



University of Mumbai

DEPARTMENT OF ECONOMICS

CENTRE OF ADVANCED STUDY IN ECONOMICS

GROWTH OF EMPLOYMENT AND OUTPUT OF ORGANISED MANUFACTURING SECTOR IN INDIA: AN INTERSTATE ANALYSIS

BY

L. G. Burange

WORKING PAPER UDE(CAS) 3(3)/2002

OCTOBER 2002

**DEPARTMENT OF ECONOMICS
UNIVERSITY OF MUMBAI**

Mumbai - 400 098

CAS WORKING PAPER SERIES

Documentation Sheet

Title

**GROWTH OF EMPLOYMENT AND OUTPUT OF ORGANISED
MANUFACTURING SECTOR IN INDIA:
AN INTERSTATE ANALYSIS**

Author(s)

L. G. Burange

Centre of Advanced Study

External Participation

WP No: UDE (CAS) 3(3)/2002

Date of Issue : October 2002

Contents : 17 p, 7 t, -- f, 9 r

No. of Copies : 100

Abstract

Since economic liberalisation the states in India are making a concerted efforts to improve industrial performance in the state. On the basis of ASI data, Haryana, Rajasthan, Punjab, Tamil Nadu, Andhra Pradesh, Karnataka, Madhya Pradesh, Kerala and Delhi recorded higher growth rate of employment in the manufacturing sector than that of all-India during 1980-81 to 1997-98. However, Assam, Gujarat, Uttar Pradesh, Maharashtra, Bihar and West Bengal recorded lower growth rate of employment during 1980-81 to 1997-98. During pre-liberalisation period Punjab, Rajasthan, Haryana, Delhi, Tamil Nadu, Andhra Pradesh, Orissa, Madhya Pradesh and Karnataka recorded higher employment growth than that of all India. While states such as Uttar Pradesh, Kerala, Assam, Bihar, Gujarat, Maharashtra and West Bengal recorded lower growth rate. During post-liberalisation period states like Karnataka, Kerala, Gujarat and Maharashtra accelerated the growth of employment. During post-liberalisation period in terms of growth of real output better performance is recorded by Haryana, Gujarat, Karnataka, Tamil Nadu, Rajasthan and Maharashtra, while Assam, Bihar and West Bengal shared relatively poor performance. In overall, Tamil Nadu, Andhra Pradesh, Punjab, Haryana, Rajasthan and Karnataka recorded better performance in terms of growth of employment and output of the manufacturing sector during 1980s and 1990s.

GROWTH OF EMPLOYMENT AND OUTPUT OF ORGANISED MANUFACTURING SECTOR IN INDIA: An Interstate Analysis

L.G. Burange*

1. Introduction:

Since economic liberalization the states in India have become more aware of their performance. The states are pursuing various policies to improve the economic performance. They are making various efforts to attract the industrial and infrastructural investments so as to accelerate the pace of economic development over the period of time. On the backdrop of this initiative of the states, it is important to study the performance of the states in India. This paper makes an effort to analyse the states' performance with respect to employment and output in the organised manufacturing sector. There are very wide regional variations in the growth rates of employment in the organised manufacturing sector over the periods (Burange, 2001b). The industrially underdeveloped states recorded higher growth rates in employment than the industrially developed states during 1980-81 to 1997-98. However, during pre-liberalization period employment growth in the manufacturing sector was higher for the industrially underdeveloped states but this has been reversed during post-liberalization period. The acceleration of growth rate during post-liberalization period was higher in industrially developed states than the industrially underdeveloped states (Burange, 2001b).

The output of the manufacturing sector is also important variable in the analysis of states' performance over the period of time. How did different states perform over the different periods in terms of output growth? This paper makes efforts to estimate growth rate of real output of the manufacturing sector over different periods for the states and makes the comparison.

* The author wishes to thank Smt. Vasantha Menon and Smt H U Dalal for their assistance. However, the author remains solely responsible for any errors.

This paper is organised into six sections. Section two discusses the coverage and adjustments of data. Section three deals with employment, while section four deals with the output. Section five discusses the overall industrial development of the states during pre-liberalization and post-liberalization periods, while section six gives the summary and conclusions of the paper.

