

**DO WORKERS GAIN FROM PRODUCTIVITY INCREASE? SOME EVIDENCE FROM INDIAN ORGANISED MANUFACTURING SECTOR, 2000-01 TO 2014-15**

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**ABSTRACT**

This paper analyses the trends in segment-wise employment and their wage rates in the organised manufacturing sector over the last one and half decades; 2000-01 to 2014-15. Its primary focus is on analysing the trends in labour productivity and the gap between labour productivity and real earnings of different segments of employees in the sector. The analysis shows that the employment stagnation of the 1980s and 1990s continued until 2003-04, and after that, there has been a significant, but an almost equal, growth across the employment categories. However, incomes have grown disproportionately across the employment categories. Labour productivity has increased tremendously, but it has primarily benefited the supervisory and managerial staffs in the sector; a 100 percent rise in labour productivity has brought 88 percent rise in supervisors and managerial staffs' real income while workers' real income has increased just by 9.5 percent over the fifteen years period. So, the gap between the labour productivity and workers' real wage has increased further, and thus, they have gained the least from the significant rise in the labour productivity in the last one and half decades.

**Keywords:** Employment, Wages, Labour Productivity, Indian Organised Manufacturing Sector

**1. Introduction**

Economic theories suggest that labour productivity and wage rates are closely related, i.e., compensation to workers is closely linked to the value of goods and services they produce. However, several empirical studies suggest increasing gap between the labour productivity and labour compensation in developing as well as developed countries in recent times (Mathur & Mishra, 2007; Herman & Georgescu, 2008; Lopez-Villavicencio & Silva, 2010; and Bhattacharya et al., 2011). In India's case, the transformation of the significant increase in the GDP into increased labour earnings and thus, poverty reduction has been rather disappointing (Bhalla, 2002 and Ghosh, 2004).

Since the employment trends are closely linked with the labour productivity and wage rate trends, it becomes crucial to study them as well. The growth rate of numbers of workers in the organized manufacturing sector consistently declined induring the 1970s to 1990s. In the 1990s, the growth rate of the number of workers employed in the sector took a negative number, -0.85 per cent (Mathur& Mishra, 2007).This phase has widely been attributed as the “jobless growth” phenomenon in the Indian organised manufacturing sector.According to Nagraj (2004), about 1.1 million workers in the organized manufacturing sector, which was about 15 percent of the workforce in the sector, lost their jobs in the period 1995-2000.

On the other hand, the real wages for both production and non-production workers had been increasing during the period 1980-2007. The wage rate for production workers<sup>1</sup>increased almost at a same rate throughout the period 1980-2007 while the wage rate of the non-production workers increased moderately till the early post-reform period, and after that, it increased rapidly (Unel, 2003).Mathur and Mishra (2007) noted that the growth rate of real wage per production worker was negative in the 1990s and the growth rate of emoluments per employee, excluding production workers, was significantly growing at an increasing rate.

In a study of organised industry groups for the periods 1970s and 1980s, Jose (1992) observed a relative stagnation or even decline in labour productivity levels in a number of industries during 1970s while there was a sharp acceleration in labour productivity in the 1980s. Unel (2003) found that labour productivity during the 1980s was markedly higher than that in the preceding two decades. The productivity growth rate picked up further in the post-reform period in the sector. However, many empirical studies have found that increased gain from labour productivity had not been appropriately transferred to workers. Mathur and Mishra (2007) noted that the relationship between growth rates of labour productivity and that of the real wage was positive but not very significant over the period 1974-81 while it was significantly positive during the period 1981-94. For the period 1994-2004, the relationship was negative and very strong.In the post-reform period, the rate of growth of productivity per production worker was relatively high, and that of the real wages has been relatively low, in fact, negative for the period (Sen &Dasgupta, 2006).

In this context, the present paper, using the Annual Survey of Industries data, attempts to study the distribution of the increased labour productivity among its different categories of employees in the sector. In this respect, the trends in segment-wise employment, their real wages, labour productivity, and especially the gap between the labour productivity and employment category-wise real wages during the period 2000-01 to 2014-15 have been analysed.

