

# EMPLOYMENT GROWTH ANALYSIS IN INDIAN MANUFACTURING SECTOR

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©Ontario International Development Agency ISSN: 1923-6654 (print)

ISSN 1923-6662 (online). Available at <http://www.ssrn.com/link/OIDA-Intl-Journal-Sustainable-Dev.html>

**Abstract:** India's manufacturing segment is a crucial cog in the wheel of economic progress; the sector's contribution to the gross domestic product (GDP) being 16 per cent. With the passage of time post 1990-economic liberalisation era, India has well realised the importance of manufacturing for the overall industrial development. In this wake, the Government has also been very pro-active, especially during the last decade. This paper has described many variables that determine the relation of organised manufacturing output and employment growth rate like labour productivity, emoluments of employees, employees- worker, non-worker and wage rates for time period 2000-01 to 2009-10. This is shown by simple percentage, coefficient of variation, compound growth rate and simple regression analysis. Through these statistical tools the output growth rates vary between a minimum of 4.02 per cent per annum in Kerala and a maximum of about 40 per cent per annum in Jammu & Kashmir. The overall growth rate of manufacturing sector output is about 12.92 per cent per annum. The growth rates of employees in the manufacturing differ from a minimum of about -12.26 per cent per annum in Andaman & N. Island to a maximum of 24.36 per cent per annum in Uttaranchal. 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. 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. 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. The study shows that 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 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.

**Keywords:** Compound growth rate; Labour productivity; Organised manufacturing industry; Regression analysis.

## INTRODUCTION

**M**anufacturing is the process of converting raw materials, components, or parts into finished goods that meet a customer's expectations or specifications. Manufacturing commonly employs a man-machine setup with division of labour in a large scale production. Manufacturing industry refers to those industries which involve the manufacturing and processing of items and indulge in either creation of new commodities or in value addition. The manufacturing industry accounts for a significant share of the industrial sector in developed countries. The final products can either can serve as a finish good for sale to customers or as intermediate goods used in the production process. In short, we can say that manufacturing industry refers to any business that transforms raw materials into finished or semi-finished goods using machines, tools and labour. Manufacturing sectors include production of food, chemicals, textiles, machines and equipment.

The growth of organized manufacturing sector is a necessary condition for balanced growth of economy which ensures creation of jobs for the large workforce joining the job market every year.

Economic history of developed and developing countries clearly demonstrates immense contribution of manufacturing to economic growth and to job creation through relocation of labour force from the traditionally low wage low productivity sector like agriculture to the higher wage manufacturing sector. In the context of India, where liberalization and reform of the industry was started from mid 1980s, it was expected that the employment scenario both in terms of quantity as well as quality would get a respectable boost contributing to the inclusive growth across the country.

### **Registered (Organized) manufacturing sector**

The registered manufacturing sector includes all factories covered under sections 2m (i) and 2m (ii) of the Indian Factories Act (IFA), 1948 which refers to the factories employing 10 or more workers and using power or those employing 20 or more workers but not using power on any day of the preceding 12 months.<sup>1</sup>

### **Importance of manufacturing Industry**

The structural transformation of the Indian economy over the last three decades has been spectacular growth of the services sector, which now accounts for about 50 percent of the GDP. However, the rapid growth of the services sector much before the manufacturing industry attaining maturity is not a healthy sign. A knowledge-based economy cannot be sustained in the long run unless it is adequately supported by a growing manufacturing economy. Moreover, a service economy cannot continue to thrive on a long-term basis in a country where over 80 percent of the population is education below the middle-school level. It is estimated that India needs to create 7-8 million new jobs each year outside agriculture to stay at its current unemployment level of 7 percent. Manufacturing jobs are ideal for workers transitioning out of agriculture, as service jobs require high level of education and professionalism. The revival of manufacturing sector can create close to 2.5 Million new jobs every year. With the removal of all quantitative restrictions on imports and the falling import tariffs under the WTO regime, it is all the more important for the Indian industry to improve its competitive edge. The sheer volume of international trade with over 70 percent of the seven trillion dollar market being in processed manufacturing, strongly indicates the necessity of developing global competitiveness in this sector. Thus, the above 8 percent growth of manufacturing industry in India is critical to ensure healthy balance

of income parity, employment generation and sustenance of growth.