2. Data Adjustment & Coverage:

The Annual Survey of Industries – Summary Results for Factory Sector is the main source of data. Since the Annual Survey of Industries does not cover the unorganised small-scale industrial units, this exercise is confined to the organised sector only. To estimate growth rate we consider total number of employees, which includes production and non-production workers. For estimating the value of output at constant prices, the Wholesale Price Index of India from the Monthly Bulletin of Wholesale Prices of India is used. The Value of Output of an industry is deflated by the wholesale price index for the output of that industry. Aggregating the values at constant prices at the individual industrial outputs gives the aggregate value of output of the organised manufacturing sector at constant prices for the state.

Following Desai et al (1991), all agriculture related industries, NIC 20-21 to NIC 29 are clubbed together under AGRIND and all non-agriculture-related industries, NIC 30 to NIC 39, are clubbed together under NAGRIND, in this exercise.

We have selected sixteen states for the state-level analysis. They are as follows: in (1) Eastern Region: Assam, Bihar, Orissa and West Bengal; (2) Northern Region: Haryana, Punjab, Uttar Pradesh and Delhi; (3) Southern Region: Andhra Pradesh, Karnataka, Kerala and Tamil Nadu; and in (4) Western Region: Gujarat, Madhya Pradesh, Maharashtra and Rajasthan.

The annual compound growth rate is estimated by using the semi-log method for the period 1980-81 to 1997-98. This total period has been divided into two periods. One is from 1980-81 to 1991-92, which is called Pre-reform period, and 1991-92 to 1997-98, called as Post-reform period. The growth rates for these periods estimated by 'Kinked Exponential Model' (Burange, 2000; Goldar and Seth, 1989; Boyce, 1986).

3. Employment:

Annual compound growth rate (ACGR) of employment estimated for the total period from 1980-81 to 1997-98 (18 years) for all 16 states and all-India. Haryana, Rajasthan, Punjab, Tamil Nadu, Andhra Pradesh, Karnataka, Orissa, Madhya Pradesh, Kerala and Delhi recorded higher growth rate than that for all-India. Assam Gujarat, Uttar Pradesh, Maharashtra, Bihar and West Bengal recorded lower ACGR than the all-India. However, West Bengal and Bihar recorded a fall in employment growth during this period in the manufacturing sector (Table 1).

By dividing the manufacturing sector into AGRIND and NAGRIND, the ACGR varies from state to state for the period. If we consider AGRIND then Tamil Nadu tops the list and not Haryana. The ACGR of Tamil Nadu, Rajasthan, Haryana, Punjab, Andhra Pradesh, Karnataka, Orissa, Kerala and Delhi is higher than that of all-India for AGRIND during 1980-81 to 1997-98. However, Assam, Madhya Pradesh, Maharashtra, West Bengal, Gujarat, Uttar Pradesh and Bihar recorded lower ACGR for the AGRIND than that of all-India during the period. In case of AGRIND substantial fall in employment is recorded by Uttar Pradesh, West Bengal, Gujarat and Bihar. The ACGR of employment of AGRIND of Maharashtra and Madhya Pradesh are statistically insignificant at 5 per cent level of significance, which means statistically not different from zero (Table 1).

In case of NAGRIND the ACGR recorded by the states for the period show different picture than that of AGRIND. The states like Madhya Pradesh and Gujarat recorded a substantial improvement in employment growth. Andhra Pradesh, Madhya Pradesh,

Gujarat, Punjab, Karnataka, Haryana, Assam, Rajasthan, Tamil Nadu, Kerala, Orissa and Uttar Pradesh recorded higher ACGR of employment in NAGRIND than that of the all-India during 1980-81 to 1997-98. However, Delhi, Maharashtra, Bihar and West Bengal recorded lower ACGR than that of all-India. West Bengal recorded a substantial fall in employment of NAGRIND during this period. The states like Maharashtra and West Bengal are lagging behind the many other states in terms of growth of employment in the manufacturing sector during 1980-81 to 1997-98.

The performance of the states in terms of ACGR of employment during pre-liberalization period is different from that of during the total period of 1980-81 to 1997-98. Punjab, Rajasthan, Haryana, Delhi, Tamil Nadu, Andhra Pradesh, Orissa, Madhya Pradesh and Karnataka recorded higher ACGR of employment of manufacturing sector than that of all-India. While states such as Uttar Pradesh, Kerala, Assam, Bihar Gujarat, Maharashtra and West Bengal recorded lower ACGR during pre-liberalization than that of all-India (Table 2).