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<sup>1</sup> Production workers are those workers who are directly engaged in production activities, like worker while non-production workers are supervisors and managerial staffs and other employees in the sector.

The paper is divided into six sections; the second section mentions data sources, methodology, and variables used. The third section deals with the analysis of employment and its composition, while the fourth section discusses trends in wages and wage inequality in the sector. Trends in the labour productivity and the increasing gap between the labour productivity and the real incomes of the different categories of employees have been the focus of the analysis in the fifth section. The findings of the paper are presented in the final section.

## **2. Data Sources, Methodology and Variables Description**

The main source of data for the studies on the organized manufacturing sector in India is the Annual Survey of Industries, which is published by the Central Statistical Organisation (CSO), Government of India. For this study, the ASI data provided by the Economic and Political Research Foundation (EPWRF) has been used. The period chosen for this study is 2000-01 to 2014-15, and the unit of analysis is the aggregate level of the Indian organised manufacturing sector. The national classification codes (NIC) concordance at the two-digit level has been done to arrive at the aggregate data. Consumer price index for industrial workers (CPI-IW) dataset has been obtained from the Reserve Bank of India's Handbook on Economy while wholesale price index (WPI)<sup>2</sup> dataset has been taken from the website of the office of the Economic Advisor (OEA), Ministry of Commerce and Industry, Government of India.

The consumer price index for industrial workers (CPI-IW)<sup>3</sup> deflator has been used to deflate the nominal wage rates while the wholesale price index (WPI) has been used to deflate the nominal gross value added. For both the deflators, the base year is 2004-05. Though there are several definitions of labour productivity, the labour productivity defined as the ratio of real gross value added and total employment has been widely used in the existing literature. Therefore, this paper uses the same definition for estimation of labour productivity. Real gross value added has been divided by the total person engaged in the sector to obtain the labour productivity.

This paper analyses three sub-categories of the total persons engaged in the sector, which are workers, other employees, and supervisory and managerial staffs as defined in the ASI instruction manual. Workers are defined as the employees directly engaged in manufacturing activities. Other employees are basically clerks in administrative offices, storekeeping sections, welfare sections, and the people working for sales and purchase of raw materials, fixed assets, and the watch and ward staffs. The supervisory and managerial staffs are responsible for all the supervisory and managerial works. They are at the top of the hierarchy in the employment chain in the sector.

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<sup>2</sup>The data set is available at [http://eaindustry.nic.in/download\\_data\\_9394.asp](http://eaindustry.nic.in/download_data_9394.asp) and at [http://eaindustry.nic.in/download\\_data\\_0405.asp](http://eaindustry.nic.in/download_data_0405.asp)

<sup>3</sup>The data set is available at <https://www.rbi.org.in/scripts/PublicationsView.aspx?id=17174>

Trend growth rates<sup>4</sup> have been calculated to analyse the movements in the relevant variables. For this purpose, a semi-logarithmic regression model, given by equation 1, is used.

$$\text{Log } X_t = \beta_0 + \beta_1 t + \mu_t(1)$$

Here, X refers to the respective index or the variable, while  $\beta_0$  is a constant.  $\beta_1$  is the slope coefficient of the time t that gives the trend growth rate, which is also the average annual growth rate for a particular index or variable over the period. It is obtained when  $\beta_1$  is multiplied by 100. The error term  $\mu_t$  is a white noise term. The standard annual growth rate has also been used in the analysis.

### 3. Trends in Employment and its Composition

Employment, both at the aggregate level and across the sub-categories, increased over the study period. However, in the beginning, 2000-01 to 2003-04, total persons engaged marginally decreased from 7.75 million to 7.63 million. After 2003-04, there has been a significant rise in total employment in the sector. So, the jobless growth of the 1980s and 1990s continued until 2003-04 in the organised manufacturing sector in India, after which a significant rise in employment was recorded and the total employment increased by 71 percent during the period of the study (Table 1 and 2).

