INDUSTRIAL WAGE POLICY IN INDIA

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Preface

The concept of wages refer to the price of labour which is the payment of compensation in return for work done. In Asia Industrial relations are relatively disturbed with labour force size, trends, participation and trade union membership.

Though Industrialization has a major role to play in the economic development, espectally in the developing countries is rejected largely in the disparities in the concentration of Industrial sector.

Most of the Industrial workers have migrated to cibies thus labour force is diversified on the basis of language, coste, religion absenteeism and in clisciplene.

To keep them on the track Industrial Wage Policy in India dances in tune with the prevalent conditions in the Industrial Sector. Indeed, Employment, new technology and productivity are seen key variables and they are being analysed.

The wage payment system is mainly of two types. (a) Time wage and (b) Piece wage. The wage payment systems used to motivate and reward labour force for their contribution to the goals of the organization.

Therefore wage Policy has to be backed by employment policy. This book briefly summaries the meed for a National Wage policy for the development of the country and for raising the standard of living of the people which is under consideration of the government.

Contents

CHAPTER I

AN ANALYSIS OF PROBLEMS AND PROSPECTS

INTRODUCTION

The need for a National wage policy for the development of the country and for raising the standard of living of the people has been under the consideration of the Government for quite sometime. No concrete action has been taken anywhere to give shape to the sacred wish.

In fact, the term "Wages" is a concept used in Economics, which has been difficult to evolve in all pervasive definition. Wages are a major source of livelihood for a large number of employees and their dependants. In an economic sense, wages referred to the price of labor, that is the payment of compensation in return for work done. In a sociological sense, wages are the characteristic stratification of occupational categories. In psychological sense, wages satisfy needs directly and indirectly. The form they take is in response to changing employee aspirations. In a political sense wages represent the exercise of constitutionally sanctioned choice in employer - employee relationships. In a legal sense, the term wages have acquired various connotations depending on the context and have become a subject of special law in many countries. At an aspire gate level, wages become an economic variable affecting and being affected by employment, consumption, investment, prices and find a place in the distribution theory along with rent, interest and profit as a component of National Income.

If wage rate prevailing at a point of time is a matter of chance or custom, then there is more reason that there should be a definite wage policy in a country. Wage structure should not be allowed to take shape haphazardly as it has hitherto happened in India.

Wage policy implies that there should be a norm for revising wage rate and there should be a well accepted social purpose for effecting changes in the wage rate or a wage structure. However, wage structure depends on the size of labor force and its trends, labor force, participation rate, technology, trade unionism and support from the governments. These problems are common not only for India but for many nations in Asia. Thus, various aspects of study on wages become essential for India.

The dilemma of wage policy is especially true in the Nations, such as India, which seek rapid economic development by essentially democratic means. The crux of the problem is that productivity must grow faster than prices as well as than wages in order to bring about a more rapid expansion of investment, output and employment. The most that can be said is that increased productivity enlarges the possibility of higher wages. There is a need for developing productivity culture and consciousness in India in the interests of the workers, employees and the Economy. If raising productivity is made a precondition for payment of higher wages, laborers too are going to be benefited because that would control inflation and avoid the danger of real wages being eroded.

Thus, the wage policy should be an integrated one as it has to achieve the objectives of wage costs within the manageable limits to safeguard the present economic requirements as well as the long term security needs of the employees and to ensure healthy industrial relations.

The following table presents the labor force structure and industrial relations indicators of ten Asian countries.

TABLE: 1

Labor Force Structures and Industrial Relations Indicators - Asia:

COUNTRIES		LABOR FORCE SIZE AND TRENDS.		Labor force participation Rate in %	Trade Union Membership (000s)
		Selected (in 000) 1996	Annual Growth %(1980-96)	1996	1995
1.	Bangladesh	60,374	2.40	52.80	1,721
2.	China	736,325	1.90	59.90	1,03,996
3.	**India**	**411,020***	**2.00**	**44.40**	**6,100***
4.	Indonesia	93,618	2.90	48.40	1,000
5	Korea	22,399	2.30	51.10	1,615
6.	Philippines	28,61 1	2.60	42.20	3,587
7.	Pakistan	5 1,292	3.40	37.50	984
8.	Srilanka	7,652	2.80	43.90	1,640
9,	Thailand	34,916	2.70	60.60	416
10	Vietnam	38,291	4.60	51.50	NA