In case of AGRIND, Punjab, Haryana, Rajasthan, Tamil Nadu, Delhi and Andhra Pradesh recorded higher ACGR of employment during pre-liberalization period. Bihar, West Bengal, Gujarat, Maharashtra and Uttar Pradesh recorded a substantial fall in the employment in AGRIND during this period. In case of NAGRIND except West Bengal all the other states of our study recorded increase in employment during pre-liberalization. However, Andhra Pradesh, Madhya Pradesh, Punjab, Rajasthan, Uttar Pradesh, Delhi, Haryana, Assam, Gujarat, Orissa and Tamil Nadu recorded relatively higher growth in employment in NAGRIND during pre-liberalization period. Maharashtra and West Bengal recorded very poor performance in the employment growth in NAGRIND during pre-liberalization period (Table 2).

During the post-liberalisation period states like Karnataka, Kerala, West Bengal, Gujarat and Maharashtra accelerated the growth of employment in the manufacturing sector (Table 3). In terms of ACGR of employment during post-liberalization Karnataka, Kerala, Tamil Nadu, Haryana, Gujarat, Andhra Pradesh, Rajasthan and Maharashtra

recorded better performance than that of all –India. However, Bihar, Delhi and Uttar Pradesh recorded very poor performance in employment in the manufacturing sector during the post-liberalization. This is mainly due to the fall in employment in NAGRIND in these states during this period. The states like Karnataka, Kerala, Tamil Nadu, Haryana, Rajasthan and West Bengal which recorded better performance in employment in the manufacturing sector during post-liberalization period is due to the better performance of AGRIND during the post-liberalization period. However, states like Gujarat, Maharashtra, Madhya Pradesh and Assam recorded better performance in employment during post-liberalization period is mainly due to the higher growth in employment in NAGRIND. The states like Karnataka, Kerala and Tamil Nadu recorded relatively higher growth rates of employment in both AGRIND and NAGRIND during the post-liberalization period.

Overall Haryana, Rajasthan, Punjab, Tamil Nadu, Andhra Pradesh & Karnataka recorded better performance in the employment growth during 1980-81 to 1997-98. However, states like West Bengal, Bihar and Maharashtra recorded relatively poor performance in the employment growth in the manufacturing sector during 1980-81 to 1997-98.

4. Output:

Annual Compound Growth Rate (ACGR) of real output is higher in Rajasthan, Haryana, Madhya Pradesh, Uttar Pradesh, Karnataka, Andhra Pradesh, Tamil Nadu and Gujarat during 1980-81 to 1997-98 (Table 4). In the case of Rajasthan, Madhya Pradesh and Tamil Nadu the high growth rate of output of manufacturing sector is due to high growth rate of output of AGRIND during the period. However, NAGRIND recorded higher growth rate during this period in Uttar Pradesh, Andhra Pradesh, Haryana, Assam, Gujarat, Karnataka, which helped manufacturing sector of these states to register high growth rate of output during this period. West Bengal, Bihar, Kerala, Assam, Orissa and Maharashtra recorded relatively lower growth rate of real output of the manufacturing sector during 1980-81 to 1997-98.

During the pre-liberalization period high growth of real output of the manufacturing sector is recorded by Uttar Pradesh, Rajasthan, Madhya Pradesh, Assam, Orissa, Andhra Pradesh, Karnataka and Tamil Nadu. However, West Bengal, Bihar, Kerala, Gujarat and Maharashtra recorded relatively lower growth in real output of the manufacturing sector during pre-liberalization period (Table 5). Rajasthan, Madhya Pradesh, Delhi, Punjab, Haryana, Uttar Pradesh, Tamil Nadu and Karnataka registered relatively higher growth of output of AGRIND during pre-liberalization period. West Bengal, Bihar, Gujarat, Kerala and Maharashtra registered relatively lower growth of real output of AGRIND during this period. In case of NAGRIND, Assam, Uttar Pradesh, Andhra Pradesh, Orissa, Rajasthan, Punjab, Madhya Pradesh, Karnataka, Haryana, Gujarat, Delhi and Tamil Nadu registered relatively high growth rate of real output during pre-liberalization period. However, West Bengal, Bihar, Kerala and Maharashtra recorded relatively poor growth rate of real output of NAGRIND during pre-liberalization period (Table 5).