**Table 1: Employment (category-wise) Trends in the Organised Manufacturing Sector during 2000-01 to 2014-15 (in lakhs)**

Year	Number of Workers	No. of Supervisory and Managerial Staff	No. of Other Employees	Total Persons Engaged
2000-01	59.59	7.49	9.80	77.54
2001-02	57.83	7.31	9.39	75.13
2002-03	59.84	7.21	9.33	77.00
2003-04	59.12	7.35	9.22	76.32
2004-05	63.96	7.70	9.49	81.80
2005-06	69.19	8.14	10.11	88.11
2006-07	76.33	9.02	13.70	99.76
2007-08	79.57	9.45	11.37	101.08
2008-09	85.10	10.45	13.18	109.44
2009-10	88.94	11.95	12.51	114.06
2010-11	95.98	11.91	13.90	122.53
2011-12	100.93	12.65	14.83	129.22
2012-13	96.94	12.22	14.23	124.12
2013-14	100.68	12.80	15.50	129.70
2014-15	103.54	12.86	15.77	132.86

Source: Calculations are based on ASI Dataset obtained from EPWRF

<sup>4</sup> Trend growth rate is also known as the compound rate of growth (Bhardwaj, 2009; page 4.22). It is widely used as the average annual growth rate in the existing literature.

**Table 2: Employment Indices for the Organised Manufacturing Sector during 2000-01 to 2014-15**

<b>Year</b>	<b>Total Persons Engaged</b>	<b>Number of Workers</b>	<b>Supervisory and Managerial Staff</b>	<b>Other Employees</b>
<b>2000-01</b>	100.0	100.0	100.0	100.0
<b>2001-02</b>	96.9	97.1	97.7	95.8
<b>2002-03</b>	99.3	100.4	96.3	95.2
<b>2003-04</b>	98.4	99.2	98.2	94.1
<b>2004-05</b>	105.5	107.3	102.8	96.8
<b>2005-06</b>	113.6	116.1	108.6	103.1
<b>2006-07</b>	128.7	128.1	120.4	139.8
<b>2007-08</b>	130.4	133.5	126.2	116.0
<b>2008-09</b>	141.1	142.8	139.6	134.5
<b>2009-10</b>	147.1	149.3	159.6	127.6
<b>2010-11</b>	158.0	161.1	159.1	141.8
<b>2011-12</b>	166.7	169.4	168.9	151.3
<b>2012-13</b>	160.1	162.7	163.2	145.1
<b>2013-14</b>	167.3	169.0	170.9	158.1
<b>2014-15</b>	171.4	173.8	171.8	160.9

Source: Calculations are based on ASI Dataset obtained from EPWRF

The total number of workers also shows quite the same trends; it decreased from 5.95 million workers in 2000-01 to 5.91 million in 2003-04 and then finally reached to 10.35 million in 2014-15, which is an increase of about 74 percent (Table 1 and 2). In a much similar way, the total number of other employees and the total number of supervisory and managerial staffs increased over the period, by 61 percent and 72 percent, respectively. Therefore, when the employment stagnation ended, and the sector started experiencing a rise in employment across the employment sub-categories. As a result, there has been a minor change in the composition of total employment in the sector (Table 3).

**Table 3: Change in the Composition of Employment in the Organised Manufacturing Sector during 2000-01 to 2014-15 (in %)**

Year	Workers	Supervisory and Managerial Staff	Other Employees	Unpaid Family Members
2000-01	76.85	9.66	12.64	0.85
2001-02	76.98	9.73	12.50	0.79
2002-03	77.72	9.37	12.11	0.80
2003-04	77.47	9.63	12.09	0.82
2004-05	78.19	9.41	11.60	0.80
2005-06	78.52	9.23	11.47	0.77
2006-07	76.51	9.04	13.73	0.72
2007-08	78.72	9.35	11.25	0.68
2008-09	77.76	9.55	12.05	0.63
2009-10	77.98	10.48	10.97	0.55
2010-11	78.33	9.72	11.34	0.59
2011-12	78.11	9.79	11.48	0.59
2012-13	78.11	9.84	11.46	0.54
2013-14	77.62	9.87	11.95	0.49
2014-15	77.93	9.68	11.87	0.52

