

CHAPTER-4

EMPIRICAL ANALYSIS

Trends of Employment and Output in Indian Organised Manufacturing

At all India and state-level growth rates of output and that of different categories of employees in the manufacturing sector are presented in table 4.1. The table shows that there are interstate differences in the growth rates of output and that of categories of employees. The output growth rates vary between a minimum of 4.02 percent per annum in Kerala and a maximum of about 40 percent per annum in Jammu & Kashmir. The overall growth rate of manufacturing sector output is about 12.92 percent per annum. The growth rates of employees in the manufacturing differ from a minimum of about -12.26 percent per annum in Andaman & N. Island to a maximum of 24.36 percent per annum in Uttaranchal. The table also shows that the growth rates of output are positive and higher than the growth rates of employees in all the states except one, namely, Tripura where output growth rate of about 7.73 percent per annum is less than that of total employees which 13.8 percent per annum. Another difference between state-wise growth rates of output and employment is that growth rate of output has been positive in all the states where as the employment growth rate is negative in three states, viz, West Bengal (-0.1 percent), Jharkhand (-0.97 percent) and Andaman & N Island about (-12.26 percent).

To see whether the growth rates of workers and non-workers follow the same pattern across the states or not, we have computed the growth rates of workers and non-workers in the manufacturing sector of different states. The table shows that there are difference in the growth rates of workers and non-workers in comparison to the growth rates of total employees. It can be seen from the table that the growth rates of workers are higher as compared to that of total employees in all the states except in Chandigarh (2.87 percent), Jharkhand (-1.31 percent), Madhya Pradesh (2.4 percent), Andhra Pradesh (2.26 percent), Karnataka (6.98 percent and Tamil Nadu (6.73 percent) where the growth rates are less than the growth rates of total employees and that of non-workers.

Table : 4.1
State-Wise Output and Employment Growth Rates in Organised Manufacturing Sector

State	Output	Employees	workers	Non workers
Jammu& Kashmir	40.07	12.05	12.62	9.62
Himachal Pradesh	31.00	16.84	17.29	15.44
Punjab	9.97	6.80	7.07	5.77
Chandigarh	11.33	3.26	2.87	3.92
Uttaranchal	39.73	24.36	26.97	17.85
Haryana	12.57	9.42	9.54	8.23
Delhi	2.51	0.57	0.97	-0.28
Rajasthan	12.41	6.53	6.73	5.82
Uttar Pradesh	8.62	4.95	5.49	3.24
Bihar	8.25	3.79	4.58	0.23
Nagaland	14.97	0.41	1.74	-6.13
Manipur	18.18	16.22	16.29	15.56
Tripura	7.73	13.80	14.19	10.6
Meghalaya	55.57	21.18	21.4	20.34
Assam	8.23	3.80	4.01	2.65
West Bengal	8.44	-0.10	0.21	-1.38
Jharkhand	11.84	-0.97	-1.31	0.07
Orissa	21.65	7.82	8.42	5.43
Chhattisgarh	19.62	7.59	8.98	4.09
Madhya Pradesh	8.19	2.50	2.4	2.78
Gujarat	12.53	6.22	6.89	4.17
Daman & Diu	12.33	10.89	11.09	10.21
Dadra & N Haveli	10.93	10.69	11.52	8.04
Maharashtra	13.59	3.41	3.42	3.35
Andhra Pradesh	13.54	2.47	2.26	3.54
Karnataka	14.85	7.53	6.98	8.66
Goa	10.50	7.11	8.26	4.1
Kerala	4.02	2.85	3.22	0.72
Tamil Nadu	11.27	6.95	6.73	7.54
Pondicherry	6.10	3.64	3.86	2.82
Andaman&N.Island	11.75	-12.26	-11.96	-12.4
All India	12.92	5.24	5.33	4.86

Note: Gross value added has been deflated by the wholesale price index for manufacturing products to compute growth rate in real value added.

Inter-state estimates of employees, workers and non-workers elasticities of output are presented in table 4.2. The estimates of employees elasticities across states are not same. The positive elasticities vary from a minimum of 0.03 in Nagaland to a maximum of 1.79 in Tripura. The estimate of employees elasticity of output for total manufacturing sector is 0.41. Three states / union territories West Bengal (-0.01), Jharkhand (-0.08) and Andaman & N Island (-1.04) have negative elasticities which show that one percent increase in the manufacturing output results in a decrease of 0.01 percent, 0.08 percent and 1.04 percent in employment respectively in West Bengal, Jharkhand and Andaman & N Island. Eighteen state / union territories have elasticities greater than the national level figure of 0.41.

The table also reports the estimates of workers and non-workers. The national level estimate of worker elasticity (0.41) is greater than that of non-workers (0.38). The estimate of workers elasticities of output vary from a minimum value 0.02 in West Bengal to a maximum 1.84 in Tripura. Two states / union territories Andaman & N Island (-1.02) and Jharkhand (-0.11) have negative elasticities which show that one percent increase in the manufacturing output results in a decrease of 1.02 percent and 0.11 percent in employment respectively in Andaman & N Island and Jharkhand. Considering the inter-state pattern, the table shows that 20 states / union territories have workers elasticities greater than the national figure while only 14 out of 31 states have non-workers elasticities of output are greater than the national figure of 0.38. The inter-state variation ranges from a minimum of 0.01 in Jharkhand to a maximum of 1.37 in Tripura. This means a one percent increase in the output of manufacturing in each state leads to an increase of non-workers employment ranging from 0.01 percent in West Bengal to a high of 1.37 percent in Tripura. Three states namely, Delhi (-0.11), Nagaland (-0.41) and Andaman & N Island (-1.06) have negative elasticities. The table also reveals that only in 5 states / union territories i.e., Chandigarh, Madhya Pradesh, Andhra Pradesh, Karnataka and Tamil Nadu have higher non-worker elasticities than worker elasticities. This suggests that an increase in the manufacturing output is expected to generate greater employment of workers than non-workers in the manufacturing sector.

Table: 4.2
State-Wise Employment Elasticities of Output in Organised Sector
Manufacturing Sector ('000)

State	Employees	workers	Non-Workers
Jammu& Kashmir	0.30	0.31	0.24
Himachal Pradesh	0.54	0.56	0.50
Punjab	0.68	0.71	0.58
Chandigarh	0.29	0.25	0.35
Uttaranchal	0.61	0.68	0.45
Haryana	0.75	0.76	0.65
Delhi	0.23	0.39	-0.11
Rajasthan	0.53	0.54	0.47
Uttar Pradesh	0.57	0.64	0.38
Bihar	0.46	0.56	0.03
Nagaland	0.03	0.12	-0.41
Manipur	0.89	0.90	0.86
Tripura	1.79	1.84	1.37
Meghalaya	0.38	0.39	0.37
Assam	0.46	0.49	0.32
West Bengal	-0.01	0.02	-0.16
Jharkhand	-0.08	-0.11	0.01
Orissa	0.36	0.39	0.25
Chhattisgarh	0.39	0.46	0.21
Madhya Pradesh	0.31	0.29	0.34
Gujarat	0.50	0.55	0.33
Daman & Diu	0.88	0.90	0.83
Dadra & N Haveli	0.98	1.05	0.74
Maharashtra	0.25	0.25	0.25
Andhra Pradesh	0.18	0.17	0.26
Karnataka	0.51	0.47	0.58
Goa	0.68	0.79	0.39
Kerala	0.71	0.80	0.18
Tamil Nadu	0.62	0.60	0.67
Pondicherry	0.60	0.63	0.46
Andaman & N.Island	-1.04	-1.02	-1.06
All India	0.40	0.41	0.38

Note: Employment elasticity is computed as the ratio of growth rate in employment to growth rate in real value added and indicates percentage change in employment in response to one percent change in output.

The state-wise distribution of output and employment in terms of percentage share at two points of time, namely, 2000-01 and 2009-10 has been shown in table 4.3. The table shows that in 2000-01 state-wise share of output at national level varies from a minimum of about zero percent in Andaman & N. Island to a maximum of 21.13 percent in Maharashtra followed by 12.89 percent in Gujarat. The six states which have more than five percent share are U.P. (6.95 percent), Gujarat (12.89 percent), Maharashtra (21.13 percent), A.P. (6.21 percent), Karnataka (5.73 percent) and Tamil Nadu (11.37 percent) account for about 64.0 percent of the manufacturing output.

Similarly, the percentage share of employment of different states / union territories varies from minimum of 0.03 percent in Andaman & N Island to a maximum 14.68 in Maharashtra followed closely by Tamil Nadu with 14.23 percent. The same six states/ Union territories also have employment share more than five percent and account for about 62.4 percent of the total manufacturing employment.

Another feature of the inter-state distribution of manufacturing output and employment revealed by the table is that of the 31 states / Union territories considered here, the employment shares are higher than the corresponding output share in case of 15 states, while in rest of the states output share is greater than the corresponding employment shares which shows that there are inter- state variations in respect of labour intensity in manufacturing sector.