During the post-liberalization period picture is somewhat different than that of the pre-liberalization period. Gujarat, Haryana, Maharashtra, Karnataka, Kerala and Tamil Nadu recorded high acceleration in the growth rate of real output of manufacturing sector during post-liberalization compared to pre-liberalization period. However, Assam, Orissa, Delhi, Punjab, Uttar Pradesh and Bihar recorded deceleration in the growth rate of real output of manufacturing sector during post-liberalization period. During post-liberalization period, Haryana, Gujarat, Karnataka, Tamil Nadu, Maharashtra and Rajasthan registered relatively high growth rate of real output of manufacturing sector in which contribution of NAGRIND is relatively higher than that of AGRIND (Table 6). Assam, Bihar, Orissa, West Bengal, Punjab, Delhi and Uttar Pradesh recorded relatively lower growth rate of real output of manufacturing sector during post-liberalization period.

During the post-liberalization AGRIND registered high growth rate of output in Tamil Nadu, Madhya Pradesh, Kerala, Rajasthan, Karnataka and Haryana. However, Assam, Punjab, West Bengal, Uttar Pradesh, Bihar, Orissa and Delhi recorded relatively poor growth rate of real output of AGRIND during post-liberalization period. During the

post-liberalization period Gujarat, Haryana, Karnataka, Tamil Nadu, Maharashtra, Rajasthan and Andhra Pradesh recorded relatively higher growth rate of real output of NAGRIND. However, Assam, Bihar, Orissa, West Bengal, Delhi, Uttar Pradesh and Kerala achieved relatively low growth rate of real output of NAGRIND during post-liberalization period.

In the case of real output, West Bengal, Bihar, Kerala, Assam, Orissa and Maharashtra registered relatively poor performance compared to states such as Rajasthan, Haryana, Madhya Pradesh, Karnataka, Andhra Pradesh and Tamil Nadu.

5. **Industrial Development;**

Khare and Yadav (2001), by taking a complete view of industrial development process constructed the composite index of industrial development for different states in India. This composite index is based on the variables such as (1) number of industrial workers per lakh population, (2) number of factories per lakh population, (3) number of factories per 100 sq.km., (4) invested capital per worker, (5) wages per worker, (6) net value-added per unit of capital, (7) net value-added per worker (8) gross output per unit of capital, (9) percentage share of manufacturing in net state domestic product, and (10) gross output per lakh population. The data for these variables are used from ASI for the years 1984-85 (mid 1980s) and 1994-95 (mid 1990s).

On the basis of the index Maharashtra occupied first rank in mid 1980s (1984-85) and Tamil Nadu second while Gujarat got third rank. However, during mid 1990s (1994-95) Maharashtra occupied fourth position and Tamil Nadu got first, Gujarat second and Punjab third rank (Table 7). During 1990s Andhra Pradesh, Gujarat, Kerala, Madhya Pradesh, Orissa, Punjab, Rajasthan, Tamil Nadu and Uttar Pradesh recorded marked improvement in the industrial development, while Assam, Bihar, Maharashtra and West Bengal registered a fall in industrial development. However some states like Haryana and Karnataka maintained their status of industrial development during 1990s.

5. Conclusion:

In terms of annual compound growth rate of employment during 1980-81 to 1997-98, Haryana, Rajasthan, Punjab, Tamil Nadu, Andhra Pradesh and Karnataka registered better performance whereas West Bengal, Bihar, Maharashtra and Uttar Pradesh recorded relatively poor performance during this period. During 1980-81 to 1997-98 the growth rate of employment in AGRIND is registered relatively high by Tamil Nadu, Rajasthan, Haryana, Punjab and Andhra Pradesh. However, Bihar, Uttar Pradesh, Gujarat, West Bengal and Maharashtra registered a fall in employment in AGRIND during 1980-81 to 1997-98. In case of NAGRIND the performance in terms of growth of employment during 1980-81 to 1997-98 is better of Andhra Pradesh, Madhya Pradesh, Gujarat, Punjab, Karnataka and Haryana. West Bengal and Bihar registered a fall in employment in NAGRIND during 1980-81 to 1997-98.

During the pre-liberalization period Punjab, Rajasthan, Haryana, Delhi and Tamil Nadu recorded relatively better performance in growth of employment in the manufacturing sector. West Bengal, Maharashtra and Gujarat registered a fall in employment of manufacturing sector during this period. During the post-liberalization period, Karnataka, Kerala, Tamil Nadu, Haryana and Gujarat recorded relatively high growth of employment in the manufacturing sector, while Bihar and Delhi registered a fall in employment of the manufacturing sector during this period.