Source: Calculations are based on ASI Dataset obtained from EPWRF

#### **4. Trends in Wages and Wage Inequality**

Table 4 shows changes in the respective shares of five exclusive categories of total emoluments in the sector. The proportion of workers in the total employment had been around 77 percent, but the proportion of their wages in total emoluments was 44.7 percent in 2000-01, which further reduced to 40 percent in 2014-15. The proportion of wages and salaries of other employees increased marginally while that of the supervisory and managerial staffs increased sharply over the period; from 20.2 percent in 2000-01 to 30.8 percent in 2014-15. The proportion of bonus in total emoluments declined from 4.4 percent in 2000-01 to 3.4 percent in 2014-15, while that of the employers' contribution showed a more considerable decline, a decline of five percentage points. It can be argued that an increase of more than ten percentage points in wages of supervisory and managerial staffs and the marginal increase in the proportion of wages to other employees may have come at the cost of declines in the proportion of wages to workers, bonus to all staffs, and provident fund and other employment expenditures over the period.

Table 5 and 6 show that the supervisory and managerial staffs' income, both in nominal and real terms, rose at the highest trend growth rates among the categories of employees over the period, which was followed by the trends in the income of other employees. On the one hand, the nominal wage per worker increased at the trend growth rate of 7.94 percent over the period. However, most of the increase in the nominal wage had been crowded out by the rise in the growth of the consumer price index for the industrial workers. As a result, the growth rate of the real wage of workers had been a meagre 0.75 percent (Table 6). On the other hand, the real wage

of the supervisory and managerial staffs increased at a trend growth rate which was more than six times higher than the trend growth rate of real wages of workers (Table 6).

**Table 4: Composition of Compensation Bill in the Organised Manufacturing Sector during 2000-01 to 2014-15 (in %)**

Year	Share of Wage & Salaries to Workers	Share of Wages & Salaries to Managerial and Supervisory Staffs	Share of Wages & Salaries to Other Employees	Share of Bonus to all Staffs	Share of Employer's Contributions etc.
2000-01	44.68	20.24	12.53	4.44	18.08
2001-02	43.21	20.66	12.33	4.18	19.63
2002-03	43.38	21.05	12.07	4.12	19.39
2003-04	42.05	22.38	11.98	4.12	19.48
2004-05	42.90	23.12	11.83	4.29	17.86
2005-06	42.47	24.33	12.24	4.35	16.61
2006-07	41.62	25.30	11.93	4.29	16.87
2007-08	40.84	27.05	11.86	4.48	15.77
2008-09	39.28	28.49	12.61	4.48	15.14
2009-10	39.81	28.10	12.19	4.35	15.56
2010-11	40.32	29.50	12.23	3.99	13.96
2011-12	40.35	29.64	12.55	3.93	13.53
2012-13	40.45	30.15	12.23	3.65	13.52
2013-14	40.70	30.47	12.47	3.60	12.76
2014-15	39.97	30.78	13.09	3.41	12.75
Average	41.47	26.08	12.28	4.11	16.06

Source: Calculations are based on ASI Dataset obtained from EPWRF

**Table 5: Trends in and Growth Rate of Category-wise Nominal Wage Rates in the Organised Manufacturing Sector during 2000-01 to 2014-15 (income in thousand rupees and growth rate in percent)**

Year	Total Emoluments (incl. Employers' Cont.) Per Person Engaged		Wage Per Worker		Salaries Per Supervisor & Managerial Staff		Salaries Per Other Employee	
	Per Annum	Annual Gr Rate <sup>5</sup>	Per Annum	Annual Gr Rate	Per Annum	Annual Gr Rate	Per Annum	Annual Gr Rate
2000-01	78.70	---	45.76	---	164.94	---	78.03	---
2001-02	83.15	5.64	46.67	2	176.44	6.97	82.05	5.15
2002-03	87.46	5.18	48.82	4.6	196.48	11.36	87.12	6.18
2003-04	93.24	6.62	50.62	3.69	216.64	10.26	92.40	6.06
2004-05	94.04	0.85	51.60	1.94	230.94	6.6	95.90	3.79
2005-06	98.58	4.83	53.32	3.33	259.78	12.49	105.16	9.65
2006-07	104.21	5.71	56.68	6.31	291.64	12.26	90.55	-13.9
2007-08	121.05	16.16	62.81	10.8	350.32	20.12	127.55	40.87

<sup>5</sup> Annual Growth Rate.