Note : The labor force participation rate is defined as the percentage of economically active children and adults in the 10 to 14 and 15 to 64 age groups respectively, the economically active population being defined as ; all persons of either sex who furnished the supply of labor for the production of goods and services during the specified time - reference period

Indian labor force size is more than half of China's and stands second in Asia. Where as all other countries in this region, have only less than one fourth of Indian labor force size. This point makes us to think about the need for having a National Wage policy in India. Our country is traditionally labor abundant, thus the economically active population in India contributes more to the Nation in carrying out production of goods and services. At the same time, the annual

growth rate of labor force during 1980-96 shows 2 percent while countries stand above this percentage, except China. Moreover, Indian trade union movement is historical with trade union membership of 6100 thousand that stands second to China in Asia. This shows India is the second labor giant and the absence of wage policy in the country that decides the wage structures to take shape haphazardly which have negative impact on the economy.

Industrial disputes arise due to various reasons. Generally, wages and allowances, bonus, personnel, retrenchment, working hours, violence and indiscipline are the major reasons that have been causing industrial disputes in India over decades. The need for having a National Wage policy has been put forth by different bodies such as the academics, political parties, trade union, government, planners and all connected with wages. To quote, the federation of India Trade Unions (FITU) has demanded a national wage policy at its national conference held in Erode, Tamilnadu. "It was important for trade unions to come together to seek a National wage policy rather than fight for piece meal benefits like the Dearness Allowance"[1],

INTUC President G.Ramanujam has urged the centre to appoint a National Wage Policy Commission immediately to maintain peace on the industrial front"[2]. "The Himachal Pradesh Chief Minister, Mr. Shanta Kumar mooted the idea of a National wage policy which should be linked with resources and production of the Nation or State"[3].

"The need for a National wage policy to provide a better deal to all sections of the working class and Government employees was

[1] Indian Express, Madurai Edition, Thursday, June 10, 1993, p.5.
[2] Indian Express, Madurai Edition, July, July 9, 1992, p.7.
[3] Indian Express, Thursday, May 16, 1996, p.6.

stressed at the Seventh National Conference of the All State Government Employees Federation"[4].

"The National Productivity Council (NPC) has suggested to the Government, the setting up of a permanent National Standing Committee on wages according to its Director General, G.K. Suri"[5].

"The Government is contemplating bringing forward a comprehensive National wage policy to give more benefits to the working class, the Union Labor Minister M. Bindeshwar's Deubey said in the Rajya Sabha on Friday"[6]. Thus the study related to wages is very essential for the formulation of new industrial wage policy in India.

INDUSTRIALISATION:

The industrialization has a major role to play in the Economic development of the under developed and developing countries. There is a positive relationship between per capital income and share of manufacturing as mentioned by Kuznets (1967). The gap in per capita income between the developed and under developed countries is largely reflected in the disparities in the concentration of industrial sector. The process of industrialization is associated with the development of skills of the industrial work. Industrial management is beneficial to the growth in productivity in agriculture, trade, distribution and other related sectors to the Economy.

The impact of the British rule in India led to the decay of Indian handicrafts. Indian industries not only concentrated on the local demand but also on the export of products. India's export mainly consists of textile products. Over the five year plan periods, Indian planners had heavy concentration on the industrial sector.

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[4] Indian Express, Madurai Edition, Wednesday, May .
[5] Indian Express, Madurai Edition, Friday, JAN. 6, 1989, P.13.
[6] Indian Express, Sunday, Aug.13, 1989, p.1.

Historically, industrial development has proceeded in three stages. In the first stage, industry is concerned with primary products. The second stage concerned itself with confectionary, footwear, material goods, cloth, furniture and paper. The third stage consists of machine goods and other capital goods. Thus, the development of industry has set off from consumer goods to capital goods.

