.32	0.22	3.16	7.08	8.17	47.28	45.54	54.80
Uttarakhand	0.37	0.50	0.58	0.32	0.48	0.51	5.51	11.26	14.17	47.01	85.46	115.65
West Bengal	0.29	0.22	0.19	0.24	0.18	0.15	2.52	4.06	6.42	68.47	62.44	60.09
Others	0.50	0.41	0.46	0.49	0.38	0.40	7.01	8.80	13.84	38.65	52.60	57.03
All India	0.34	0.29	0.24	0.32	0.27	0.20	3.94	7.12	9.29	48.40	46.78	52.97

Source: Calculated from suppliment to Annual Survey of Industries, various years

the top performing states in 2019-20. Overall the states that performed well in all the three time periods turned out to be Uttarakhand, Delhi and Jammu and Kashmir. Similarly, we have arrived at the states that performed dismally in the three time periods and these states remained Odisha, Madhya Pradesh and Jharkhand. For the profit per unit of invested capital, top states that figured well in all the periods remained Uttarakhand, Jammu and Kashmir, Himachal Pradesh and Assam. The states that could not perform well in terms of profit per unit of invested capital remained Madhya Pradesh, West Bengal and Odisha. As far as the net value added per worker is concerned, Himachal Pradesh, Jharkhand, Uttarakhand, Chhattisgarh and Maharashtra were the leading states in all three periods whereas Punjab, West Bengal, Kerala, Assam and Tamil Nadu could not augur well. Odisha, Uttarakhand, Haryana and West Bengal remained the promising states in terms of employment providence as workers per factory remained highest in these states. On the contrary, Delhi, Bihar, Punjab, Andhra Pradesh and Rajasthan had the lowest number of workers per factory. Overall, it can be deduced that the hill states Uttarakhand, Jammu and Kashmir, Himachal Pradesh and Assam have outperformed their counterparts in terms of structural ratios studied.

There are increasing returns to scale existing in the manufacturing sector in India.

To estimate the capital and labor-intensive nature of the manufacturing industries, economies of scale have been computed with the help of the Cobb-Douglas production function. The estimates of á and â obtained are presented in Table 4. It is evident from the table that, overall, there are increasing returns to scale existing in the manufacturing sector in India as the sum of á and â (1.138) turns out to be more than 1. Further, the elasticity of capital is observed to be higher than that of labor input (0.768 Vs 0.370). Also, the elasticity of capital is highly significant whereas the elasticity of labor is found to be statistically less significant. This clearly suggests that the manufacturing industries in India are adopting capital-intensive techniques of production. Coefficient of determination is found to be significant indicating that about 99 percent of the variation in output is explained by labor and capital taken together. The returns to scale for each state is worked out in the same way. The states where labor productivity is high include Assam, Bihar, Chhattisgarh, Himachal Pradesh, Jammu and Kashmir, Kerala and Uttarakhand. In the states of Haryana, Gujarat and Delhi labor productivity is found to be negative, whereas in Andhra Pradesh, Uttar Pradesh and Punjab it remained low. It is pertinent to mention here that low labor productivity seems to have resulted in decreasing returns to scale in these states, except Punjab. Incidentally, in Uttar Pradesh and Gujarat, capital productivity alone yielded increasing returns to scale. Capital productivity remained negative in Uttarakhand; whereas in Assam, Bihar and Chhattisgarh, it remained very low. However, despite low capital productivity in these states, returns to scale remained more than one as high labor productivity

