WAGE AND PRODUCTIVITY NEXUS IN INDIAN MANUFACTURING UNDER DIFFERENT POLICY REGIMES

DR. S. JEYARANI

Abstract: India has made remarkable economic progress in recent times. However, this growth has been skewed geographically and across sectors; and has failed to generate more jobs, especially in the registered manufacturing sector but labour productivity has been increased at satisfactory level during intensive liberalizations period. In this perspective, this paper seeks to examine the relationship between wage rate and labour productivity in manufacturing sector in India for the period 1973-09. At the aggregate as well as at the individual State level, growth of wage has shown worrying picture in Indian manufacturing industry since 1980. It implies that industrial corporations deliberately follow labour saving technique of production in our labour surplus economy. The liberalization programme promoted process of capital deepening in Indian manufacturing. Thus more and more labour displacing production techniques have been favored and as a result growth has been jobless and drastic cut short in growth of wages during intensive liberalization period compared to pre liberalization period.

Introduction: Labour is one of the main factors which constitute the material foundation of society. In an economy, where agriculture is the primary occupation and most of the national income is contributed from agriculture, problems related to labour are there but not in a complex form. Labour problems may be considered as social problems which result among different groups where there is absence of cooperative Endeavour for the realization of common goal. In agriculture, labour problems do not arise because of the presence of cooperative mentality. Workers and owners of means of production work together with a sense of cooperation and therefore they do not think in terms of their exact share and the exploitation in the hands of the owners. In agricultural sector mainly family farming prevails where everybody thinks in terms of contributing towards production.

Even if some of the people are removed from this sector, the production remains unaltered and therefore total production is same and the problem of disguised unemployment is faced by this sector. It means agricultural sector does not realize labour problems; however they crop in the system itself. Things have altogether changed because of the changes in structure of the economic system. With the development of the society, there is a demand for more goods and services. Agricultural sector cannot meet the rising demand for goods and services. It is the industry sector which can discharge the things at this juncture. When there is need for large scale production, division of labour and specialization, machinery, senior skilled labour etc. are automatically on the scene. When normal social relation guided by the existing norms and values are distributed then problems of social nature automatically emerge.

Industrial revolution brought a substantial change in our contemporary society. Similarly the economic order which India wants to establish is also changing very fast with the expansion of money supply and credit. The monetary institution is increasing and the mode of transaction is also changing very fast. In advanced countries the share of agriculture is low and that of manufacturing and services is high. With the accelerated growth of population in the last few years, the pressure of population on the available land has increased tremendously in the absence of growing industries at the same pace of absorb the new labour force. The labour ratio being higher, agricultural holdings have become very small and uneconomic. All these factors have brought a radical change in the agrarian Indian society consequently various problems are, arising out of the new situation (e.g.) the problem of unemployment, social security and industrial relations etc. are the outcomes of the process of industrialization.

Wages in India are very low. Effort were made to ameliorate the grievances of workers and the British Government appointed a commission to go into the matters of labour the commission (Royal commission) suggested to explore the possibilities for fixing up a machinery which can look into the matter of the wages but due to certain administrative difficulties the idea was dropped. After Independence, The Minimum Wage Act was passed in 1948 and this Act has been amended subsequently from time to time.

The question of wage is of great significance and importance to the working class. Any one impalpable of maintaining himself and his family out of his income is bound to become discontented. There will be no peace in his mind and he would always aspire to overthrow the orders which compel him to lead a life of poverty, degradation and humiliation in spite of his hard work. It will give rise to industrial unrest. Ultimately the industrial production will suffer.

Therefore, a study of wages in different industrial establishment is of paramount importance.

At present, in India, there are three views with regard to wages. The employer' Association is trying for fixing a wage which is equivalent to the subsistence wage. The workers unions are striving for a living wage, while Government is considering a middle way approach for fixing fair wage. The minimum wage is higher than subsistence wage and fair wage is something between minimum and living wages. The Fair Wage Committee (1949) stated that, "the state of national income is highly relevant to the problems of wages because no wage policy can be regarded as just or even economically sound unless it encourages increase of the national income and secures to the wage earner a legitimate share in that increase. We consider that a minimum wage must also provide for some measure of education, medical requirements and amenities.