INDUSTRIAL PATTERNS UNDER FIVE YEAR PLANS:

During the first plan (1951-1956), concentration was on the basic services like power and irrigation. The first plan only aimed to utilize the existing capacity to the full. The index of industrial production increased 39 percent during the plan period.

The second plan (1956-1961) model was called as the industry model. This program was based on industrial policy resolution of 1956. The basic heavy industry was to be created. During the second plan period, Rourkela Steel Plant in Orissa, Bhilai Steel Plant in Madhyapradesh and Durgapur Steel Plant in West Bengal were set up. Priorities were given to increase in production of iron and steel industries, expansion of capacity in respect of oilier commodities such as cement, fertilizer and chemicals,, Modernization had come to the support of such jute, cotton and sugar About 60 industrial estates and 1000 small factories were also set up.

The Third plan (1961-1966) achieved an integrated growth of industry based on agriculture. The aim was to make the Economy self sustaining in producers goods industries such as steel, machine building etc. During this plan period, Bharat Heavy Electricals for power generation and transmission equipment was set up.

The fourth plan (1969-1974) intended to complete industrial projects undertaken in the third plan. It also aimed to enlarge capacities in export promotion and import substitution industries. Nearly three fourth of the selected investments was in the core sector

viz. iron and steel, non-ferrous metals, fertilizer, petroleum and petrochemicals, coals and iron ore.

The programs of industrial development in the fifth plan (1974-1979) were formulated with the objectives of self reliance and growth with social justice,

The programs of industrial development in the Sixth Plan (1980-85) were formulated in the view of overall development of structural diversifications, modernization and self reliance.

The seventh plan (1985-1990) aimed to achieve growth with social justice and improving productivity. The main elements of seventh plan industrial strategy was the removal of infrastructure constraints, encouragement of modernization and technological up gradation, specific targets of productivity for major industries, export promotion, encouragements of such industries, removing the regional disparities and the installed pollution control system.

The eighth plan (1992-97) was commonly labelled as one of the economic liberalization. It was formulated under number of industrial fiscal trade and foreign investment policies were introduced in the economy.

During the ninth plan (1997-2002) the Government decided to continue the process of reduction in import tariffs so as to bring them in In .a with levels providing in the developing countries. This would help to open up our economy to international competition and thus strengthen the process of globalization. However, to protect Indian industry, against unfair competition, anti-dumping machinery should be strengthened. In view of the fact that rapid economic growth enquires large volumes of investment and extensive industrial modernization, our import needs are bound to grow.

The Tenth plan (2002-2007) is being prepared against a backdrop of high expectation arising from some aspects of recent

performance. The growth in the 1990's has generated less employment than was expected. The selected employment generated was 19.32 million. To achieve 8 percent growth, it has set the target of reducing ICOR from the average level of 4.53 during the ninth plan to 3.58 in the tenth plan by increased utilization of existing capacities and adoption of a labor-intensive approach in sectors which are amenable to less capital-intensive path without losing competitive ability. The plan also seeks to generate 50 million additional jobs to bring about reduction in employment.

Now a days, India has recorded significant progress in the field of Science and Technology. India now ranks third in the world in respect of technological talent and man power. The high capital intensity of public sector investment which leads to smaller amount of employment.

The industrial transformation of an Economy brings about a variety of far-reaching changes such as rapid urbanization, the emergence of industrial communities, complex structuring of industry and labor, quantitative growth in the workforce, the development of labor unions, the application of scientific management techniques, etc. Along with these changes there emerges a new economic group in society, handy 'labor'. Industrialization grow in strength and become the 'expensive organs' of industrial society. Industry and labor have to work as inter-reliant groups, and have to reinforce each other.

INDUSTRIAL LABOR IN INDIA:

Most of the industrial workers have migrated from village to cities to search of permanent or temporary employment. Mostly industrial labor is uneducated which makes them unaware of the problems they are lacing. This is one, of the factors for weak trade union organization. The industrial labor in India is diversified on the

basis of religion, language and caste, Absenteeism, indiscipline etc. are quite common for the industrial labor in India.

Industrial disputes refer to the differences that affect the groups of employees and employers engaged in an industry. Wages have been and will continue to be, the single major substantial issue in industrial disputes. This cause alone has accounted for about one-third of selected disputes in I he country.