2008-09	135.63	12.05	68.51	9.08	404.55	15.48	142.04	11.36
2009-10	148.15	9.23	75.63	10.4	397.30	-1.79	164.57	15.85
2010-11	169.10	14.14	87.05	15.09	513.05	29.13	182.38	10.83
2011-12	186.51	10.29	96.36	10.7	564.70	10.07	204.00	11.85
2012-13	213.58	14.52	110.62	14.81	654.10	15.83	227.92	11.73
2013-14	262.03	22.68	121.30	9.65	714.38	9.22	241.35	5.89
2014-15	255.79	-2.38	131.19	8.16	813.42	13.86	282.00	16.84
Average <sup>6</sup>	142.08	9.00*	73.80	7.94*	396.58	11.78*	146.87	9.54*

Source: Calculations are based on ASI Dataset obtained from EPWRF.

**Table 6: Trends in and Growth Rate of Category-wise Real Wage Rates in the Organised Manufacturing Sector during 2000-01 to 2014-15 (income in thousand rupees and growth rate in percent)**

Year	Total Emoluments (incl. Employers' Cont.) Per Person Engaged		Wage Per Worker		Salaries Per Supervisor & Managerial Staff		Salaries Per Other Employee	
	Per Annum	Annual Gr Rate	Per Annum	Annual Gr Rate	Per Annum	Annual Gr Rate	Per Annum	Annual Gr Rate
2000-01	92.18	---	53.59	---	193.17	---	91.39	---
2001-02	93.38	1.31	52.42	-2.18	198.17	2.58	92.16	0.84
2002-03	94.35	1.04	52.67	0.48	211.97	6.97	93.99	1.99
2003-04	96.97	2.78	52.65	-0.05	225.30	6.29	96.10	2.24
2004-05	94.04	-3.03	51.60	-1.98	230.94	2.5	95.90	-0.2
2005-06	94.58	0.58	51.15	-0.87	249.23	7.92	100.89	5.2
2006-07	93.59	-1.05	50.91	-0.49	261.85	5.06	81.32	-19.4
2007-08	102.18	9.18	53.01	4.14	295.70	12.93	107.66	32.4
2008-09	105.01	2.77	53.04	0.05	313.21	5.92	109.97	2.15
2009-10	102.04	-2.83	52.09	-1.79	308.95	-1.36	113.34	3.06
2010-11	105.47	3.36	54.29	4.22	319.98	3.57	113.75	0.36
2011-12	107.37	1.81	55.47	2.18	325.10	1.6	117.44	3.25
2012-13	111.52	3.87	57.76	4.13	341.54	5.06	119.01	1.33
2013-14	110.05	-1.32	57.70	-0.11	339.82	-0.5	114.81	-3.53
2014-15	114.40	3.95	58.68	1.7	363.81	7.06	126.13	9.86
Average	101.14	1.55*	53.80	0.75*	278.58	4.60*	104.92	2.35*

Source: Calculations are based on ASI Dataset obtained from EPWRF.

### 5. Trends in Labour Productivity and the Gap between Labour Productivity and Real Wages

The structural change in the Indian economy led to a significant increase in the gross value added in the sector. So the labour productivity also has increased significantly over the period (Figure 1). It increased at a trend growth rate of 4.8 percent, which means it doubled over the period of

<sup>6</sup> These values has been calculated using the trend growth rates (\* implies the values are significant at the level of 1 percent level of significance; \*\* for the 5 percent level of significance; \*\*\* for the 10 percent level of significance while # represents not significant at all).