### **Statement of the Problem**

Productive employment enhances income-earning capabilities of people, which ultimately leads to a reduction in poverty. The impact is greater when employment is of higher quality and real wages are higher. Historically speaking, structural change in employment in India has been very slow. The manufacturing sector in India is crucial for main reason: It has significant potential to provide modern employment to a growing labour force. This sector of India with Its future opportunities and high employment potentials embraces the path to the economic development of country. So, it is very important to examine the present situation of employment in manufacturing sector. The study looks at the performance of organized manufacturing sector of India in terms of employment generation since 2000s.

### **OBJECTIVES OF THE STUDY**

(a) To study state wise trends of manufacturing employment and output in India. (b) To study the inter-state variations in the impact of output growth on growth of employment.

### **MATERIALS AND METHODS**

For the fulfilment of proposed objectives, secondary sources of data were used. The data has been drawn mainly from Annual survey of Industries (ASI)<sup>2</sup>, vol.-1, over time period 2000-01 to 2009-10 which is published by Central Statistics Office (CSO), Department of Ministry Statistics and Programme Implementation (MOSPI), Government of India. The ASI consists primarily of all factories which are required to be registered under sections 2m (i) and 2m (ii) of the Factories Act 1948. To find out the state wise trends of manufacturing employment and output in India as well as inter-state variations on the impact of output growth on growth of employment, simple percentage share, coefficient of variation, compound growth rate and regression analysis were applied as statistical tools. The state wise distribution of gross value added (GVA) and employment generated in the organized sector were studied with the help of percentage shares. The technique of percentage shares was further used to examine

<sup>1</sup> The 'organised sector' in India is defined by the size of establishment in terms of number of workers.

<sup>2</sup> The Annual Survey of Industries (ASI) is the principal source of industrial statistical in India. It provides statistical information to assess and evaluate, objectively and realistically, the changes in the growth, composition and structure of organised manufacturing sector comprising activities related to manufacturing processes, repair services, gas and water supply and cold storage.

whether the state wise distribution of employment undergoes changes when employment is disaggregated into workers and non-workers. Similarly, the technique of percentage share was used to study the state wise distribution of compensation to employees at the levels of total employees, workers and non-workers. The percentage shares were calculated by dividing the state specific figures by all industries and multiplying by hundred.

### Compound growth rate

To study the behavior of variables such as output, employment, labour productivity<sup>3</sup> and wage rates over a period of time (2000-01 to 2009-10), the technique of compound growth rate (CAGR) has been used. The compound growth rate is computed by fitting an exponential function to the relevant data. An exponential trend equation is defined as:

$$Y = ab^t e^u$$

Where  $b$  is  $1+g$  and  $g$  is the compound growth rate.

The semi natural logarithmic transformation of this function is:

$\ln Y = \ln a + \ln b t + u$  Which is a semi log linear function. And 'ln' is natural logarithm.

The values of the parameter  $a$  and  $b$  in this equation are estimated by using OLS method. CAGR is computed by using the formula:

$$\text{CAGR (g\%)} = (\text{anti-log } b-1) * 100$$

### Coefficient of variation

For studying the interstate variations of labour productivity and wage rates of employees, workers and non-workers, the technique of coefficient of variation (C.V.) was used. The coefficient of variation was used to measure the extent of interstate disparities in respect of labour productivity and wage rates in organized manufacturing. The coefficient of variation is calculated by dividing the standard deviation (S.D.) by the mean of observations i.e.  $C.V. = S.D. / \text{Mean}$ . It was also used to ascertain the extent of interstate variations in growth rate of labour productivity and wage rates of employees, workers and non-workers.