Over the years, industrial laborers have organized themselves into trade unions. The demand for higher wages in the wake of rising prices and the rising cost of living have often been backed by trade union action. This has frequently led to trade union activities like strikes, sit-ins, gheraos, work-to-rule etc., This type of activities has led to prolonged industrial disputes.

One of the major problems of the Indian Trade Union Movement is the fragmentation of unions. Unions are associated with different political parties and groups. Multiunionism[7] is the serious threat to industrial harmony in India. West Bengal and Kerala had the largest number of trade unions. West Bengal occupies the first place in industrial unrest[8].

In cotton textile Industry, "wage differentials due to differences in skill requirements were common not only between jobs but even within each job due to differences in work loads. It was identified that cotton textile was the first large scale industry in which trade unions had been successful in pushing the wage upwards"[9].

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7 Arun Monappa (2000), “Industrial Relations”, Tata McGraw Hill Publishing Company Ltd. New Delhi, p.13

8 Sunilkumar (2001), “Productivity and Factor Substitution Theory and Analysis”. Deep and Deep publications Pvt.Ltd.p. 243

9 Abdul Aziz, Industrial wage Structure in Mysore State, Universty of Mysore, 1972.

Trade Unions:

Most of the past studies have focused their attention much on the link between Trade Unions on the one hand and with policies, political parties and Government on the other. But studies on the influence of Trade Unions on wages and their structure in the Industry are scanty. At the macro level, fonseca[10] and Johri [11] attempted to assess the impact of unionism on wages and their structure, but the findings of such studies would be valid only at the macro level.

Affiliated unions:

There are National Level Trade Union such as Indian National Trade Union Congress (INTUC), Hindu Mazdoor Sabha (HMS), All India Trade Union Congress (AITUC), and the Centre of Indian Trade Unions (CITU). These Trade Unions function at the National Level as well as at the regional level covering several industries. Besides these, Local level Trade Unions and their significance are also to be taken into account depending on their influence on wages and related issues. These various unions jointly fight for the overall betterment of workers in the country. The role of Trade unions on the industrial agreements between the management on wage-related issues is important. There are two types of Industrial Agreements. The first one is called the 18(1) settlement and the second type is called 12 (3) settlement. While the first one is purely voluntary in nature without the intervention of the Government, the latter is made in the presence of a conciliator sponsored by the Department of Labor. In some cases, 18 (1) settlements may be converted into 12 (3) settlements by getting the signature of the

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10 A.Fonseca, Wage Determinationand organised labor in India, Oxford University Press, London 1964.

11 C.K. Johri, Unionism ina Developing Economy, A study of the Interaction between Trade Unionism and Govt. Policy in India 1950-65 Asia Publishing House, Bombay 1968.

conciliator, though he had no role in the settlement. The workload assigned and the labor allocation in an industry are serious issues. Recently the money wage and bonus had become the prime concern of the trade unions. At the same time, the employers are also particular in controlling wage increase and bonus as these alone account for a huge expenditure of funds.

EMPLOYMENT:

Employment is one of the important economic variables affected by the recent decades of changes that are taking place in the Indian Industries. A developing country like India cannot afford industrial inefficiency and at the same time soaring unemployment. A labor- abundant country should make use of the available labor force instead of spending huge amount of capital on the substitutes to labor.

In the Industrial sector, the current defensive strategy of preserving, and providing benefits to existing workers has raised the labor costs and worsened the over-all environment to employment growth. The restrictions imposed against retrenchment of labor and closure of factories have raised the long-term cost of Industries through the hiring of additional labor. In addition, fast growth in money wages slowed down employment growth when employers started economizing on labor to reduce costs.

The welfare of the workers lies in job security and monetary rewards. Here, the employers play their trump card by varying the share of different kinds of workers in employment to attain their goal of wage - cost reduction. Moreover, employers are particular in not allowing many to become permanent. They employ trainees cannot claim permanency. This indirectly reduces their wage costs also.