We now examine the distribution of manufacturing output and employment across states in the year 2009-10. The table shows that the output shares vary from minimum of zero percent in Andaman & N Island to a maximum of 19.63 percent in Maharashtra followed by Gujarat, with a share of 13.86 percent. The table shows that in the year 2009-10 also the same six states of U.P., Gujarat, Maharashtra, Andhra Pradesh, Karnataka and Tamil Nadu which have more than 5 percent share account for about 63.0 percent of manufacturing output and about 62.3 percent of manufacturing employment.

The output share is slightly less than that in 2000-01 while the employment share remains same after a decade. A note able feature in the table is that in case of Maharashtra and Gujarat there are high difference between output shares and

Table: 4.3**State-Wise Distribution of Output and Employment In Organised Manufacturing Sector**

State	2000 - 01		2009 - 10	
	Output	Employment	Output	Employment
Jammu& Kashmir	0.11	0.29	0.42	0.45
Himachal Pradesh	0.87	0.49	2.57	1.09
Punjab	2.95	4.49	2.51	4.82
Chandigarh	0.10	0.12	0.08	0.09
Uttaranchal	0.62	0.54	2.87	2.03
Haryana	3.98	3.77	4.71	4.96
Delhi	1.29	1.51	0.61	1.03
Rajasthan	3.62	2.91	0.12	3.33
Uttar Pradesh	6.95	6.76	5.40	6.47
Bihar	0.50	0.79	0.39	0.74
Nagaland	0.01	0.04	0.02	0.03
Manipur	0.00	0.01	0.00	0.03
Tripura	0.07	0.11	0.04	0.24
Meghalaya	0.01	0.01	0.08	0.05
Assam	0.90	1.41	0.84	1.26
West Bengal	3.99	7.13	3.32	4.85
Jharkhand	2.83	2.17	2.83	1.20
Orissa	1.73	1.61	2.61	1.93
Chhattisgarh	1.70	1.21	2.25	1.31
MadhyaPradesh	4.16	3.17	2.58	2.38
Gujarat	12.89	9.42	13.86	9.83
Daman & Diu	0.89	0.50	0.92	0.92
Dadra & N Haveli	1.26	0.51	8.56	0.97
Maharashtra	21.13	14.68	19.63	12.85
Andhra Pradesh	6.21	11.36	7.26	9.60
Karnataka	5.73	5.94	6.46	7.52
Goa	0.97	0.39	0.90	0.44
Kerala	2.34	3.92	1.21	3.10
Tamil Nadu	11.37	14.23	10.47	16.04
Pondicherry	0.81	0.49	0.60	0.43
Andaman&N.Island	0.00	0.03	0.00	0.00
All India	100.00	100.00	100.00	100.00

Source: Calculation based on Annual Survey of Industries Summary Results for Factory Sector.

employment shares. For example, in case of Maharashtra the output share (21.13 percent) and employment share (14.68 percent) became (19.63 percent) and (12.85 percent) respectively in 2000-01 and 2009-10. This difference between output and employment shares indicates a continuity of lower labour intensity over time in the manufacturing sector. Similarly is the case in Gujarat where the shares of output (12.89 percent) and employment (9.42 percent) increased to (13.86 percent) and (9.83 percent) in 2000-01 and 2009-10 respectively.

Again, 17 of the 31 states / Union territories have higher shares of employment in comparison to the correspond shares of output. The two states which reversed the trend are Haryana which had lower employment share of (3.77 percent) of as compared to (3.98 percent) of output in 2000-01 changed to shares of (4.71 percent) of output and 4.96 of employment in 2009-10 and Rajasthan which had output 3.62 percent and employment (2.91 percent) in 2000-01 changed to output share of (0.12 percent) and employment share of (3.33 percent) in 2009-10 as shown table 4.3.

State-wise share of emoluments to employees, wages to workers and non-workers have been shown in table 4.4. The table shows that the inter-state variations in the shares of emoluments to employees range from a minimum of 0.13 percent in Tripura followed by Himachal Pradesh with 0.14 percent to a maximum of 0.82 percent in Andaman & N Island followed by West Bengal with 0.54 percent in manufacturing gross value added. In 20 states / union territories, the share of emoluments is higher than all India level of 0.28 percent in 2000-01. In 2009-10, the all India share of emoluments reduced to 0.21 percent and only 15 states / union territories had shares exceeding 0.21 percent. The range of variation was between a minimum of 0.09 percent in Himachal Pradesh to a maximum of 0.73 percent in Manipur. Only 7 states registered an increased in the share of emoluments during the period 2000-01 to 2009-10. These states are Delhi (0.32 percent to 0.40 percent), Manipur (0.47 percent to 0.73 percent), Tripura (0.13 percent to 0.32 percent), Daman & Diu (0.10 percent to 0.17 percent), Goa (0.15 percent to 0.17 percent), Kerala (0.35 percent to 0.37 percent) and Pondicherry (0.15 percent to 0.17 percent).

Table: 4.4**Share of Emoluments to Employees, Wages to Workers and Wages to Non-Workers in GVA (at Current Prices)**

State	Employees		Workers		Non workers	
	2000-01	2009-10	2000-01	2009-10	2000-01	2009-10
Jammu& Kashmir	0.53	0.15	0.36	0.09	0.17	0.06
Himachal Pradesh	0.14	0.09	0.08	0.04	0.07	0.05
Punjab	0.32	0.28	0.20	0.16	0.12	0.13
Chandigarh	0.47	0.30	0.22	0.11	0.24	0.19
Uttaranchal	0.48	0.15	0.23	0.08	0.25	0.07
Haryana	0.30	0.27	0.15	0.13	0.15	0.14
Delhi	0.32	0.40	0.16	0.14	0.16	0.26
Rajasthan	0.21	0.18	0.12	0.09	0.09	0.10
Uttar Pradesh	0.25	0.24	0.14	0.11	0.12	0.13
Bihar	0.35	0.20	0.20	0.12	0.15	0.08
Nagaland	0.54	0.05	0.34	0.04	0.20	0.01
Manipur	0.47	0.73	0.39	0.56	0.07	0.16
Tripura	0.13	0.32	0.10	0.23	0.03	0.09
Meghalaya	0.36	0.12	0.22	0.06	0.14	0.05
Assam	0.27	0.20	0.17	0.11	0.10	0.09
West Bengal	0.54	0.26	0.37	0.15	0.17	0.11
Jharkhand	0.40	0.18	0.28	0.09	0.12	0.09
Orissa	0.31	0.18	0.19	0.10	0.12	0.08
Chhattisgarh	0.34	0.15	0.15	0.06	0.19	0.09
Madhya Pradesh	0.23	0.21	0.13	0.10	0.10	0.11
Gujarat	0.21	0.16	0.11	0.07	0.10	0.09
Daman & Diu	0.10	0.17	0.06	0.08	0.04	0.10
Dadra & N Haveli	0.09	0.17	0.05	0.07	0.05	0.10
Maharashtra	0.28	0.21	0.15	0.08	0.13	0.13
Andhra Pradesh	0.33	0.22	0.20	0.12	0.12	0.10
Karnataka	0.31	0.24	0.16	0.11	0.14	0.13
Goa	0.15	0.17	0.07	0.08	0.07	0.09
Kerala	0.35	0.37	0.24	0.21	0.11	0.16
Tamil Nadu	0.29	0.29	0.18	0.15	0.11	0.15
Pondicherry	0.15	0.17	0.09	0.07	0.06	0.09
Andaman&N.Island	0.82	0.22	0.61	0.13	0.21	0.10
All India	0.28	0.21	0.16	0.10	0.12	0.11

Note: Share of emolument to employees, wages to workers & wages to non-workers are computed ratio of total emolument to GVA, total wages to workers to GVA & non-workers wages to GVA.

To see whether similar trend is observed when the total employees are separated into workers and non-workers, wage shares of workers and non-workers are examined separately. The table shows that the wage share of workers at the national level decreased from 0.16 percent in 2000-01 to 0.10 percent in 2009-10 while in case of non-workers, the wage share declined from 0.12 percent in 2000-01 to 0.11 percent only in 2009-10. This shows that there has been a greater decline in the wage share of workers in comparison to that of non-workers. The wage share of workers ranged between a minimum of 0.05 percent in Dadra & N Haveli to a maximum of 0.39 percent in Manipur in 2000-01 while in 2009-10, the wage share of workers ranged from 0.04 percent in Himachal Pradesh to 0.56 percent in Manipur. There were only five states / union territories in 2009-10 which have wage shares of workers higher than those in the year 2000-01.

In case of non-workers there are 18 states in 2000-01 which have higher wage share than the all India figure of 0.12 percent but in 2009-10, there are only 12 states / union territories which recorded higher wage share than the national figure of 0.11 percent. In contrast to wage share of workers, the wage-share of non-workers increased in 13 states over the period under consideration.

The Impact of Output Growth on Growth of Employment

This section examines the relationship between output and employment growth in manufacturing sector in India. As India consists of a large number of heterogeneous states in socio economic and political character, state level studies have immense importance. In India as in other countries different regions have been growing with different growth rates. The regional disparities in growth have been highly associated with unequal incidence of industrial development and employment growth. Kaldor observed a highly significant relationship between output and labour productivity growth which suggests that output growth plays major role in determining productivity growth and also employment growth in the manufacturing sector. The higher state of growth of manufacturing output leads to higher rates productivity growth, but not to faster rate of growth of manufacturing employment.