In case of the growth rate of real output of the manufacturing sector Rajasthan, Haryana, Madhya Pradesh, Uttar Pradesh and Karnataka recorded relatively better performance, while West Bengal Bihar, Kerala and Assam showed poor performance during 1980-81 to 1997-98. During the pre-liberalization period Uttar Pradesh, Rajasthan, Madhya Pradesh and Assam registered relatively high growth rate of real output of the manufacturing sector, while West Bengal, Bihar, Kerala, Gujarat and Maharashtra registered relatively low growth rate of real output of the manufacturing sector during this period. During post-liberalization period better performance in terms of growth of output of the manufacturing sector is recorded by Haryana, Gujarat,

Karnataka, Tamil nadu, Rajasthan and Maharashtra while Assam, Bihar and West Bengal showed relatively poor performance.

In general, Tamil Nadu, Andhra Pradesh, Punjab, Haryana, Rajasthan and Karnataka recorded better performance in terms of growth of employment and output of the manufacturing sector during 1980s and 1990s. However, in terms of index of industrial development Tamil Nadu, Gujarat, Punjab and Andhra Pradesh showed improvement during 1990s whereas West Bengal, Maharashtra, Bihar and Assam registered deterioration in the industrial development during 1990s..

Table 1 : Annual Compound Growth Rate of Number of Employees in the Organised Manufacturing Sector of the States

(Per cent)

States	1980-81 to 1997-98		
	MFG. (2-3)	AGRIND	NAGRIND
(1)	(2)	(3)	(4)
1. Assam	1.31	0.72	3.79
2. Bihar	- 0.72	- 2.82	- 0.18*
3. Orissa	2.62	1.88	3.05
4. West Bengal	- 1.41	- 1.31	- 1.55
5. Delhi	1.79	1.62	1.93
6. Haryana	3.48	3.41	3.51
7. Punjab	3.43	3.07	3.81
8. Uttar Pradesh	0.81	- 0.62	2.70
9. Andhra Pradesh	3.05	2.40	4.69
10. Karnataka	2.96	2.37	3.53
11. Kerala	2.24	1.86	3.14
12. Tamil Nadu	3.35	3.52	3.17
13. Gujarat	1.05	- 1.64	3.90
14. Madhya Pradesh	2.44	0.43*	4.19
15. Maharashtra	0.75	- 0.30*	1.59
16. Rajasthan	3.47	3.49	3.44
All-India	1.63	0.94	2.37

* Statistically insignificant at 5 per cent level of significance.

MFG (2-3) = Manufacturing Sector

AGRIND = Agriculture-related industries

NAGRIND = Non-agriculture-related industries

Table 2 : Annual Compound Growth Rate of Number of Employees in the Organised Manufacturing Sector of the States during Pre-liberalisation Period

(Per cent)

States	1980-81 to 1991-92		
	MFG. (2-3)	AGRIND	NAGRIND
(1)	(2)	(3)	(4)
1. Assam	0.47*	0.01*	2.89
2. Bihar	0.04*	- 4.27	1.15
3. Orissa	2.17	1.30	2.69
4. West Bengal	- 3.00	- 3.71	- 2.34
5. Delhi	2.58	1.82	3.18
6. Haryana	2.70	2.33	2.92
7. Punjab	4.07	4.20	3.90
8. Uttar Pradesh	0.61*	- 1.27	3.28
9. Andhra Pradesh	2.31	1.38	4.70
10. Karnataka	1.08	- 0.17*	2.30
11. Kerala	0.48*	- 0.36*	2.40
12. Tamil Nadu	2.39	2.16	2.65
13. Gujarat	- 0.61*	- 3.44	2.81
14. Madhya Pradesh	1.97	- 0.37*	4.15
15. Maharashtra	- 0.73	- 1.78	0.15*
16. Rajasthan	2.96	2.27	3.57
All-India	0.60	- 0.49*	1.77

* Statistically insignificant at 5 per cent level of significance.