NEW TECHNOLOGY:

The new technology has given an opportunity for the Indian industries to make use of an average worker who had limited skills previously, to become familiar with new technology as the computer controlled systems are user-friendly. Further the traditional kind of labor involvement and interaction in the work spot have been treated as one of the major variables to be eliminated from the industries to reduce labor costs, increase productivity and thus profitability. New technology brings changes in the job content and responsibility, job displacement, redundancy and re-deployment, retraining, union co-operation and mutual agreement which are extremely important in realizing the benefits from new technology. New Technology requires huge initial capital for which the gestation period is also long. Still the fact remains that new technology is capable of selectively replacing the human element in performing the actual work. The worker along with the same stages of production process is removed. This has happened not only in developing countries but also in the advanced countries. To quote, "Technology displacement and loss of job opportunity have affected the United States"[12] . Thus the impact of new technology on wage levels in selected industries is to be carefully studied.

NEED FOR ESTIMATING PRODUCTIVITY:

Productivity is an index of economic measure of efficiency with which human resources as a whole are utilized in the production process. Productivity at department level, at plant level and or at job level helps in evaluating the effectiveness of the various schemes of rationalization and scientific management. Productivity also serves as a guideline for the future planning of production.

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[12] Rafkin (1995) as given by RC Data, New Technology and Textile workers, Economic and Polytical Weekly, Sp 25, 1999 PL.41

Productivity is an important factor for influencing increase in wage level. Because productivity provides a convenient starting point for a theory of factor prices. The committee on fair wages report submitted to the government in 1949 admits that wage is the one of the important factors which depend on productivity of labor. Indian five year plans also make a very general reference to the need for improving productivity. Our fifth plan simply reiterated the theme that increase in wages should be closely correlated with increase in productivity. Higher wages may result in an improvement in the efficiency of workers. Ultimately the wage cost per unit of output will be reduced. The increased wages lead to substantial increase in labor productivity.

Improvements in wages can result mainly from increased productivity. Increase in productivity does not necessarily involve installation of new machinery or greater exertion on the part of labor. Wage increases should result mainly from productivity increases so that inflation would be controlled.

The five year plans' support is expressed for two kinds of non-inflationary wage increases, first for improvement in wages resulting from increased productivity and second for improving the position of the very low-paid workers through the statutory protection of minimum wages.

"The important cause of lock out is the labor productivity that has failed to rise commensurate with the rise in wages"[13]. The close down by Hindustan Lever, Mafatlal Engineering, Bata Shoe factory have all been prompted by this factor. Thus a study on the nature of relationship between productivity and wage rate is very much needed for Indian industries.

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[13] Ruddar Dutt and K.P.M Sundaram (2001), “Indian Economy”,S.Chand and Company Ltd.Ram Nagar, New Delhi, p.704

WAGE PAYMENT SYSTEM:

Wage may be defined as the price paid for the services rendered in production by labor. Wages are paid by different methods. Wages are measured by the period of time the workers employed and in some cases by the contribution made by labor to the output which is measurable. The former is called time wage and the later is called piece wage.

In the time rate, wages are paid at a fixed rate according to the period of time employed (i.e.) fixed rate per hour, a day, week etc. irrespective of output. That is each worker is paid by a quality of work. Under piece wage system, the payment depends on output (i.e.) each worker is paid by according to the quantity of work done by him. In short, lime rate payment is based on qualily of work whereas in piece ratle, payment is based on quantity, with specified standard.

The main difference between piece rate and time rate system is when output is produced at a greater speed in the given period of time, the workers on piece rate are eligible for more payment but workers on the time rate system are received fixed wages. The workers on piece rate system can get double the earnings. So it is favorable to workers under piece system, Thus, trade unions began to object the piece wage system. Now, a study on the comparison of piece rate and lime rate is needed for a deeper look into the problems of wages and for formulating a wage policy.

Generally, the widely prevalent system of wage payment systems are piece and time wage systems which are century old. These piece rate and time rate are universally accepted system of wage payments in any country. Thus any study on wage policy frame work should include industries with both piece and time wage system. Fortunately, the principle in operation in these systems are scientific, economical and socially relevant.