The estimated coefficients of the regression equations of employment growth of total employees, workers and non-workers separately on output growth in the registered manufacturing sector are shown in tables 4.5, 4.6, and 4.7 respectively.

The table 4.5 shows that the impact of output growth on the growth of total employees in the manufacturing sector is positive and significant in nine states, namely, Jammu and Kashmir (0.11), Himachal Pradesh (0.23), Uttarakhand (0.34), Delhi (0.35), Manipur (0.30), Meghalaya (0.18), Orissa (0.58), Chhattisgarh (0.21), and Chandigarh (0.58). In rest of the states / union territories, the impact is non-significant except Tripura, where the impact of output growth on employment growth is negative and significant.

Table: 4.5
OLS Estimates of the Equation: $G_e = a + b G_m$

State	Intercept	coefficient	R ²	D. W.
Jammu& Kashmir	5.77 (1.70)	0.11 (2.16)	0.30 —	2.20 —
Himachal Pradesh	8.15 (1.44)	0.23 (1.96)	0.35 —	1.12 —
Punjab	2.94 (1.40)	0.24 (1.68)	0.29 —	1.25 —
Chandigarh	-4.23 (-0.85)	0.58 (1.74)	0.30 —	1.62 —
Uttarakhand	8.29 (1.59)	0.34 (5.14)	0.79 —	0.83 —
Haryana	16.22 (2.74)	-0.50 (-1.56)	0.26 —	1.26 —
Delhi	-0.95 (-0.73)	0.35 (3.27)	0.60 —	2.32 —
Rajasthan	7.24 (2.06)	-0.08 (-0.44)	0.03 —	2.51 —
Uttar Pradesh	1.96 (1.04)	0.23 (1.69)	0.29 —	1.84 —
Bihar	3.57 (1.07)	-0.02 (-0.32)	0.01 —	1.79 —
Nagaland	-0.13 (-0.05)	0.01 (0.19)	0.01 —	2.59 —
Manipur	10.75 (1.66)	0.30 (2.02)	0.37 —	2.94 —

Contd. Table:4.5
OLS Estimates of the Equation: $G_e = a + b G_m$

State	Intercept	coefficient	R ²	D. W.
Tripura	14.80 (8.46)	-0.05 (-2.14)	0.39 —	1.72 —
Meghalaya	4.96 (0.95)	0.18 (3.12)	0.58 —	2.19 —
Assam	3.69 (2.28)	-0.02 (-0.86)	0.10 —	2.60 —
West Bengal	-0.77 (-0.40)	0.09 (0.60)	0.05 —	0.92 —
Jharkhand	-2.97 (-1.15)	0.06 (0.98)	0.12 —	2.03 —
Orissa	1.26 (0.47)	0.30 (3.12)	0.58 —	0.42 —
Andhra Pradesh	2.92 (0.67)	-0.01 (-0.06)	0.00 —	3.24 —
Karnataka	8.58 (3.07)	-0.09 (-0.64)	0.06 —	0.06 —
Goa	8.98 (1.23)	-0.25 (-0.43)	0.03 —	2.64 —
Kerala	1.53 (0.53)	0.09 (0.35)	0.06 —	2.70 —
Tamil Nadu	2.16 (0.35)	0.40 (1.31)	0.20 —	3.34 —
Pondicherry	3.54 (1.22)	-0.03 (-0.31)	0.01 —	2.41 —
Andaman&N.Island	-10.65 (-0.87)	-0.02 (-0.19)	0.01 —	0.79 —
All India	-1.10 (-0.33)	0.48 (1.88)	0.34 —	2.33 —

Note: (.) contains t- values for the regression coefficients and intercepts. D-W indicates Durbin-Watson statistics.

The impact of output growth on employment growth of workers is shown in table 4.6. The table shows that the impact is positive and significant only in 6 states. These states are Uttaranchal (0.33), Meghalaya (0.29), Haryana (0.87), Delhi (0.20), Chhattisgarh (0.23) and Orissa (0.35). The impact is positive and significant at national level. Rest of the states have insignificant relationship between the growth of employment of workers and output growth in the manufacturing sector except Tripura state where the impact is

negative and significant. Highest impact on growth of workers' employment is experienced in Haryana (0.87) followed by Orissa (0.35).

Table: 4.6
OLS Estimates of the Equation: $Gw = a + b Gm$

State	Intercept	coefficient	R ²	D. W.
Jammu& Kashmir	7.47 (2.01)	0.08 (1.47)	0.24 —	2.33 —
Himachal Pradesh	9.25 (1.58)	0.2 (1.67)	0.28 —	0.98 —
Punjab	3.45 (1.20)	0.22 (1.54)	0.25 —	1.37 —
Chandigarh	-2.26 (-0.45)	0.37 (1.09)	0.15 —	2.07 —
Uttaranchal	11.02 (1.77)	0.33 (4.24)	0.72 —	0.77 —
Haryana	-2.87 (-0.47)	0.87 (2.19)	0.41 —	1.52 —
Delhi	-0.39 (-0.38)	0.20 (2.35)	0.44 —	2.27 —
Rajasthan	6.95 (2.73)	-0.03 (-0.23)	0.01 —	2.63 —
Uttar Pradesh	2.58 (1.16)	0.22 (1.35)	0.21 —	2.05 —
Bihar	5.23 (1.47)	-0.01 (-0.17)	0.00 —	2.20 —
Nagaland	1.16 (0.21)	0.01 (0.31)	-0.13 —	2.66 —
Manipur	11.21 (1.63)	0.28 (1.78)	0.31 —	2.82 —
Tripura	15.42 (8.34)	-0.06 (-2.32)	0.44 —	1.55 —
Meghalaya	6.30 (0.81)	0.29 (3.44)	0.63 —	1.85 —
Assam	4.13 (2.50)	-0.03 (-1.04)	0.01 —	2.84 —
West Bengal	-0.70 (-0.30)	0.12 (0.58)	-0.09 —	1.36 —

Contd. Table: 4.6

OLS Estimates of the Equation: $G_w = a + b G_m$

State	Intercept	coefficient	R ²	D. W.
Jharkhand	-3.70 (-1.48)	0.07 (1.30)	0.20 —	2.01 —
Orissa	1.38 (0.40)	0.35 (2.85)	0.54 —	0.68 —
Chhattisgarh	2.8 (0.89)	0.23 (2.34)	0.44 —	1.30 —
Madhya Pradesh	-0.14 (-0.05)	0.21 (1.38)	0.21 —	1.34 —
Gujarat	6.51 (1.93)	-0.07 (-0.36)	0.02 —	0.80 —
Daman & Diu	12.09 (3.17)	0.01 (0.07)	0.00 —	1.94 —
Dadra & N Haveli	14.59 (2.79)	-0.05 (-0.27)	0.01 —	1.61 —
Maharashtra	1.13 (0.36)	0.18 (0.94)	0.11 —	2.76 —
Andhra Pradesh	3.48 (0.68)	-0.06 (-0.19)	0.01 —	3.29 —
Karnataka	3.66 (1.42)	0.145 (1.14)	0.16 —	1.17 —
Goa	6.91 (1.22)	0.03 (0.06)	0.00 —	2.29 —
Kerala	1.87 (0.59)	0.096 (0.60)	0.05 —	2.74 —
Tamil Nadu	3.86 (1.21)	0.19 (1.21)	0.17 —	3.17 —
Pondicherry	3.92 (1.33)	-0.40 (-0.45)	0.023 —	2.33 —
Andaman&N.Island	-8.15 (-0.47)	0.00 (-0.03)	0.00 —	1.54 —
All India	-1.17 (-0.46)	0.50 (2.53)	0.48 —	1.82 —

Note: (.) contains t- values for the regression coefficients and intercepts. D-W indicates Durbin-Watson statistics.

The estimates of the impact of output growth on the employment growth of non-workers have been shown in table 4.7. The table shows that the relationship is positive and significant in 11 states, namely, Jammu & Kashmir (0.24), Himachal Pradesh (0.32),

Table: 4.7
OLS Estimates of the Equation: $Gnw = a + b Gm$

State	Intercept	coefficient	R ²	D. W.
Jammu& Kashmir	-1.12 (-0.36)	0.24 (4.91)	0.78 —	1.67 —
Himachal Pradesh	4.98 (0.81)	0.32 (2.47)	0.47 —	1.91 —
Punjab	1.05 (0.38)	0.30 (2.15)	0.40 —	0.93 —
Chandigarh	-7.02 (-0.95)	0.96 (1.94)	0.35 —	1.7 —
Uttaranchal	1.56 (0.27)	0.36 (4.97)	0.78 —	2.34 —
Haryana	63.29 (2.53)	-3.84 (-2.37)	0.45 —	1.46 —
Delhi	-1.68 (-0.89)	0.44 (2.87)	0.54 —	2.62 —
Rajasthan	8.77 (1.21)	-0.27 (-0.69)	0.06 —	2.33 —
Uttar Pradesh	0.17 (0.09)	0.27 (2.02)	0.37 —	1.69 —
Bihar	1.75 (0.41)	-0.07 (-1.06)	0.14 —	0.77 —
Nagaland	-4.87 (-1.01)	-0.04 (-1.09)	0.15 —	2.55 —
Manipur	9.48 (1.01)	0.42 (1.92)	0.35 —	2.6 —
Tripura	9.95 (5.69)	0.01 (0.44)	0.03 —	2.75 —
Meghalaya	7.87 (1.19)	0.21 (2.95)	0.55 —	2.86 —
Assam	1.65 (0.71)	0.00 (0.06)	0.00 —	1.08 —
West Bengal	-1.08 (-0.26)	0.05 (0.16)	0.00 —	2.76 —