Trade is need for floor income for workers in "sweated" trades. Left uncontrolled, the wage levels would be extremely low. There is, therefore, a need to fix some minimum wage to prevent exploitation of labour. According to H.A. Turner the protection of workers against exploitation or unduly low wages remains wage policy's major pre-occupation for the under-developed areas. The question of wage ceiling is important because of the damaging inflationary consequences that follow from an uncontrolled upward movement of money wage. Wage policy is a determinant of the shares of the rival claimants of the product industry and national dividend, but there often may be a conflict between its short run and long run objectives as well as between private and social interest. There is, of course, theoretical generalization or principles that may provide scientific guidelines for framing a wage policy. Equally important in this context are the concrete social facts that must be taken into account in its formulation at any given time. No principle on wage policy can ever be applied in vacuum in disregard of the realities of a situation. Along with import of new technology, machinery and equipment demand for specialized skill requirement has emerged necessitating increase in total emoluments. Naturally, the question arises that what is going on Indian manufacturing in respect of wage fixation during liberalization period. In this paper an attempt has been made to examine the determinants wage in Indian manufacturing industry for the period from 1973-04 to 2008-09.

Methodology: The basic data for the present study has been collected from the various volumes of Annual Survey of Industries (ASI) published by Central Statistical Organization (CSO), government of India.

The ASI framework is classified into two sectors namely 'Census sector' and 'Sample sector'. The census sector covers all factories employing either 50 or more workers using power and 100 or more workers but not using power. The information's about factories belonging to census sector are collected on complete enumeration basis. The sample sector constitutes remaining factories and covered through sample survey. The census sector and sample sector together comprise what is called the 'Factory sector'. The present study is based on factory's sector data and covers the period from 1973-74 to 2008-09.

Besides the ASI data, the required data have been procured from the other secondary sources. In this context, for making price corrections to the reported data on output, whole sale price index for manufactured products collected from the Office of the Economic Advisor, Ministry of Industry, and Government of India. For constructing the capital input series, gross fixed capital formation index constructed by CSO presented in National Accounts Statistics (NAS) has been used. Consumer price index has been collected from the Labour Bureau, Shimla. Economic surveys, Handbook of Statistics on the Indian Economy published by Reserve Bank of India and reports of Centre for Monitoring Indian Economy are the additional sources of data on the variables like index of industrial production, production and employment of small scale sector and other related variables for the study.

The study period (1973-74 to 2003-09) has been divided into three distinct sub-periods namely

1. pre-liberalization period (1973-74 to 1980-81),
2. mild-liberalization period (1981-82 to 1990-91) and
3. Intensive-liberalization period (1991-92 to 2003-09).

The selected se states which together have contributed more than 80 per cent of Indian registered manufacturing gross value added in every year of the study period of 36 years 1973-74 to 2008-09.

The selected States arranged in descending order of their respective share in total value added of Indian registered manufacturing industry are Maharashtra, Gujarat, Tamil Nadu, Uttar Pradesh, Andhra Pradesh, Karnataka, Madhya Pradesh, Haryana, Punjab and West Bengal. Individual share of all other States not included in the study, has been much less than one per cent and negligible. Hence, aggregate of the fifteen States' registered manufacturing industry is used as a good proxy for Indian manufacturing industry in the present study.

In the measurement of output, the important choices between value added and physical output. Physical output is the best measure of output. But this is not practicable, because most of the industries produce more than one output. Generally each output is

expressed in different units and dissimilar products can be aggregated by appropriate weights. Weights are computed on the basis of the relative share of overall output and separate price indices which are needed for adverse set of products. So the measuring output in terms of physical output is very tedious. In such case aggregation of output could be measured only in terms of value. This study has used gross value added at constant prices (2004-05= 100) as a measure of output.

Labour input is generally measured in terms of the total number of man-hours or the average number of persons employed. The total number of persons engaged has been used as the measure of labour.