The wage incentive scheme in Indian industries is the piece rate system. Depending on the measurability of individuals output, its coverage differs from industry to industry. To cite a few examples, in textiles, matches, coir matting, carpet weaving and tanneries piece rate system is widely prevalent. In these industries the highest percentage workers are paid on piece-rate in India. While there is only a small percentage of workers paid on piece rate system in Industries such as iron and steel and chemicals. Wage analysis combining those industries with varying percent of workers on piece and time rate would reveal the most common problems and also solutions to frame wage policy in India.

ADVANTAGES OF HIGHER WAGES

(i) "Higher wages may result in such an improvement in the efficiency of workers that wage cost per unit of output is reduced. The United Nations Economic Survey commented in 1950, by raising workers efficiency as a result of better nutrition and health and by stimulating their incentive for graeter effort, increased wages can bring about a substantial increase in labor productivity.

(ii) Higher wages may force employers to look for better production techniques leading to improvements in input-output ratios.

(iii) Finally higher wages can cause the expansion of markets and this production of goods and services via increased purchasing power in the hands of the working class.

DISADVANTAGES:

"Beyond a certain level higher wages tend to bring about just the opposite results such as inflation, loss of production and shrinking

markets caused by reduced purchasing power in the hands of wage –earners[14].

WAGES AND DISPUTES IN INDIAN INDUSTRIES:

Conversion of resources into goods and services can be made efficient, if the rewards for the factors of production concerned are properly given. Wage is universally acknowledged as an important economic variable. Wage determination in the major industries is left to the processes of collective bargaining, conciliation, arbitration and adjudication. In fact, analysis of data on industrial dispute shows that a sizable number of disputes relate to wage and age structure"[15]. The following table explains the industrial disputes classified on the basis of causes, in percentage.

TABLE: 2

INDUSTRIAL DISPUTES CLASSIFIED ON THE BASTS OF CAUSES

(Per cent)

Year	Wage & Allowance	Bonus	Personnel	Retrenchment	Leave &Work Hours	Indisci-pline & Violence	Others	Un-known
1981	28 1	7.9	17 6	3.6	1 6	9.4	26.6	5.2
1982	29.9	5.8	18.9	2.9	1.6	1 1.7	26.4	2.8
1983	27.7	6.3	18.2	3.1	1.8	13.3	26.4	3,2
1984	26.5	7.2	16 1	2.6	1.9	13.4	27.4	4.7
1985	21.8	7.0	19.3	2.9	1.7	15 6	28.3	3.4
1986	24.3	9.1	18.4	3.8	1.2	14.3	23.5	5.4
1987	26.9	7.5	13.1	3.5	1.2	13.6	31.6	2.6
1988	27.4	6.7	13.1	3.3	1.0	15.3	30.6	2.6
1989	23.7	6.0	16.7	2.7	I 1	15.3	31.2	3.3
1990	24.2	3.9	12.9	2.9	1.2	15.6	36.4	2.9
1991	24.6	4.0	15.2	2.2	7.0	18.9	16.9	11.2

[14] Sahab Dayal,"Industrial Relations Systems in India", p.18

[15] C.V.S. Rao,"Productivity, Technology and Industrial Relations in the Textile Industry", Inian Journal of Industrial Relations, Vol.25,No.2. October, 1989-p.50

1992	23.0	1.2	15.2	8.4	14.2	9.0	14.2	14.8
1993	24.0	2.1	17.6	9.7	12.6	8.0	18.3	7.7
1994	22.0	3.4	19.5	10.2	13.5	9.7	16.1	5.6
1995	23.0	3.9	18.6	1 1.7	14.2	9.8	15.0	3.8
1996	24.3	8.23	18.26	0.93	1.8	18.18	24.27	4.03

Industrial disputes on the basis of causes - converted into percentages.
Source : Labor Bureau, Indian Labor Year Book 1999.

As seen in Table 2 the major cause of industrial disputes up to 1996, was 'Wage and allowances' which compelled, employers to replace labor with capital. Traditionally, India's Industry was characterized by low content of capital and wide use of manual labor which is being reversed now. In fact, trade union and labor legislations are not able to fulfill the objectives of efficiency and equity. So the wage system often gets disturbed under great pressures, such as changes in the economic environment, industrial and labor policy, competition from other rival companies and even from factors outside the country. Thus, changes in money wages play a significant role in raising the share of wages in output and value added in manufacturing.