Contd. Table: 4.7

OLS Estimates of the Equation: $Gnw = a + b Gm$

State	Intercept	coefficient	R ²	D. W.
Jharkhand	-0.55 (-0.17)	0.00 (0.05)	0.00 —	2.06 —
Orissa	1.13 (0.30)	0.14 (1.01)	0.13 —	1.29 —
Chhattisgarh	-0.34 (-0.07)	0.19 (1.35)	0.21 —	1.35 —
Madhya Pradesh	0.33 (0.09)	0.22 (1.07)	0.14 —	1.93 —
Gujarat	2.56 (1.18)	0.07 (0.56)	0.04 —	0.37 —
Daman & Diu	6.91 (1.28)	0.34 (1.85)	0.33 —	2.13 —
Dadra & N Haveli	5.68 (1.50)	0.28 (2.23)	0.42 —	2.67 —
Maharashtra	2.09 (0.78)	0.07 (0.40)	0.02 —	2.14 —
Andhra Pradesh	0.38 (0.22)	0.21 (2.06)	0.38 —	1.43 —
Karnataka	25.77 (2.59)	-0.90 (-1.83)	0.32 —	1.86 —
Goa	15.91 (1.23)	-1.06 (-1.02)	0.13 —	2.76 —
Kerala	-0.24 (-0.12)	0.07 (0.71)	0.07 —	1.82 —
Tamil Nadu	-0.46 (-0.02)	1.18 (1.26)	0.19 —	3.01 —
Pondicherry	2.19 (0.70)	0.03 (0.26)	0.01 —	2.46 —
Andaman&N.Islan	-8.15 (-0.47)	-0.0041 (-0.03)	0.00016 —	1.54 —
All India	-0.84 (-0.12)	0.45 (0.80)	0.08 —	2.1 —

Note: (.) contains t- values for the regression coefficients and intercepts. D-W indicates Durbin-Watson statistics.

Punjab (0.30), Chandigarh (0.96), Uttaranchal (0.36), Delhi (0.44), Uttar Pradesh (0.27), Manipur (0.42), Meghalaya (0.21), Dadar & N Haveli (0.28), and Andhra Pradesh (0.21). The remaining states show an insignificant relationship except Haryana where there is negative (-3.84) and significant relationship between growth of non-workers employment and output growth in manufacturing sector. At the level of Total manufacturing sector also, the relationship is positive but insignificant.

It can be seen that the relationship of output growth with growth of total employees is +ve and significant in 9 states, with employment growth of workers is positive and significant in only 6 states, and with employment of non-workers in 11 states. This shows that the relationship between output growth and employment growth varies across states and across categories of employment.

Growth of Productivity, Wage Rates and Elasticity of substitution

The state-wise estimates of employees' (total) productivity levels in organized sector for the period 2000-01 to 2009-10 are measured in thousand rupees and are presented in table 4.8. Along with these estimates of productivity levels the coefficients of variation and growth rates over the period are also shown in the table. The table reveals that the level of labour productivity (in other words the intensity of labour per unit of output) varies across states as depicted by coefficient of variation and over time as exhibited by the growth rates. It can be seen from the table that the labour productivity level in 2000-01 is highest with 652 (thousand Rs.) in Goa which increased to about Rs. 849 in 2009-10 and recorded a growth rate of 3.17 percent per annum followed by Dadar & N Haveli with productivity level of Rs. 650 in 2000-01 which increased to about Rs. 800 in 2009-10 registering a growth rate of about 2.30 percent per annum only. Similarly, the state of Manipur increased from a minimum level of productivity of about 34.3 thousand Rs in 2000-01 to 42.4 thousand Rs. in 2009-10 registering a growth rate of about 1.69 percent per annum.

Other states having lowest levels of productivity in 2000-01 are Nagaland (39.6 thousand Rs.) and Andaman & N Island (36.9 thousand Rs.) whose productivity levels increased to 85.6 and 353.6 in 2009-10 recording compound growth rates of about 14.5 and 27.4 respectively. Tripura is the only state where the growth rate of productivity is

negative (-5.33 percent) which means level of labour productivity has declined or in other words, intensity of labour use has increased.

It is also evident from the table that the interstate variations in the levels of labour productivity as depicted by the coefficients of variations for various years do not follow a definite pattern of convergence or divergence. The value of the coefficient of variation varies from a minimum of 57 percent in the year 20002-03 to a maximum of about 67 percent in the year 2004-05. In other words, the pattern of intensity of labour use in the organized manufacturing across different states in India is showing neither a converging nor a diverging trend.

The table also shows that the growth rates of levels of labour productivity in different states are different and not same. It can be seen that the 12 states Meghalaya, Andaman & N. Island, Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Nagaland, West Bengal, Jharkhand, Orissa, Chhattisgarh, Andhra Pradesh, and Maharashtra are registering a growth rate in the level of labour productivity higher than all India growth rate of about 7.30 percent per annum while rest of the states and union territories have shown lower growth rates than the all India growth rate. The coefficient of variation of growth rates of various states shows that the interstate variability in the growth rates of levels of labour productivity over the sample period is 98 percent of the mean of the interstate growth rates. It is also clear that interstate variation in respect of levels of productivity or the levels of intensity of labour use in manufacturing sector.

Estimates of the constant elasticity of substitution plays a central role in explaining various economic phenomenon. It is useful in the determination of factor demand elasticities, trend of relative factor shares overtime, and explanation of partial factor productivities. The estimates of elasticities of substitution between labour and capital in manufacturing sectors of different states / union territories are presented in table appendix-3. The table shows that the substitution possibilities between labour and capital vary across states / union territories. Elasticities of substitution are significant in 19 states and in remaining states are insignificant. The significant elasticities of substitution range from a minimum of 0.50 in Daman & Diu to a maximum of 2.71 in Chandigarh.

Table: 4.8**State-Wise Estimates of Employees Productivity in Organised Manufacturing Sector ('000)**

State	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Growth Rate	E S [#]
Jammu& Kashmir	101.03	100.93	105.24	91.16	208.92	268.45	268.45	375.09	489.30	516.57	25.05	4.37
Himachal Pradesh	461.35	508.98	588.63	620.09	594.42	1069.83	1069.83	1060.72	1141.80	1103.57	12.12	2.42*
Punjab	172.12	212.11	213.71	202.49	178.76	176.65	176.65	219.37	256.75	226.51	2.97	1.33*
Chandigarh	212.91	188.85	236.08	238.86	256.09	247.23	247.23	255.56	292.65	368.97	7.80	2.71*
Uttaranchal	301.31	286.85	421.44	443.44	427.33	522.99	522.99	535.53	624.68	1083.71	12.36	0.01
Haryana	277.19	329.45	352.56	373.67	392.00	387.64	387.64	383.97	369.22	330.35	2.88	0.93*
Delhi	224.29	237.37	255.87	215.40	230.77	233.71	233.71	246.91	274.13	250.44	1.92	0.60*
Rajasthan	326.80	305.28	279.89	288.04	300.32	322.34	322.34	427.03	347.40	460.43	5.51	1.66*
Uttar Pradesh	269.71	285.07	294.04	291.91	301.02	298.39	298.39	356.68	360.56	331.66	3.77	0.98*
Bihar	167.27	142.41	219.40	149.85	186.83	96.92	96.92	80.12	171.64	392.55	4.29	1.64
Nagaland	39.56	107.94	71.60	76.27	77.63	125.74	125.74	101.95	117.42	85.57	14.49	-1.21
Manipur	34.32	34.65	46.08	34.27	37.66	53.49	53.49	31.44	38.94	42.44	1.69	0.43
Tripura	175.22	88.84	46.03	54.15	154.73	59.60	59.60	61.54	62.91	66.02	-5.33	0.96
Meghalaya	118.42	118.35	228.98	309.75	356.08	591.39	591.39	810.05	955.20	886.99	28.38	2.26*
Assam	167.35	126.95	344.91	392.80	353.84	311.89	311.89	296.37	262.04	210.90	4.26	1.18
West Bengal	146.55	169.81	190.30	205.62	245.00	221.82	221.82	250.74	287.21	293.46	8.55	2.36
Jharkhand	341.62	337.20	580.85	695.25	1177.27	924.73	924.73	782.16	1294.63	837.03	12.96	1.46
Orissa	280.92	278.13	325.65	375.81	507.37	523.32	523.32	608.21	739.72	747.80	12.82	2.08*
Chhattisgarh	368.22	364.57	491.57	641.84	891.75	698.58	698.58	903.40	936.30	903.49	11.19	0.65
Madhya Pradesh	343.50	405.96	355.73	327.58	320.14	384.50	384.50	496.26	550.28	516.51	5.55	1.53*
Gujarat	358.85	397.46	487.32	538.00	551.86	634.77	634.77	569.04	634.51	551.70	5.93	1.44*
Daman & Diu	466.24	486.40	500.10	466.93	444.68	600.51	600.51	517.11	733.16	453.75	1.29	0.50**
Dadra & N Haveli	650.10	582.69	634.41	678.29	944.97	575.95	575.95	692.08	625.00	800.33	0.23	0.25