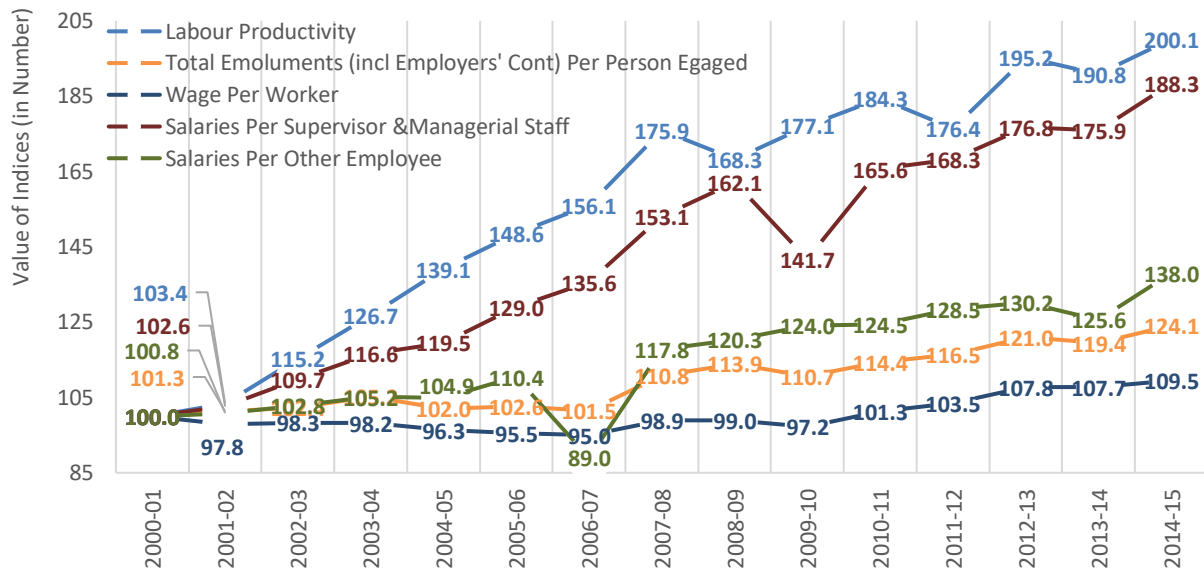
the study. Figure 2 shows the gap between labour productivity and the real incomes of the different categories of employees in the sector. As noted above, labour productivity increased by almost 100 percent over the period, but the increase in the real wages of the worker has been about 9.5 percent. However, the real earnings of the supervisory and managerial staffs increased by 88.3 percent. They are the mostly benefited employees from the rise in the labour productivity in the sector. The real wage of the other employees increased by 38 percent over the period. So, workers, which constitute about 77 percent of total employment in the sector, experienced an almost stagnation in their income despite a significant rise in the labour productivity. It is a serious cause of concern as it has macroeconomic effects. As argued by Chakraborty (2015), it can create an effective demand problem in the economy because the income of the masses is also the sources of consumption for the masses.

**Figure 1: Trends in Labour Productivity in the Organised Manufacturing Sector during 2000-01 to 2014-15**



Source: Calculations are based on ASI Dataset obtained from EPWRF.

**Figure 2: Indices of Labour Productivity and Category-wise Real Earnings in the Organised Manufacturing Sector during 2000-01 to 2014-15**



Source: Calculations are based on ASI Dataset obtained from EPWRF.

## 6. Conclusion

The jobless growth of the 1980s and 1990s continued till 2003-04 in the sector. After 2003-04, there has been a significant rise in total employment in the organised manufacturing sector in India. Total employment in the sector grew at a trend growth rate of 4.77 percent during the period of the study, 2000-01 to 2014-15. Similar trends were seen across the employment categories in the sector. So, there has been a minor compositional change in the workforce in the sector. On the wage front, the workers have experienced a meagre rise in their real wages over the period of the study, but this has not been the case with the supervisory and managerial staffs and other employees. Labour productivity increased by about 100 percent, but the real income of the workers increased by a mere 9.5 percent over the period. The real income of the supervisory and managerial staffs and other employees increased by 88.3 percent and 38 percent, respectively. Therefore, it is clear that the workers' real income failed to catch up with the labour productivity in the sector. They have gained negligibly from the significant increase in the labour productivity. The massive increase in the income of the supervisory and managerial staffs, income inequality in the sector, and profits are the main reasons behind these developments. The falling bargaining power of the workers due to increasing contractualisation in the sector has also been a dominant reason. Although the driving forces behind the rising gap between the labour productivity and real wage of works are not new and are part of the long term trends, they have become stronger with time. Therefore, the role of the state as an arbitrator and regulator becomes

even more crucial in a labour abundant developing country for the protection of the workers' rights and ensuring their fair share in their increased productivity.

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