Growth rates are perhaps the most commonly used measure in economic profession. Semi log trend equation has been used to measure growth rate. The model is given as $lny = \beta_0 + \beta_1 t$

Growth rate has been calculated by   [exp (b) -1].

For examining wage and productivity relationship double log model has been used.

The model is given as $\ln Y = \beta_0 + \beta_1 \ln X + u,$ where

Y = Wage rate

X= Labour productivity

βo and β1 are parameters to be estimated. Here β1 represents labour productivity elasticity of wage rate .

Labour productivity (LP) = $\frac{Value\ added}{Labour\ input}$

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Results and Discussion:

Growth of Gross Value Added: Growth of gross value added at the aggregate level has been 6.92 per cent per annum during 1973-74 to 2003-09. Growth has exceeded 5 per cent   per annum in nine States except West Bengal (2.52 per cent per annum) and Madhya Pradesh have been 5.87 per cent per annum during the study period. Growth of value added has been the highest in Haryana (8.73 per cent per annum), followed by Gujarat (8.05 per cent per annum), Karnataka (8.15 per cent per annum), Andhra Pradesh (7.26 per cent per annum), Tamil Nadu (6.73 per cent per annum) and Uttar Pradesh (6.65 per cent per annum) during the entire period of study.

Growth of value added in five states has been relatively higher during mild- liberalization period compared to pre- liberalization period. Growth of value added has been the lowest in   West Bengal (2.45 per cent per annum) among all the ten states during   pre-liberalization period. Growth of value added has been more than ten per cent per annum in Haryana and Punjab during pre-liberalization period. All other States excluding Gujarat and West Bengal have registered growth of gross value added exceeding 5 per cent per annum in mild-liberalization period.   Haryana have has recorded continuous increase in growth of gross value added in all the three sub-periods.

In the intensive- liberalization period, growth of value added has improved neither at aggregate nor at the individual State level setting aside Gujarat, Karnataka and Haryana.   Gross value added has registered an impressive growth of 9.80 per cent per annum and 9.64 per cent per annum in Haryana and Karnataka respectively during the period. For the other states during the same period, growth of value added has been lower compared to that during mild-liberalization period. All the States have registered growth of gross value added has been positive during intensive -liberalization period. However, growth has been less than one per cent in Madhya Pradesh during intensive -liberalization period.   On the whole, comparative analysis across the three times period has revealed that LPG policy has shrunk growth of value added at the aggregate and at ten States' level.

Table 1: Average Annual Growth Rate of Gross value added in Indian Manufacturing
(Per cent per annum)

Period / State	Pre Liberalization Period (1973-81)	Mild-Liberalization Period (1981-91)	Intensive-Liberalization Period (1991-09)	Entire Period (1973-09)
All India	6.08	6.78	6.47	6.92
Maharashtra	4.78	4.04	6.15	5.94

Gujarat	5.80	4.04	7.25	8.05
Tamil Nadu	7.03	8.25	5.19	6.73
Uttar Pradesh	8.07	11.22	2.00	6.65
Andhra Pradesh	6.44	6.05	5.81	7.26
Karnataka	6.84	7.69	9.64	8.15
Madhya Pradesh	6.40	7.15	0.11	5.87
Haryana	11.74	5.77	9.80	8.73
Punjab	12.41	10.97	3.72	6.94
West Bengal	2.45	1.45	2.44	2.52

Source: Computed using ASI data

Output per Employee of the Manufacturing Sector across States: Output per employee is referred as labour productivity. In the present study output per employee is measured as (real) gross value added per employee. During 1973-09, labour productivity growth rate has been 5.77 per cent at the aggregate level. All the fifteen major states have shown positive growth of labour during the entire period of study as a whole. However, across the states there has been a substantial variation.

For the four States namely Gujarat, Uttar Pradesh, a Maharashtra and Karnataka, growth rate of labour productivity has crossed the aggregate level during entire period of study as a whole and for the rest of the States it has been the reverse.