Contd. Table: 4.8

State-Wise Estimates of Employees Productivity in Organised Manufacturing Sector ('000)

State	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Growth Rate	E S [#]
Maharashtra	377.16	357.88	403.75	472.21	519.57	659.32	659.32	703.66	797.94	710.38	9.85	2.23
Andhra Pradesh	143.34	165.32	159.07	204.21	210.72	210.14	210.14	285.88	306.42	309.51	10.79	1.67*
Karnataka	252.79	290.34	336.37	357.06	434.81	371.73	371.73	465.59	481.52	525.96	6.81	2.05*
Goa	652.22	754.50	687.80	813.59	900.61	918.86	918.86	885.40	749.15	848.87	3.17	0.61*
Kerala	156.63	152.34	177.97	160.24	151.95	151.65	151.65	117.09	168.93	192.01	1.13	1.17*
Tamil Nadu	209.40	191.40	192.87	218.07	212.39	243.33	243.33	220.02	266.66	228.64	4.03	0.79*
Pondicherry	432.72	530.82	538.74	605.48	421.16	751.72	751.72	512.47	508.70	556.03	2.37	0.44*
Andaman&N.Island	36.88	79.21	83.68	623.89	464.94	394.96	394.96	500.27	649.69	353.56	27.37	2.55*
all India	262.07	272.37	303.18	334.55	366.26	390.87	390.87	411.78	466.34	448.23	7.30	1.67*
C.v.	0.59	0.61	0.57	0.59	0.67	0.64	0.64	0.61	0.63	0.60	0.98	

Note: E S[#] is elasticity of substitution between labour and capital. Elasticity of substitution marked by (*) are significant at 5 % level of significance and elasticities marked (**) indicate significance at 10 % level of significance.

Source: Calculation based on Annual Survey of Industries.

The state wise growth rates of labour productivity and estimates of these elasticities of substitution in table 4.8 suggest that in the 19 states which the elasticities of substitution are high and significant, the growth of labour productivity is partly due to substitution of capital in place of labour and partly due to efficient use of labour input in the manufacturing sector. In the states where the elasticity of substitution is insignificant, the growth in labour productivity is entirely due to efficient use of labour input. Positive growth rate of labour productivity means decrease in labour intensity or other words decline of employment per unit of manufacturing output.

Table 4.9 has shown the state wise estimates of growth rate of workers productivity and levels of workers productivity in thousand rupees along with its coefficient variations over the time period 2000-01 to 2009-10. The table shows that the highest growth rate of worker productivity is recorded in Meghalaya with 28 percent per annum registering the low level of worker productivity with 152.6 thousand Rs. in 2000-01 which increased to about 933.8 in 2009-10. On average, the level of labour productivity in Goa is highest with 954 thousand Rs. in 2000-01 which has grown up to about 1297 thousand Rs. in 2009-10 although registering minimum growth rate of worker productivity 2.08 percent per annum, followed by Dadar & N Haveli with productivity level of 890 thousand Rs. in 2000-01 which decreased to about 705 thousand Rs. in 2009-10 registering a negative growth rate (-0.51) percent per annum. Similarly, the second highest growth rate of worker productivity has registered 27 percent per annum in Andaman & N Island with very low level of worker productivity 42.3 thousand Rs. in 2000-01 which increased to about 427 thousand Rs. in 2009-10. The minimum level of worker productivity can be seen in Manipur with only 40.2 thousand Rs. which increased very slowly to about 51 thousand Rs. in 2009-10 recording a growth rate 1.61 percent per annum. Manipur is the single state where the level of worker productivity is represented minimum performance with the lowest growth rate.

The table reveals that a level of worker productivity varies across states as depicted by coefficient of variation over time period as exhibited by growth rate. The value of the coefficient of variation varies between a minimum of 55 percent in the year 2009-10 to a maximum of about 68 percent in 2004-05. It shows that the pattern of intensity of labour

Table: 4.9**State-Wise Estimates of Workers Productivity in Organised Manufacturing Sector('000)**

State	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Growth Rate
Jammu& Kashmir	127.68	128.90	133.35	111.72	264.49	337.65	471.83	610.35	626.09	529.71	24.40
Himachal Pradesh	609.72	696.03	789.24	824.65	780.00	1426.93	1375.16	1514.25	1439.81	1444.00	11.68
Punjab	221.76	272.05	271.20	257.44	225.64	221.22	276.52	324.54	285.92	307.83	2.69
Chandigarh	324.30	282.43	375.68	383.92	402.73	390.11	447.39	457.32	581.64	672.97	8.22
Uttaranchal	452.76	429.27	628.57	667.94	625.74	693.71	715.86	828.66	1440.22	847.72	10.05
Haryana	383.39	454.84	472.17	506.45	517.97	502.28	493.71	469.36	531.90	567.43	2.74
Delhi	328.89	357.67	382.00	313.21	345.43	340.49	358.79	395.62	362.75	402.36	1.15
Rajasthan	432.17	396.52	358.00	368.75	388.28	412.98	542.58	461.79	586.24	623.93	5.30
Uttar Pradesh	362.42	382.15	389.66	378.52	390.53	386.56	464.53	459.29	426.14	510.64	3.24
Bihar	213.91	173.57	268.47	183.86	224.41	114.89	97.27	202.92	459.96	294.24	3.53
Nagaland	50.75	137.41	88.00	90.71	93.91	146.58	114.95	140.02	99.75	415.92	12.99
Manipur	40.19	39.37	53.87	38.71	43.00	60.77	35.46	43.41	48.69	51.05	1.61
Tripura	200.17	100.76	51.25	59.94	172.35	65.96	67.87	69.60	72.85	79.85	-5.64
Meghalaya	152.58	142.08	275.97	389.24	449.65	711.25	970.40	1166.74	1080.26	933.81	28.13
Assam	203.67	150.85	410.65	466.73	417.72	364.69	348.16	311.04	249.16	372.75	4.04
West Bengal	183.20	213.94	239.54	259.08	303.58	272.15	317.67	351.76	358.67	398.09	8.11
Jharkhand	441.23	440.87	748.61	904.66	1528.69	1207.29	1012.05	1681.43	1117.81	1340.08	13.13
Orissa	364.62	360.01	415.25	477.19	633.62	686.17	789.73	941.41	912.18	776.61	12.19
Chhattisgarh	538.63	531.61	723.00	894.25	1217.95	927.17	1188.22	1234.00	1225.00	1081.55	9.75
Madhya Pradesh	455.49	536.30	474.58	435.76	423.16	504.97	660.74	723.97	697.43	687.39	5.66
Gujarat	487.37	543.24	661.54	729.21	735.34	841.69	746.92	831.86	712.55	869.33	5.26
Daman & Diup	602.30	659.34	645.19	624.70	592.54	822.29	688.41	992.50	581.74	599.17	1.12
Dadra & N Haveli	890.18	780.82	825.60	923.93	1306.92	756.99	916.53	793.97	1038.54	705.42	-0.51

Contd. Table: 4.9**State-Wise Estimates of Workers Productivity in Organised Manufacturing Sector('000)**

State	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Growth Rate
Maharashtra	541.21	509.55	569.84	679.71	741.37	933.66	981.74	1134.27	1024.80	1031.24	9.82
Andhra Pradesh	170.20	197.62	185.30	244.16	250.89	249.34	342.61	369.97	372.01	430.34	11.01
Karnataka	333.68	386.48	441.49	466.69	558.09	478.61	601.46	614.01	677.28	617.73	7.36
Goa	954.01	1045.06	991.65	1120.82	1190.96	1197.20	1152.44	1012.62	1111.87	1297.08	2.08
Kerala	186.63	180.44	211.78	186.22	175.95	176.54	135.71	194.93	221.31	213.43	0.77
Tamil Nadu	257.12	233.92	235.92	267.55	257.34	296.04	310.31	321.98	278.55	378.85	4.23
Pondicherry	559.61	674.38	682.66	762.44	530.71	954.31	641.41	637.38	695.87	832.95	2.15
Andaman&N.Island	42.29	97.48	118.72	841.17	778.00	473.39	629.10	805.80	428.06	426.55	26.94
all India	341.20	354.31	390.49	432.55	469.17	499.08	539.69	594.58	578.50	607.96	7.19
C.V.	0.62	0.63	0.59	0.61	0.68	0.66	0.61	0.64	0.61	0.55	1.03

Source: Calculation based on Annual Survey of Industries Summary Results for Factory Sector.

use in organised manufacturing across different states in India is showing neither a converging nor a diverging trend. The table also shows different growth rate of labour productivity of various states. The 14 states Meghalaya, Andaman & N Island, Jammu & Kashmir, Himachal Pradesh, Chandigarh, Uttaranchal, Nagaland, West Bengal, Jharkhand, Orissa, Chhattisgarh, Maharashtra, Andhra Pradesh and Karnataka are registering higher growth rate of labour productivity than all India growth rate of about 7.19 percent per annum. Growth in worker productivity may be either due to more efficient use of labour without more of other inputs or due to the fact that each worker works with more of the other inputs such as physical capital, human capital or intermediate inputs.