Table 4 Estimates of Cobb Douglas Production Function

State	Log K	Log L	R^2	F
Andhra Pradesh	0.72*(.054)	0.18**(.082)	0.93	92.98
Assam	.006(.206)	1.69*(.455)	0.95	133.74
Bihar	.164(.138)	1.51*(.288)	0.93	80.95
Chhattisgarh	.268*(.079)	1.53*(.255)	0.97	272.82
Delhi	.903*(.098)	-.117(.562)	0.93	87.79
Gujarat	1.01*(.234)	-.289(.558)	0.96	194.29
Haryana	.812*(.060)	-.409*(.127)	0.99	1450.60
Himachal Pradesh	.316(.198)	1.155*(.292)	0.98	493.88
Jammu & Kashmir	.443*(.131)	1.127*(.406)	0.97	244.18
Jharkhand	.618*(.056)	.473***(.251)	0.97	243.10
Karnataka	.716*(.070)	.630*(.202)	0.99	1247.69
Kerala	.985*(.111)	1.600*(.681)	0.87	45.06
Madhya Pradesh	.341*(.083)	1.580*(.318)	0.98	347.49
Maharashtra	.640*(.104)	.683*(.274)	0.99	984.51
Odisha	.677*(.173)	.282*(.656)	0.93	86.54
Punjab	.879*(.074)	.184(.228)	0.99	796.13
Rajasthan	.862*(.161)	.218(.451)	0.99	744.43
Tamil Nadu	.867*(.102)	.333(.267)	0.99	542.20
Telangana	.889*(.097)	.537(.322)	0.97	115.37
Uttar Pradesh	1.033*(.107)	.139(.273)	0.99	773.11
Uttarakhand	-.216(.448)	1.712*(.561)	0.98	441.32
West Bengal	.851*(.084)	.472(.423)	0.98	435.14
All India	.768*(.103)	.370(.317)	0.99	1340.01

*Statistical significance at1% level . **Statistical significance at 5% level. ***Statistical significance at 10% level

was able to offset the impact of low capital productivity on output. On the whole, the existence of high returns to scale signifies good prospects for the progression of industries in most of the states. Coefficient of determination in majority of the cases is found to be highly significant which indicates that the variation in output explained by labor and capital taken together remained high.

Summary & Conclusions

After Independence, our policy-makers adopted the approach of Five Year plans as originated in the Soviet Union, but altered it to suit India's mixed economy model by adding the private sector. The growth of the industrial sector, particularly the state-oriented, was specifically emphasized as a solution to the problems of economic and social progress in India. Subsequently, liberalization, privatization and globalization opened up new vistas for the development of industries away from the public sector. Different economists viewed the growth of industries in the pre and post-reform era from their own perspectives, but all of them consented that disparities in terms of industrialization have existed for long in the Indian states. This study has traced the inter-state variations in the growth of manufacturing industries in

India during the period 2004-05 to 2019-20. In the context of the dominance of industries, the results showed that customary port states i.e. Tamil Nadu, Gujarat, Maharashtra and Andhra Pradesh have dominated India's industrial sector, whereas, Jammu and Kashmir, Bihar, and Delhi remained the laggards. In terms of the fastest-growing number of industries, Uttarakhand, Haryana and Himachal Pradesh stole the show, whereas Delhi, Jharkhand and Kerala observed slow growth. The hill states viz. Uttarakhand, Jammu and Kashmir, Himachal Pradesh and Assam have outperformed their counterparts in terms of structural ratios computed. The elasticity of capital remained highly significant which suggests that manufacturing industries in India are adopting capital-intensive techniques of production. On the whole, increasing returns to scale is found to exist in the manufacturing sector in India which offers good prospects for the development of the sector that can eventually render 'Make in India' dream come true.

References

Bryce, Murray. D. (1960), Industrial Development: A Guide for Accelerating Economic Growth, McGraw Hill. New York

Hoffmann, W. G. (1958), The Growth of Industrial Economies, Oxford University Press. Manchester, United Kingdom

Kaldor, N. (1970), "The Case for Regional Policies", *Scottish Journal of Political Economy,* XVII (3) November.

Kuznets, S. (1966), Modern Economic Growth, Yale University Press, New Haven.

Myrdal, Gunnar. (1956), An International Economy: Problems and Prospects, Harper and Brothers, New York

Nagaraj, R. (2003), "Industrial Policy and Performance Since 1980: Which Way Now"? *Economic and Political Weekly*, 38(35).

Panagariya, A. (2004a), *India in the 1980s and 1990s: A Triumph of Reforms,* University Library of Munich, Germany.

Panagariya, A. (2004b)*, India's Trade Reform: Progress, Impact and Future Strategy.* Retrieved October 9, 2023, from https://www.imf.org/external/pubs/ft/wp/2004/wp0443.pdf

Weiner, M. (1986), "The Political Economy of Industrial Growth in India", *World Politics*, 38(4).