WAGE STRUCTURE AND COMPOSITION IN INDIAN INDUSTRIES:

The labor policy of the economy has the basic responsibility of working towards the creation of a work atmosphere that helps and encourages the worker to put in his best performance and contribute his mite towards the development of the Economy. The structure of wages in Indian Economy has undergone several changes over the years. So the information and analysis of wage structure are required to understand the direction in which the wage structure is moving and how the wage differentials are changing over a period of time. However, the wage structure is influenced by the nature of industry,

permanency of workers, collective bargaining, Trade Unions, level of employment and the technology concerned.

WAGE COMPONENTS:

BAIC WAGE:

The pay package of a worker generally comprises two major elements. They are basic wage and dearness allowance. While the basic wage is in relation to the work assignment and the performance of workers concerned, the dearness allowance is to compensate for the hike in the consumer prices for industrial workers. The basic wage differentials should reflect differences in physical and mental abilities of workers in productivity. In some cases, a flat rate of wage is paid to workers where there are more casual workers employed on adhoc basis rather than workers on permanency.

b) DEARNESS ALLOWANCE:

The system of payment of dearness allowance (D.A.) is peculiar to India and to some Asian Countries. "D.A. alone covers 70 percentages of the average selected monthly wages"[16]. Indeed, Permanent and badli workers are alone eligible for this component where as others are not. Employers are very cautious about this component because it eats up a large sum of their wage fund easily.

At the same time, trade unions are particular in getting the due dearness allowance accordingly. Recently, D.A. merger with basic wage became possible, which is given greater consideration than regular pay revision. Such merger alters the pay pocket considerably whenever any pay calculation is made with basic wages.

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[16] T.S. Papola, Principles of Wage Determination, Somaiye Publications, Bombay, 1970, p.117

c) BONUS:

Bonus is a deferred wage which is socially acceptable to fill the gap between the actual wage and the need - based wage. An important element in the selected wage income of the worker is the bonus, demanded by the trade unions as a sacred right of labor. Workers are very particular in raising the percentage of bonus as they are helpless to do anything on the ceiling fixed by the government. On the other hand, the capacity to pay is also very important because unless and otherwise the employer is able to pay, bonus becomes meaningless.

d) INCENTIVES:

The basic principle underlying an incentive scheme is that an offer of additional money would motivate workers to work harder and more skillfully for a greater part of their working time, which would result in a stepped-up rate of output. The reward received by human beings not only benefit them at the moment but it keeps their consciousness alive towards further possible improvement and achievement.

e) FRINGE BENEFITS:

Workers receive certain benefits at the time of retirement, sickness and death. These are payments made without any effort on the part of the workers directly associated with their jobs. However, these benefits indirectly boost the morale and loyalty of the workers towards their own organization. Indeed, the payment of fringe benefits has some influence on the composition of the wage structure, but it is difficult to measure the employee's benefits because some of the benefits may be available only over the long run. The fringe benefits paid to employees vary widely within and between industries, "The Indian wage structure statistics do not always actually reflect the varieties of additional fringe benefits and

payments to workers received under the various heads in the presentation of statistics of wage data"[17]

MONEY WAGES:

Changes that take place in the wage components have an impact for betterment of the Economy and vice-versa. Wage increase should have some relevance to labor performance. Pay per unit of labor in output tends to be raised by workplace arrangements beyond the recognized procedure for determining the wage rate. This has become a continuous and common phenomenon in Indian Industries where money wages are paid in accordance with the inflationary trends in the Economy.

REAL WAGES:

The real wage is a better indicator of the efficiency of the industry concerned. Advanced countries have already introduced wage payment system that suits their productivity formulae. But in India, in the absence of a National wage policy frame-work, wage fixation has become a complicated one and as a result, the purchasing power of workers is eroded by the low real wages.