The state wise levels of non-worker productivity in thousand rupees, its growth rate and coefficients of variation estimates over time period 2000-01 to 2009-10 are presented in table 4.10. It depicts the levels of intensity of labour per unit of output varies across states with its growth rates and coefficients variation over time period. The highest level of non-worker is 2411 thousand Rs. in Dadar & N Haveli in 2000-01 which increased to about 2727 in 2009-10 with minimum growth rate 2.7 percent per annum. Same situation happens with Daman & Diu, the level of non-worker productivity is highest 2064 thousand Rs. in 2000-01 which grew up to about 2223 thousand Rs. in 2009-10 recording negative growth rate -1.91 percent per annum. The state of Nagaland increased from the minimum level of productivity of about 180 thousand Rs. in 2000-01 which increased fast speed to about 3393 thousand Rs. in 2009-10 registering a growth rate of about 22.48 percent per annum. Similarly, other states having lowest levels of productivity in 2000-01 are Manipur with 235 thousand Rs. and Andaman & N Island with 289 thousand Rs. whose productivity levels increased to 285.24 and 1722.4 in 2009-10 recording compound growth rates of about 2.66 and 27.58 respectively. Tripura is only state where growth rate of labour productivity is negative -2.58 percent which means level of labour productivity has declined or intensity of labour use has increased.

The table also shows that the value of the coefficient of variation varies from a minimum of 46 percent in the year 2009-10 to a maximum of about 60 percent in 2004-05. Thus, it is clear that the use of the labour intensity in organised sector across different

Table: 4. 10**State Wise Estimates of Non Workers Productivity in Organised Manufacturing Sector('000)**

State	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Growth Rate
Jammu& Kashmir	484.12	465.08	499.22	495.48	994.21	1309.98	1829.27	2467.05	2952.96	2668.90	27.80
Himachal Pradesh	1895.86	1894.02	2315.80	2499.73	2498.35	4274.97	4638.90	4642.17	4725.56	4929.24	13.48
Punjab	769.01	962.67	1008.18	948.71	860.30	876.74	1061.48	1229.09	1089.99	1228.14	3.87
Chandigarh	619.91	569.97	635.33	632.21	703.30	675.01	596.03	812.76	1009.09	1255.88	7.03
Uttaranchal	900.74	864.59	1278.98	1319.34	1347.67	2125.25	2125.96	2537.76	4377.97	3209.01	18.56
Haryana	1000.60	1195.03	1391.81	1425.25	1611.80	1698.46	1727.37	1730.68	871.82	2170.48	3.99
Delhi	705.21	705.72	774.93	689.76	695.26	745.25	791.85	892.65	808.87	924.07	2.81
Rajasthan	1340.29	1326.73	1282.83	1315.98	1325.68	1468.54	2005.08	1402.39	2145.51	2278.03	6.21
Uttar Pradesh	1054.40	1122.15	1198.23	1275.73	1313.43	1308.17	1536.27	1677.35	1495.85	1755.87	5.50
Bihar	767.20	793.13	1200.31	810.06	1115.66	619.88	454.42	1113.50	2678.55	1648.78	8.00
Nagaland	179.46	503.25	384.06	479.17	447.85	884.18	901.67	727.51	601.91	3393.29	22.48
Manipur	234.74	289.30	318.95	299.21	303.07	446.49	276.89	378.56	330.28	285.24	2.66
Tripura	1406.03	751.14	452.02	559.91	1513.09	618.58	659.40	654.76	704.21	777.58	-2.58
Meghalaya	528.87	708.73	1344.93	1516.74	1711.08	3509.47	4902.24	5268.20	4957.70	3777.68	29.27
Assam	938.52	801.22	2154.57	2479.71	2313.66	2154.45	1992.34	1663.59	1373.54	2040.58	5.33
West Bengal	732.41	823.17	925.81	996.41	1269.68	1199.48	1190.00	1564.97	1614.16	1754.09	9.85
Jharkhand	1513.24	1433.98	2592.01	3003.45	5121.19	3951.04	3443.33	5627.81	3332.25	3853.17	11.75
Orissa	1223.75	1222.91	1509.25	1768.90	2546.32	2204.97	2646.20	3452.78	4149.76	3666.52	15.40
Chhattisgarh	1163.88	1160.27	1535.70	2273.87	3329.60	2833.45	3768.81	3881.06	3442.45	3290.56	14.93
Madhya Pradesh	1397.11	1670.29	1420.45	1319.45	1315.09	1611.66	1993.56	2293.72	1991.13	2038.23	5.26
Gujarat	1360.81	1481.18	1850.46	2051.83	2211.62	2582.02	2389.38	2674.51	2443.92	2880.35	7.89
Daman &Diu	2063.87	1854.39	2223.81	1848.86	1782.03	2226.52	2078.15	2805.88	2062.26	2222.95	1.91
Dadra &N Haveli	2410.45	2296.25	2739.52	2551.26	3412.02	2408.27	2826.15	2936.85	3489.21	2727.22	2.66

Contd. Table: 4.10

State Wise Estimates of Non Workers Productivity in Organised Manufacturing Sector('000)

State	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Growth Rate
Maharashtra	1244.33	1202.32	1385.20	1546.86	1736.65	2243.88	2484.21	2691.02	2315.44	2426.21	9.91
Andhra Pradesh	908.15	1011.61	1123.49	1247.91	1316.09	1336.47	1726.49	1783.96	1842.25	2136.98	9.64
Karnataka	1042.69	1167.14	1412.69	1520.03	1968.32	1664.60	2061.11	2231.55	2354.13	1192.64	5.70
Goa	2061.77	2713.73	2244.71	2968.13	3694.16	3952.15	3821.07	2879.21	3588.67	3939.16	6.15
Kerala	974.31	978.23	1114.51	1148.39	1114.12	1075.49	853.45	1266.41	1450.36	1337.19	3.28
Tamil Nadu	1128.36	1052.97	1056.99	1179.18	1215.93	1366.83	756.14	1551.93	1276.03	1677.02	3.46
Pondicherry	1908.36	2493.61	2555.45	2941.11	2040.38	3540.97	2549.30	2519.77	2766.89	3106.37	3.17
Andaman&N.Island	288.06	422.43	283.49	2415.36	1155.45	2383.86	2443.01	3353.56	2031.59	1722.38	27.58
all India	1129.99	1177.64	1355.92	1476.53	1669.72	1802.76	1737.43	2162.14	1990.54	2113.44	7.68
C.V.	0.50	0.51	0.51	0.52	0.60	0.56	0.59	0.58	0.56	0.46	0.87

Source: Calculation based on Annual Survey of Industries Summary Results for Factory Sector.

states in India is showing no converging or diverging trend. The 14 states Meghalaya, Andaman & N Island, Jammu & Kashmir, Himachal Pradesh, Uttaranchal, Bihar, Nagaland, West Bengal, Jharkhand, Orissa, Chhattisgarh, Gujarat, Maharashtra, Andhra Pradesh are registered in which a growth rate are higher than all India growth rate of about 7.7 percent per annum while other states have shown lower growth rate than all India growth rate. The coefficient of variation of growth rate of non-worker productivity of various states shows that interstates variability over the same period is 87 percent of the mean at the interstates growth rates.

As has been discussed earlier, there are inter-state variations in the levels and growth rates of labour productivity of employees, workers and non-workers over the sample period. An important question arises whether the differences in these growth rates are due to the differences in the levels of productivity in different states. This is because in the states where productivity level is already high in the base year, the improvement in the productivity levels is expected to be slower in comparison to the states where productivity level is lower. We tested the hypothesis of no relationship between productivity growth rate and levels of productivity.

This was done by regressing the growth rate of productivity on the level of productivity in different states. This has been done for total employees, workers, and non-workers. The regression results have been shown in appendix table Appendix-1. The results show that in case of total employees, the growth rate of productivity is negatively and significantly related to the levels of productivity. The coefficient of productivity level is negative and significantly different from zero at 5.5 percent level of significance using one tailed test.

When the hypothesis was tested separately for workers and non-workers, the relationship negative and therefore expected but is not found significant at any conventional level of significance.

The table contains the levels of employees wage rates in thousand rupees and its growth rates. To know the interstate variation of levels of employees wage rates over time period 2000-01 to 2009-10, the coefficient of variation for each state have been shown in table 4.11. The level of employees wage rates for the Uttaranchal varies from a higher of 144 thousand Rs. than other state in 2000-01 which decreased to about 98.5 thousand Rs.