MFG (2-3) = Manufacturing Sector

AGRIND = Agriculture-related industries

NAGRIND = Non-agriculture-related industries

Table 3 : Annual Compound Growth Rate of Number of Employees in the Organised Manufacturing Sector of the States during Post-Liberalisation Period

(Per cent)

States	1991-92 to 1997-98		
	MFG. (2-3)	AGRIND	NAGRIND
(1)	(2)	(3)	(4)
1. Assam	3.33	2.44	5.98
2. Bihar	- 2.51	0.77*	- 3.27
3. Orissa	3.69	3.26	3.91
4. West Bengal	2.46	4.63	0.35*
5. Delhi	- 0.04*	1.15*	- 0.98*
6. Haryana	5.33	6.03	4.94
7. Punjab	1.92	0.43*	3.61
8. Uttar Pradesh	1.27*	0.95*	1.36*
9. Andhra Pradesh	4.82	4.85	4.65
10. Karnataka	7.55	8.67	6.53
11. Kerala	6.56	7.33	4.93
12. Tamil Nadu	5.68	6.80	4.42
13. Gujarat	5.09	2.77	6.54
14. Madhya Pradesh	3.58	2.37	4.27
15. Maharashtra	4.36	3.29	5.09
16. Rajasthan	4.68	6.44	3.15
All-India	4.15	4.42	3.82

* Statistically insignificant at 5 per cent level of significance.

MFG (2-3) = Manufacturing Sector

AGRIND = Agriculture-related industries

NAGRIND = Non-agriculture-related industries

**Table 4 : Annual Compound Growth Rate of Value of Output in the Organised Manufacturing Sector of the States
(at constant prices, 1981-82=100)**

(Per cent)

States	1980-81 to 1997-98		
	MFG. (2-3)	AGRIND	NAGRIND
(1)	(2)	(3)	(4)
1. Assam	6.78	5.04	10.63
2. Bihar	3.86	3.93	3.86
3. Orissa	8.05	6.51	8.39
4. West Bengal	2.78	2.30	2.98
5. Delhi	8.36	9.27	7.43
6. Haryana	10.46	9.68	10.73
7. Punjab	8.55	8.00	9.11
8. Uttar Pradesh	10.07	8.43	11.15
9. Andhra Pradesh	9.71	8.27	10.91
10. Karnataka	9.89	8.95	10.42
11. Kerala	6.63	6.49	6.70
12. Tamil Nadu	9.37	9.54	9.24
13. Gujarat	8.68	5.08	10.56
14. Madhya Pradesh	10.16	11.11	9.71
15. Maharashtra	8.07	5.94	8.84
16. Rajasthan	10.76	11.15	10.39
All-India	8.36	7.57	8.76

MFG (2-3) = Manufacturing Sector

AGRIND = Agriculture-related industries

NAGRIND = Non-agriculture-related industries

Table 5 : Annual Compound Growth Rate of Value of Output in the Organised Manufacturing Sector of the States during Pre-liberalisation Period (at constant prices, 1981-82=100)

(Per cent)

States	1980-81 to 1991-92		
	MFG. (2-3)	AGRIND	NAGRIND
(1)	(2)	(3)	(4)
1. Assam	9.84	6.44	17.27
2. Bihar	4.41	3.11	4.53
3. Orissa	9.80	6.23	10.53
4. West Bengal	1.96	1.03	2.35
5. Delhi	9.15	9.98	8.34
6. Haryana	9.04	9.74	8.76
7. Punjab	9.78	9.87	9.72
8. Uttar Pradesh	11.25	9.51	11.25
9. Andhra Pradesh	9.61	8.28	10.81
10. Karnataka	8.84	8.51	9.07
11. Kerala	5.68	4.93	6.05
12. Tamil Nadu	8.48	8.83	8.22
13. Gujarat	6.78	3.90	8.43
14. Madhya Pradesh	10.10	11.35	9.44
15. Maharashtra	6.99	5.23	7.68
16. Rajasthan	10.79	11.62	10.04
All-India	7.72	7.27	7.96

MFG (2-3) = Manufacturing Sector

AGRIND = Agriculture-related industries

NAGRIND = Non-agriculture-related industries

Table 6: Annual Compound Growth Rate of Value of Output in the Organised Manufacturing Sector of the States during Post Liberalisation Period (at constant prices 1981-82 = 100)

(Per cent)

States	1991-92 to 1997-98		
	MFG. (2-3)	AGRIND	NAGRIND
(1)	(2)	(3)	(4)
1. Assam	- 0.16*	1.80*	- 3.68*
2. Bihar	2.57	5.92	2.28
3. Orissa	3.99	7.18	3.39
4. West Bengal	4.76	5.39	4.50
5. Delhi	6.50	7.60	5.30
6. Haryana	13.94	9.53	15.53
7. Punjab	5.68	3.68	7.70
8. Uttar Pradesh	7.32	5.90	7.32
9. Andhra Pradesh	9.96	8.24	11.16
10. Karnataka	12.44	10.01	13.71
11. Kerala	8.98	10.30	8.27
12. Tamil Nadu	11.53	11.22	11.69
13. Gujarat	13.43	7.95	15.79
14. Madhya Pradesh	10.30	10.55	10.36
15. Maharashtra	10.67	7.67	11.66
16. Rajasthan	10.68	10.04	11.25
All-India	9.90	8.26	10.69

* Statistically insignificant at 5 per cent level of significance.