Table 2: Growth Rate of Output per Employee across states in Indian Manufacturing
(Per cent per annum)

Period / State	Pre-Liberalization Period (1973-81)	Mild-Liberalization Period (1981-91	Intensive Liberalization Period (1991-09)	Entire Period (1973-09)
All –India	2.64	6.77	5.94	5.77
Maharashtra	2.34	7.04	6.49	6.78
Gujarat	2.14	5.09	6.56	7.01
Tamil Nadu	22.25	6.01	2.78	4.03
Uttar Pradesh	0.35	10.81	3.18	6.41
Andhra Pradesh	-1.57	4.05	5.58	5.14
Karnataka	3.47	6.68	6.88	5.89
Madhya Pradesh	2.11	5.87	5.51	5.88
Haryana	5.29	3.99	6.32	4.87
Punjab	3.66	5.11	3.48	4.12
West Bengal	1.75	3.94	6.02	1.62

Labour productivity growth across states and across time periods show an interesting picture. During pre-liberalization period, average annual growth of labour productivity has been the least at the aggregate level. Andhra Pradesh which has negative growth of output per employee (-1.57 per cent per annum) during pre liberalization period and it has been 4.05 per cent growth per annum during mild- liberalization period. Except two States namely Andhra Pradesh (-1.57 per cent per annum) and Punjab (4.12 per cent , the rest of States have shown labour productivity growth higher than 5 per cent per annum and highest growth level of 10.81 per cent per annum has been realized by Uttar Pradesh during mild liberalization period.

During intensive liberalization period whereas, Tamil Nadu and Punjab had lower growth of labour productivity (less than 4 per cent per annum) and negative growth has not been observed in all States. Karnataka has been the highest growth rate of labour productivity (6.88 per cent per annum), followed by Gujarat (6.56 per cent per annum).

Growth of labour productivity Indian aggregate registered manufacturing industry has been increased from 2.64 per cent in pre-liberalization period to 6.77 per cent in mild-liberalization period and close to 6 per cent in intensive-liberalization period. On the whole, it can be concluded that growth of labour productivity has been positive and higher at national level and in most of the states after reform process came into force but growth of employment did not respond well in consonance with labour productivity growth.

Growth of Wage rate:

Table 3: Growth of Wage rate across states in Indian Manufacturing
(Per cent per annum)

Period \ State	Pre-Liberalization Period (1973-81)	Mild-Liberalization Period (1981-91	Intensive Liberalization Period (1991-09)	Entire Period (1973-09)
All –India	3.08	3.32	0.39	2.40
Maharashtra	3.49	3.68	0.34	2.69
Gujarat	3.32	2.23	1.21	2.84
Tamil Nadu	2.84	2.95	0.90	1.85
Uttar Pradesh	0.58	3.48	1.06	3.34
Andhra Pradesh	2.18	1.12	0.40	2.39
Karnataka	3.15	2.83	1.22	2.81
Madhya Pradesh	1.39	2.98	3.16	2.95
Haryana	3.55	2.79	2.60	3.13
Punjab	4.13	2.62	1.00	2.60
West Bengal	3.06	2.28	0.69	1.80

Source: Computed using ASI data.

In the recent past there has been deceleration in the growth of wage in India in spite of accelerated output growth. During the entire period of study, growth of wage has been 2.40 per cent at the aggregate manufacturing industry. All the ten major states have shown positive growth of wage rate.   Growth of wage rate has been found to be positive but less than 2 per cent in Tamil Nadu and west Bengal.   The highest growth of wage rate has been in Uttar Pradesh recording 3.34   per cent per followed by Haryana (3.13 per cent per annum), Madhya Pradesh (2.95 per cent per annum) and Karnataka (2.81 per cent per annum) during the entire period of study.