### Regression Analysis

Kaldor<sup>4</sup> hypothesized that higher output will induce higher labour productivity in manufacturing

industries. There can be two different ways of looking at this hypothesis by using simple regression. One is to regress productivity growth ( $g_{pt}$ ) on output growth ( $g_{mt}$ ) and the other is to regress employment growth ( $g_{et}$ ) on output growth ( $g_{mt}$ ). The first can be specified as:

$$g_{pt} = a + b g_{mt}$$

The second can be derived as:

$$g_{et} = g_{mt} - g_{pt} = -a + (1-b) g_{mt}$$

The coefficient  $b$  in 1<sup>st</sup> or 2<sup>nd</sup> equation implies that  $b = 1$  indicates that there is no variation in employment growth due to growth in output. The value  $b = 0$  implies that there is no response of productivity growth due to change in output growth. We have estimated the following equations to know statistical relationship of growth of employees, workers, and non-workers on one hand and growth rate of output on the other. The equations are stated as:

$$G_e = a + b G_m + u$$

$$G_w = a + b G_m + u$$

$$G_{nw} = a + b G_m + u \quad (a \text{ \& } b \text{ are regression parameters})$$

Where  $G_e$  is growth rate of employees;  $G_w$  is growth rate of workers;  $G_{nw}$  is growth rate of non-workers representing the dependent variable.  $G_m$  is growth rate of manufacturing output and it denotes the independent variable in all in above equations.

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.

### RESULTS AND DISCUSSION

Hypothesis' Economic and Political Weekly, 29 September vol.42, no.39.

<sup>3</sup> Labour productivity is defined as number of workers per unit of real value added (in real terms).

<sup>4</sup> Das, P. (2007) 'Economic Reform, Output and

Employment Growth in Manufacturing: Testing Kaloder's

There are many variables to find out the growth rate in organised manufacturing sector such as total output, employees, labour productivity of employees, workers and non workers etc.

### **Trends of Employment and Output in Indian Organized 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 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. 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. The table 2 shows the distribution of manufacturing output and employment across states in the year 2009-10, 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 notable feature in the table is that in case of Maharashtra and Gujarat there are high difference between output shares and 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 1.2.

State-wise share of emoluments to employees, wages to workers and non-workers have been shown in table 3. 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 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 Mani-10, the all India share of emoluments reduced to 0.21 percent and only 15 states / union pur. 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). **Chaudhuri** (2001) organized manufacturing sector has increased at the compound annual rate of growth of 2.59 percent between 1990-91 and 1997-98. The growth of employment (measured as number of employees) increased during 1990-91 to 1995-96 though at a much lower rate. **Nagaraj** (2004) explained that between 1980-81 and 2000-01, employment of workers increased by 4.3 percent (0.24million), while that of supervisors rose up by 39 percent (0.55million). On a trend basis, however, the annual growth rates are 0.9percent and 2.2 percent for workers and supervisors respectively.

### **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 table 4 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), Uttaranchal (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. The regression results have been shown in table 1.5. 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.

### **CONCLUSION**

There have been a number of studies which have established a link between organised manufacturing growth rate and its variables like employees, workers and non worker and labour productivity for the time period 2000-01 to 2009-10. We found the growth rate of output has been higher than the growth rating of employment in most the states. The state-wise growth rates 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 (-12.26percent). In terms of annual compound growth rate of employment of the manufacturing sector Meghalaya, Jammu & Kashmir, Uttaranchal, & Himachal Pradesh have registered better performance whereas Delhi, Pondicherry, Kerala and Tripura recorded relatively poor performance during this period. However, Daman& Dui, Dadar& N Haveli and Chhattisgarh are showed improvement whereas West Bengal, Jharkhand, Delhi and Goa registered deterioration in the industrial development during 2000s. The study has observed an employment growth of 5.24 percent per annum for all India during the sample period.

The conclusion is that the performance of organized sector in most states is not satisfactory especially; it has failed to generate adequate employment. The primary reason for this is widespread automation and decline in labour intensity in most states. These have ensured that the benefits of the rise in labour productivity have largely gone to the surplus earners in the sector, who have been the main beneficiaries in the organised manufacturing sectors of the policies of liberalisation in general and trade liberalisation in particular. What is particularly striking is that even falling real wages in a context of relatively strong growth in organised industry and rising labour productivity have not been sufficient to ensure growth in employment. The negative effects of openness on employment generation have been strong enough to offset any supposed "benefits" of labour becoming cheaper in real terms for employers. This new trend therefore suggests that greater employment generation is not a necessary result of more growth in organised industry indeed; it could even be associated with falling employment in future as well. This is an extremely important fact that policy makers must take on board, if there is to be even pretence of "more inclusive" economic growth in the country.