MFG (2-3) = Manufacturing Sector

AGRIND = Agriculture-related industries

NAGRIND = Non-agriculture-related industries

Table 7 : Index of Industrial Development

States	Mid-80s		Mid-90s	
	Index	Rank	Index	Rank
(1)	(2)	(3)	(4)	(5)
1. Andhra Pradesh	10.352	8	9.916	7 ↑
2. Assam	8.182	12	4.908	16 ↓
3. Bihar	8.302	11	4.946	15 ↓
4. Goa	17.017	4	12.934	5 ↓
5. Gujarat	17.230	3	14.134	2 ↑
6. Haryana	13.930	6	12.533	6 →
7. Himachal Pradesh	6.565	16	5.788	13 ↑
8. Jammu & Kashmir	5.358	19	3.805	18 ↑
9. Karnataka	10.236	9	8.193	9 →
10. Kerala	8.553	10	9.529	8 ↑
11. Madhya Pradesh	7.666	13	5.861	12 ↑
12. Maharashtra	17.744	1	13.048	4 ↓
13. Manipur	4.889	20	1.900	20 →
14. Meghalaya	3.137	21	1.869	21 →
15. Orissa	5.925	18	4.613	17 ↑
16. Punjab	15.628	5	13.927	3 ↑
17. Rajasthan	7.041	15	5.660	14 ↑
18. Tamil Nadu	17.632	2	15.512	1 ↑
19. Tripura	6.456	17	2.393	19 ↓
20. Uttar Pradesh	7.262	14	6.373	11 ↑
21. West Bengal	12.315	7	7.345	10 ↓
Mean	10.068		7.866	
SD	4.680		4.644	
CV	46.484		55.227	

Source: Khare Mona and Yadav H.S. (2001).

Mid-80s = 1984-85

Mid-90s = 1994-95.

References

- Boyce, J.K. (1986), 'Kinked Exponential Models for Growth Rate Estimation', Oxford *Bulletin of Economics and Statistics*, Vol.48, No.4, pp.385-391.
- Burange, L.G. (2001a), 'Liberalization and Employment in the Organised Manufacturing Sector of India: An Inter-regional Analysis', [Appendix], *Journal of Indian School of Political Economy*, vol.13, No.3, July-September, pp.471-482.
- Burange, L.G. (2001b), 'Liberalization and Employment in the Organised Manufacturing Sector of India: An Inter-regional Analysis', *Journal of Indian School of Political Economy*, Vol.13, No.2, April-June, pp.197-215.
- Burange, L.G. (2000), 'Growth and Structure of Manufacture of Textile Products of India: An analysis of four major industrial states', *Review of Development and Change*, Vol.5, No.1, January-June, pp.81-98.
- Goldar, Bishwanath and Vijay Seth (1989), 'Spatial Variations in the Rate of Industrial Growth In India', *Economic and Political Weekly*, Vol.24, No.22, June 3, pp.1237-1240.
- Government of India (1997), *Annual Survey of Industries 1994-95: Summary Results for Factory Sector*, Central Statistical Organisation, Department of Statistics, Ministry of Planning and Programme Implementation, New Delhi, (Various Issues for 1980-81 to 1994-95).
- Government of India (1999), *Annual Survey of Industries 1997-98, Revised Results for Factory Sector*, Central Statistical Organisation, Department of Statistics, Ministry of Planning and Programme Implementation, Calcutta, (Issues for 1995-96 to 1997-98).
- Government of India (1999), *Index Numbers of Wholesale Prices in India: Base 1981-82, Monthly Bulletin*, Ministry of Commerce and Industry. Udyog Bhavan, New Delhi, (Various Issues).
- Khare M. and Yadav (2001), Regional Pattern of Industrial Development in India, *Indian Journal of Regional Science*, Vol.33, No.2, pp.18-31.