Table: 4.11**State Wise Estimates of Employees Wage Rates in Organised Manufacturing Sector ('000)**

State	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Growth Rate
Jammu& Kashmir	53.47	52.88	56.08	50.85	60.86	50.95	62.11	55.96	64.22	66.47	2.28
Himachal Pradesh	66.54	70.36	77.18	81.45	74.57	88.94	103.70	92.41	100.84	101.81	5.05
Punjab	54.54	55.16	60.02	59.48	55.02	57.23	65.66	60.34	63.76	69.87	2.20
Chandigarh	99.05	100.41	113.65	110.67	106.93	102.82	130.11	108.76	117.16	131.62	2.37
Uttaranchal	144.79	119.47	125.11	119.86	104.23	91.98	125.29	92.03	164.35	98.46	-1.66
Haryana	84.23	86.47	93.05	96.37	88.17	89.21	97.47	94.90	86.29	121.18	2.08
Delhi	72.58	78.12	87.14	79.62	78.94	85.22	91.75	93.82	91.00	112.46	3.63
Rajasthan	68.19	64.78	68.21	65.91	64.55	67.78	71.29	66.52	79.45	88.93	2.43
Uttar Pradesh	67.97	68.53	76.71	69.91	70.64	73.12	83.94	80.34	89.73	93.50	3.43
Bihar	58.60	51.19	54.44	50.06	45.90	42.35	45.13	42.19	50.15	49.92	-1.95
Nagaland	21.48	23.74	23.47	22.15	24.21	28.05	29.52	22.03	19.57	18.71	-1.14
Manipur	16.00	16.74	21.83	18.82	21.69	20.13	20.64	22.06	23.66	31.48	-5.45
Tripura	22.76	24.02	21.95	19.78	18.63	18.38	19.69	19.39	20.52	23.00	1.01
Meghalaya	42.51	40.93	40.83	43.83	74.35	66.25	88.67	76.38	78.36	86.41	-9.28
Assam	45.38	42.19	49.75	48.29	46.94	46.20	50.78	49.41	53.98	62.59	2.89
West Bengal	79.42	78.91	85.63	78.10	76.38	78.64	76.43	86.56	86.10	84.51	0.72
Jharkhand	136.02	140.92	158.70	177.55	129.38	148.66	147.61	186.06	177.97	180.36	2.79
Orissa	87.77	95.03	98.37	96.15	86.56	94.87	109.02	118.70	127.10	113.42	3.54
Chhattisgarh	125.18	128.32	136.72	159.87	120.78	126.32	157.86	151.12	149.27	123.27	0.87
Madhya Pradesh	79.48	75.89	80.11	76.58	78.48	80.92	91.96	89.18	94.99	106.91	3.30
Gujarat	75.68	78.12	84.93	84.72	83.38	83.92	96.51	93.13	96.22	109.29	3.46
Daman & Diu	48.25	59.41	66.03	61.56	65.97	75.49	74.76	89.66	76.23	82.33	5.48
Dadra& N Haveli	61.75	67.55	73.00	73.49	79.46	73.36	98.85	73.69	92.26	96.18	4.35

Contd. Table: 4.11**State Wise Estimates of Employees Wage Rates in Manufacturing Organised Sector ('000)**

State	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Growth Rate
Maharashtra	106.26	103.51	111.09	112.17	113.92	118.69	137.32	133.70	144.10	150.75	4.35
Andhra Pradesh	47.08	46.66	48.37	49.57	49.01	52.95	58.74	66.14	67.55	77.26	5.72
Karnataka	77.42	80.02	89.78	84.84	84.59	85.59	98.30	101.80	103.32	96.28	2.97
Goa	94.76	99.53	102.70	104.91	109.11	115.29	124.63	114.57	120.58	170.17	4.80
Kerala	55.09	55.38	61.36	52.97	53.36	55.49	55.61	56.29	58.61	67.50	1.20
Tamil Nadu	60.17	56.73	64.04	61.35	59.11	62.90	77.20	69.52	76.06	90.16	4.23
Pondicherry	63.02	67.68	71.34	68.97	67.29	88.67	102.05	104.91	96.15	108.56	6.72
Andaman&N.Island	30.15	42.26	55.13	56.86	58.57	74.83	74.92	79.64	80.99	75.72	10.02
all India	74.52	73.98	80.10	78.77	76.19	79.32	90.02	88.96	94.91	101.14	3.36
coeff.var.	0.43	0.42	0.42	0.48	0.38	0.39	0.40	0.43	0.43	0.40	1.53

Source: Calculation based on Annual Survey of Industries Summary Results for Factory Sector

in 2009-10 and registering the negative growth rate -1.66 followed by Jharkhand with wage rates level of 136 thousand Rs. in 2000-01 which grew up to about 180.4 thousand Rs. in 2009-10 recording a growth rate of about 2.79 percent per annum. As the same way, the states of Manipur and Nagaland rose from the minimum level of wage rates of about Rs 16 & 21.5 thousand in 2000-01 to maximum of about 31.5 & 18.7 thousand in 2009-10 finding growth rate of about -5.45 & -1.14 percent per annum respectively. Five states Uttaranchal, Bihar, Nagaland, Manipur, and Assam have shown negative growth rate. The 14 states Andaman & N Island, Pondicherry, Tamil Nadu, Goa, Himachal Pradesh, Delhi, Jharkhand Orissa, Madhya Pradesh, Gujarat, Daman & Diu, Dadar & N Haveli, and Andhra Pradesh are registered higher growth rates than all India growth rate of level of wage rates of about 3.36 percent per annum.

The table shows the interstate variability from a minimum of 38 percent of the mean in 2004-05 to maximum of 48 percent in 2009-10. Therefore, it is clear that rate of paid based on per unit of production to labour in organised sector across different states in India neither a converging nor a diverging trend. The interstate variability in the growth rates of wage rates levels over the sample period is 153 percent of the mean of the interstate growth rates. It is also clear that interstate variation in respect of growth rate is more pronounced than the variations in respect of levels of wage rates. The interstate year wise performance in respect of employees wage rates is not unique and there are variations from one state to another and year to year, this has been depicted by the value of coefficient of variation and growth rates of level of wage rates are also different in various states.

The levels of workers wage rates in thousand for the year 2000-01 to 2009-10 are estimated in table 4.12. It contains the growth rate of levels of workers wage rates and its coefficient of variations. The table shows that there are various states those have highest level of workers wage rates while registering a negative growth rates, such as the level of wage rates in Jharkhand is highest of 122.1 thousand Rs. in 2000-01 which decreased to about 121 thousand Rs. registering a negative growth rate of -0.96 percent per annum followed by Uttaranchal with level of wage rates 102.5 thousand in 2000-01 to 63.7 thousand in 2009-10 recording a negative growth rate -0.47. There are some states in

State Wise Estimates of Workers Wage Rates in Organised Manufacturing Sector ('000)

State	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Growth Rate
Jammu& Kashmir	45.75	45.32	43.87	41.37	39.85	39.05	38.05	40.53	39.65	46.77	-0.84
Himachal Pradesh	46.49	48.86	47.58	47.14	44.75	44.68	43.18	48.43	50.33	52.95	0.73
Punjab	43.90	45.91	45.03	45.60	42.13	43.26	42.51	43.82	44.57	48.24	0.19
Chandigarh	71.72	72.23	80.71	72.92	63.96	61.02	61.73	65.24	70.38	75.40	-0.80
Uttaranchal	102.47	92.83	93.36	91.92	79.43	63.69	64.25	63.90	86.15	63.65	-0.47
Haryana	57.63	58.83	60.22	59.22	54.24	53.20	53.58	55.82	60.26	73.39	0.90
Delhi	53.58	58.33	54.13	51.20	47.93	49.88	49.99	50.30	49.76	56.72	-0.59
Rajasthan	51.47	49.70	46.67	45.99	45.77	46.11	45.92	43.70	48.42	53.61	-0.08
Uttar Pradesh	49.49	51.30	51.39	47.48	46.23	47.10	48.32	48.55	51.88	55.28	5.31
Bihar	42.96	41.26	41.66	38.84	35.17	31.78	32.87	32.39	38.37	35.07	-2.50
Nagaland	17.41	20.08	18.89	18.09	20.11	23.59	19.63	17.71	16.25	16.15	-1.25
Manipur	15.87	16.38	18.75	17.74	18.86	17.52	16.76	20.55	21.87	28.72	4.69
Tripura	20.42	21.66	17.90	16.28	15.51	15.20	14.66	15.25	15.72	18.09	-2.67
Meghalaya	32.91	32.36	28.48	29.73	54.10	49.91	51.75	56.87	57.13	59.02	9.03
Assam	34.74	34.22	33.70	33.85	33.20	32.54	32.81	33.31	35.79	40.08	0.86
West Bengal	67.97	68.60	67.59	62.62	61.14	62.03	58.82	64.95	63.36	58.19	-1.40
Jharkhand	122.09	131.33	129.00	152.36	106.48	107.60	109.17	136.52	115.94	121.80	-0.96
Orissa	69.50	78.36	74.56	67.14	60.09	68.95	69.48	78.88	82.52	74.67	0.93
Chhattisgarh	81.11	86.22	83.20	71.55	67.30	61.76	60.90	64.84	59.61	67.41	-3.60
Madhya Pradesh	60.97	56.56	52.68	51.16	51.38	54.27	55.63	56.20	59.37	67.20	1.12
Gujarat	55.34	55.81	54.63	55.06	53.53	53.60	54.86	58.48	56.55	62.00	0.88
Daman & Diu	35.49	41.34	39.34	35.60	34.90	39.52	37.92	40.54	42.07	47.27	1.93
Dadra & N Haveli	43.65	45.25	40.43	43.25	42.71	41.55	44.30	42.84	48.21	52.73	1.51