Wage rate has grown significantly at a modest rate of 3.09 per cent per annum during pre- liberalization period and increased to 3.32 per cent during mild-liberalization period at the aggregate level. Only five States have had relatively higher growth of wage rate during   pre- liberalization period compared to mild-liberalization period. Growth of wage rate in Uttar Pradesh has been positive though less than one per cent during pre- liberalization period and, it has become 3.48 per cent during   mild- liberalization period. Growth of wage rate   has been the highest in

Maharashtra (3.68 per cent per annum) followed by Uttar Pradesh (3.48 per cent per annum), Madhya Pradesh (2.98 per cent per annum) and Tamil Nadu (2.95 per cent per annum during mild-liberalization period.

Growth of wage has been less than one per cent (0.39 per cent per annum) in aggregative Indian manufacturing sector during intensive- liberalization period. Maharashtra, Andhra Pradesh and Tamil Nadu have been attained less than one per cent growth during intensive-liberalization period. The better performance in terms of growth of wage rate has been seen in Madhya Pradesh during intensive-liberalization period. The highest growth of wage rate has been in Madhya Pradesh (3.16 per cent per annum) followed by Haryana (2.60 per cent per annum) and Karnataka (1.22 per cent per annum) during intensive-liberalization period. The growth of wage during intensive-liberalization has been less that of mild-liberalization period in all the states except Madhya Pradesh. Therefore, growth wage has shown an unhappy during intensive- liberalization period in Indian manufacturing.

Relationship between Labour productivity and Wage Rate:

Table 3: Regression Results

State	Regression coefficients		R^2
	B_0	β_1	
All India	8.37* (36.84)	0.4208* (11.00)	0.82
Maharashtra	7.7467* (354.768)	0.4912* (13.084)	0.85

Gujarat	8.6578* (61.757)	0.4193* (16.321)	0.90
Tamil Nadu	7.6422* (32.733)	0.0409* (10.654)	0.79
Uttar Pradesh	7.760* (42.884)	0.45566* (13.364)	0.86
Andhra Pradesh	7.6798* (30.287)	0.50797* (11.182)	0.81
Karnataka	8.37* (36.84)	0.04962* (11.68)	0.82
Madhya Pradesh	1.40037 (0.5017)	0.21836* (3.4616)	0.29
Haryana	7.8108* (32.00)	0.58600* (13.14)	0.85
Punjab	6.160* (20.600)	0.3559* (15.379)	0.89
West Bengal	3.2320* (2.69	0.5799* (6.478)	0.59

Note: 1. Figures in bracket indicates t values

2. * Indicates 5 percent level of significance

Source: Computed using ASI data.

From the above table it is evident that there is positive relationship between Labour productivity and wage rate in Indian manufacturing as the elasticity coefficients in all states has been positive. The elasticity coefficient has been highest in the state of Haryana followed by west Bengal. It is inferred that one per cent increase in labour productivity lead to 0.42 per cent increase in wage rate in Indian aggregate manufacturing sector during the study period. Elasticity coefficient has been found to be nearly zero in the states of Tamil Nadu and Karnataka.

Policy Implications: The role of manufacturing sector is recognized to be not only for enabling high GDP growth but also for facilitating large-scale employment and status employment. In India the status employment that is wage rate of manufacturing sector has always unsatisfactory. Slower growth in wage rate in the manufacturing sector has resulted in sharp decline of share of labour in value added. At the aggregate as well as at the individual State level, growth of wage has shown worrying picture in Indian manufacturing industry since 1980. It implies that industrial corporations deliberately follow labour saving technique of production in our labour surplus economy. The liberalization programme promoted process of capital deepening in Indian manufacturing. Thus more and more labour displacing production techniques have been favored and as a result growth has been jobless and drastic cut short in growth of wages during intensive liberalization period compared to pre liberalization period. Our results show that in those states where the growth of value added and labour productivity in registered manufacturing has risen over time, however the growth of wage has not been commensurate with increase in value added and the growth of labour productivity. Such a situation in Indian manufacturing may be profitable in individual capitalists, but it is certainly not beneficial to the society, because it increase unemployment. This will lead to unrest unless the government rethinks of economic priorities. Therefore, there is an urgent need to remove prevailing distortions in labour market.

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Dr. S. Jeyarani/Associate Professor of Economics/The American College/Madurai- 625 002/