### **REFERENCES**

- [1] Ahmed, N.Yunusand, M., Bhuyan H. R. (2009). 'Promoting Employment-Intensive Growth in Bangladesh: Policy Analysis of the

- Manufacturing and Service Sector', Employment Working Paper No. 38.
- [2] Alessandrini, M. (2009). 'Jobless Growth in Indian Manufacturing: A Kaldorian Approach', Discussion Paper No. 99.
- [3] Banga, R (2005). 'Impact of Liberalization on Wages and Employment in Indian Manufacturing Industries', Working Paper No. 153.
- [4] Bhalotra, S. R (1998). 'The Puzzle of Jobless Growth in Indian Manufacturing', *Oxford Bulletin of Economics and Statistics*, Vol.60, No.1, pp. 0305-9049.
- [5] Bhide, S., Kalirajan, K. (2004). 'Impact of Trade Liberalization on Employment in Indian Manufacturing: Evidence from the Organized Sector', *Journal of Social and Economic Development*, Vol. 6, No. 1, pp 1-19.
- [6] Burange, L.G. (2002). 'Growth of Employment and Output of Organized Manufacturing Sector in India: An Interstate Analysis', Working Paper (CAS).
- [7] Chaudhuri, S.(2001). 'Production and Employment Growth and Decline in Organized Manufacturing in India since 1991', Working Draft 12- 14 February.
- [8] Das, D. K., Wadhaw, D. (2009). 'The Employment Potential of Labour Intensive Industries in India's Organized Manufacturing', Working Paper No. 236.
- [9] Nagaraj, R (2004). 'Fall in Organized Manufacturing Employment: A Brief Note', *Economic and Political Weekly*, Vol. 39, No.30, pp. 3387-3390.

**Table 1:** State Wise Output and Employment Growth Rates in Organized 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.

**Table 2:** State Wise Distribution of Output and Employment In Organized

<b>Manufacturing Sector</b>				
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
Madhya Pradesh	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.



**Table 3:** 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.

**Table 4:** OLS Estimates of the Equation:  $G_e = a + b G_m$ 

State	Intercept	coefficient	R <sup>2</sup>	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 –
Uttaranchal	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 –
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 –
	8.58	-0.09	0.06	0.06

Karnataka	(3.07)	(-0.64)	–	–
Goa	8.98	-0.25	0.03	2.64
	(1.23)	(-0.43)	–	–
Kerala	1.53	0.09	0.06	2.70
	(0.53)	(0.35)	–	–
Tamil Nadu	2.16	0.40	0.20	3.34
	(0.35)	(1.31)	–	–
Pondicherry	3.54	-0.03	0.01	2.41
	(1.22)	(-0.31)	–	–
Andaman&N.Island	-10.65	-0.02	0.01	0.79
	(-0.87)	(-0.19)	–	–
	-1.10	0.48	0.34	2.33
All India	(-0.33)	(1.88)	–	–

**Table 5:** Regression of Productivity Growth on Level of Productivity

**Dependent Variable: Employees**  
**Method: Least Squares**  
**Number of Observations: 31**

Coefficients	Estimates	Std. Error	t-Statistic	Prob.
C(1)	12.533	2.658	4.716	0.000
C(2)	-0.017	0.009	-1.998	0.055
R-squared	0.121	Durbin-Watson stat		1.844
Adjusted R- Squared	0.091			

**Dependent Variable: Workers**  
**Method: Least Squares**  
**Number of observations: 31**

Coefficients	Estimates	Std. Error	t-Statistic	Prob.
C(1)	10.257	3.158	3.248	0.003
C(2)	-0.009	0.011420	-0.756	0.456
R-squared	0.019	Durbin-Watson stat		1.902
Adjusted R- Squared	-0.015			

**Dependent Variable: Non- Workers**  
**Method: Least Squares**  
**Number of observations: 31**

Coefficients	Estimates	Std. Error	t-Statistic	Prob.
C(1)	10.372	2.486	4.172	0.000
C(2)	-0.002	0.004	-0.503	0.619
R-squared	0.009	Durbin-Watson stat		1.945
Adjusted R- Squared	-0.026			