Contd. Table: 4.12**State Wise Estimates of Workers Wage Rates in Organised Manufacturing Sector ('000)**

State	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Growth Rate
Maharashtra	82.35	78.62	74.31	76.27	75.40	74.46	74.19	78.28	78.12	83.99	0.81
Andhra Pradesh	34.84	35.68	34.63	35.07	34.61	37.09	38.18	43.24	44.50	49.56	3.80
Karnataka	54.86	57.01	54.95	52.40	53.86	52.62	56.61	59.50	59.07	67.60	1.66
Goa	70.86	72.93	66.14	73.32	74.39	78.54	79.12	77.48	74.83	103.00	2.82
Kerala	44.71	44.56	43.15	37.43	38.51	38.79	38.32	38.07	39.54	44.67	-0.84
Tamil Nadu	45.85	44.57	43.85	42.22	40.47	42.47	42.41	44.25	48.52	55.58	1.49
Pondicherry	48.93	54.23	46.65	47.22	44.60	48.81	46.93	52.40	53.54	59.46	1.40
Andaman&N.Island	25.82	36.78	37.70	42.29	46.67	64.41	61.48	58.89	65.28	53.48	9.01
all India	56.14	56.11	54.11	53.21	50.97	51.54	51.94	54.89	56.56	61.13	0.50
C.V.	0.45	0.43	0.45	0.50	0.38	0.37	0.38	0.43	0.38	0.37	2.72

Source: Calculation based on Annual Survey of Industries Summary Results for Factory Sector

which the level of wage rates have remained minimum from initial 2000-01 to end of 2009-10, such as the state of Manipur increased from the minimum level of wage rates of about 15.9 thousand in 2000-01 which grew up to about 28.7 thousand in 2009-10 registering a growth rates 4.69 percent per annum followed by Nagaland having lowest level of wage rates with 17.4 thousand in 2000-01 to 16.2 thousand in 2009-10 recording a negative growth rate -1.25 percent per annum. Two states Meghalaya and Andaman & N Island have shown fastest and equal growth rates at about 9.03 & 9.01 percent per annum followed by Rajasthan with about 5.31 percent rate of growth. The value of the coefficient of variation varies from a minimum of 37 percent in 2004-06 to a maximum of about 45 percent in 2009-10. The pattern of rate of paid based on per unit of production to labour in organised manufacturing across different states in India is showing neither converging nor a diverging trend.

The interstate year wise performance in respect of growth rate of wage rates level is not satisfactory and it is different for various states. The growth rate of wage rates of all India is also very low with 0.50 percent per annum. The 12 states have negative growth rates. The coefficient of variations of growth rates of various states is 272 percent show that the interstate variability over the same period in respect of wage rates level in manufacturing. It is also clear that interstate variation in respect of growth rate is more pronounced than the variations in respect of levels of wage rates

Table 4.13 contains the levels of non-workers wage rates in thousand with its growth rates and coefficient of variation over the time period 2000-01 to 2009-10. The table explains that two states Andaman & N Island and Pondicherry have highest or equal growth rates of non-workers wage rates level with 12.82 & 12.38 percent per annum registering 59.6 & 111 thousand Rs. levels of Wage rates in 2000-01 which increased to about 165.6 & 291.7 thousand in 2009-10 followed by Meghalaya with growth rate 10.09 percent recording the level of wage rates of about 75.8 thousand in 200-01 which rose to about 197.2 thousand in 2009-10. Similarly, the states of Bihar & Nagaland having minimum growth rates of wage rates levels recording 114.7 & 35.9 thousand in 2000-01 to 133.2 & 39.6 thousand in 2009-10. All states have positive growth rate of level of wage rates but it is different for various states.

Table: 4.13**State Wise Estimates of Non-Workers Wage Rates in Organised Manufacturing Sector ('000)**

State	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Growth Rate
Jammu& Kashmir	82.75	86.58	94.99	92.89	139.80	97.10	110.25	118.32	180.09	165.71	7.95
Himachal Pradesh	128.89	135.76	156.25	185.43	170.08	221.53	234.80	227.25	266.64	268.59	8.96
Punjab	91.42	94.50	108.46	110.62	104.14	112.58	111.81	122.90	136.90	156.16	5.06
Chandigarh	151.31	165.26	161.52	172.84	181.96	175.13	160.45	186.10	198.32	236.54	3.45
Uttaranchal	228.98	182.63	179.97	175.06	157.64	178.63	181.20	178.19	402.04	230.21	3.55
Haryana	153.65	167.35	180.41	200.93	193.76	210.99	219.64	239.03	128.96	303.97	3.74
Delhi	113.34	123.29	147.32	142.21	141.36	162.58	179.48	192.02	182.96	240.49	7.34
Rajasthan	120.03	122.66	137.40	136.98	128.66	144.84	149.24	135.80	193.02	217.89	5.51
Uttar Pradesh	121.77	126.24	146.55	145.50	152.76	161.16	177.45	196.42	222.59	224.94	7.28
Bihar	114.67	104.11	103.93	99.50	99.27	99.39	104.25	95.92	118.75	133.15	1.21
Nagaland	35.89	40.02	40.24	43.60	43.76	54.95	52.07	44.46	39.60	39.63	1.26
Manipur	16.77	23.05	36.16	27.13	41.67	39.31	35.08	35.27	35.80	46.93	8.15
Tripura	39.23	46.98	52.20	52.49	46.06	48.20	49.95	58.36	67.00	70.82	5.12
Meghalaya	75.75	90.13	94.87	98.79	151.42	146.89	144.59	164.44	175.79	197.22	10.09
Assam	94.38	91.53	125.97	125.02	123.04	126.89	133.85	135.56	154.27	185.87	6.48
West Bengal	125.20	128.68	144.70	137.67	140.12	151.84	146.27	182.70	188.42	200.49	5.17
Jharkhand	183.77	187.90	243.37	261.21	206.12	283.04	285.18	351.89	362.89	348.77	8.06
Orissa	149.11	162.64	173.23	203.69	192.93	178.17	188.94	264.73	329.87	296.38	8.16
Chhattisgarh	220.41	230.96	239.46	384.44	266.99	323.61	339.01	422.51	401.23	293.22	5.66
Madhya Pradesh	136.26	144.29	154.02	153.55	162.69	165.97	171.29	193.69	196.70	224.64	5.06
Gujarat	132.47	146.62	161.42	168.20	173.14	176.93	190.04	204.51	232.25	265.97	6.92
Daman & Diu	91.99	116.18	150.50	138.39	159.39	172.87	159.54	228.52	197.34	212.41	8.74
Dadra&N Haveli	110.77	140.15	172.98	157.00	175.41	174.54	201.09	187.80	240.27	264.16	8.03

Contd. Table: 4.13**State Wise Estimates of Non-Workers Wage Rates in Organised Manufacturing Sector ('000)**

State	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Growth Rate
Maharashtra	161.25	171.42	190.72	193.87	204.16	225.01	242.61	265.17	293.18	307.81	7.53
Andhra Pradesh	112.40	110.38	122.92	123.69	124.56	137.97	150.10	176.52	181.71	214.80	7.41
Karnataka	147.89	157.97	191.56	190.52	192.99	200.27	198.19	255.52	257.15	151.64	3.22
Goa	146.39	178.03	176.86	188.57	216.81	236.61	242.29	220.02	268.23	374.18	8.36
Kerala	109.26	123.38	147.29	148.80	147.39	157.25	155.17	174.66	183.57	210.53	5.97
Tamil Nadu	123.01	119.69	145.46	145.64	147.14	157.23	85.98	191.31	202.24	243.22	6.03
Pondicherry	111.06	125.80	155.07	152.86	154.50	236.60	246.45	312.51	265.57	291.68	12.38
Andaman&N.Island	59.61	71.93	91.96	98.67	76.24	127.30	183.30	165.99	155.57	165.55	12.82
all India	135.39	141.77	161.17	166.02	165.94	179.66	167.86	212.84	226.86	240.25	6.21
C.V.	0.40	0.36	0.34	0.44	0.34	0.38	0.40	0.43	0.43	0.36	0.41

Source: Calculation based on Annual Survey of Industries Summary Results for Factory Sector

The interstate variability varies from a minimum of 34 percent in 2002-03 to maximum of 44 percent in 20003-04. The coefficient of variation of growth rates of various states shows that the interstate variability in the growth rates of levels of wage rates over the sample period is 41 percent of the mean of the interstate growth rates. The variation across different states in India is not converging or diverging trend.

As has been discussed, there are inter-state differences in the growth rates and levels of wages of employees, workers, and non-workers. An interesting question arises whether the levels of wages in the base years influences the growth rates of wages of employees, workers, and non-workers. This is important in view of the fact that it is expected that the states where wage rates are already high are expected to show a lower increase over time in comparison to those states where wage rates are lower. In other words the relationship between growth rate and level of wages is expected to be negative. We tested the hypothesis of no relationship between wage rate growth and level of wage rate by regressing growth rate of wages on the level of wage rates. The results are shown in the appendix table Appendix-2. The table shows that there is no relationship between growth rate of wages and the levels of wage rate in all the three cases i.e. employees, workers, and non-workers.