INDUSTRIAL POLICY:

The Government announced the new industrial policy on 24lh July 1991. It provided a major thrust to the process of economic liberalization aimed at fastening the phase of the country's industrial and agricultural development.

The major objectives of the new industrial policy package will be to build on the gains already made, correct the distortions or weaknesses that may have kept in, maintain a sustained growth in productivity and gainful employment and attain international

[17] R.C. Sharma, "The concept of fringe benifits in Indian Industry". Indian Journal of Industrial Relation, October, 1977, p.247

competitiveness. The pursuit of these objectives will be tempered by the need to preserve the environment and ensure the efficient use of available resources. All sectors of industry whether small, medium or large, belonging to the public, private or co-operative sector will be encouraged to grow and improve on their past performance. Naturally the question arises as to what is the impact of New Economic Policies on wages in Indian industries. So this project makes an attempt to study about wages and their relationships in piece rate and time rate industries for the pre and post reform periods. The Economic reform process in India so far has concentrated at the central level. The reforms at the state level have been rather slow-moving, based on the progress of state-level policy reforms.

SIGNIFICANCE OF THE STUDY

The availability of accurate statistical information on wages is very essential for effective and timely action. A successful and socially significant wage policy can be built up only on the strong foundation of correct and meaningful data on various aspects of the problem, such as wage determination, wage levels, wage structure, wage payments in different industries and occupations.

Wage payment system consists of the pay structures and the methods used to motivate and reward labor force for their contribution to the goals of the organization. Various systems of wage payments have been developed in different industries and in different countries. Among them, the popular and widely prevalent systems of wage payments are piece-rate system and time rate system.

The contribution of Industrial output to the National Income is quite significant especially in the developing countries. In a developing country like India, workers are very particular in raising their monetary rewards through agitations and all other possible means, utilizing their union strength. More over, earlier studies on

wage productivity nexus in Indian Industries have been based only on limited industries or at the aggregate manufacturing with secondary level or primary level. The present study has covered 146 industries at three digit level (disaggregate) during the period 1982-83 to 1997-98. ASI data are more comprehensive as unlike the payment of wages act, no income ceiling is prescribed. These data have an all-India coverage; but because of the time-lag involved in the publication of there data, their up-dating is not possible.

In order to find out the problem at the unit level, the present study collects data at the micro level for the purpose of examining the wage and productivity and their relationships on the floor situation. Consequently, this study has more significance and relevance towards the issues related to Industrial wages in India.

OBJECTIVES:

1. To analyze the growth rates of output, employment, wage rate, capital intensity and fixed capital stock among all piece and time rate industries for the pre reform (1983-90) and post reform (1991 -98) periods.
2. To analyze partial productivity indices and TFP among all piece and time rate industries for the pre reform (1983-90) and post reform (1991-98) periods.
3. To find out the nature of the relationship between wage and other related variables among all piece and time rate industries for the pre-reform (1983-90) and post-reform (1991-98) periods.
4. To analyze the wage-productivity relationship between the selected groups of high piece and time rate industries.
5. To compare the analysis of the selected group of piece and time rate industries and suggest possible ways and means to have a balanced industrial wage policy in India.

CHAPTER II

REVIEW OF LITERATURE

V.B. Singh[18] has made a study about the wage structure of cotton mill workers in various centres in India. The purpose of his analysis was to find out wage rates of different category in different years in same and different centres. His technique of analysis was based on the coefficient of variations and analysis of variance. There are some variations in wages in the same industry in different regions. In this study, the wage differentials can be analyzed in terms of comparison of the wage rates have verified from centre to centre. He also studied about the inter-department differentials and intra departmental differentials and variations in the wage structure of department between mills.

The Possible reasons for wage differentials both workers and management have been obtained from opinion survey. From the workers point of view, the average differentials arise due to degree of still, responsibility and strain. From the management point view, the wage differentials may occurred due to degree of skill, strain, experience, training, nature of job (Permanent or temporary) and hazardous work. The important point suggested by management is that the reduction of wage disparities wills not increase the productivity of workers. But in case of low paid workers, the reduction in wage disparities will raise productivity.

V.B. Singh analyzed piece rate system and time rate system operating in Kanpur Textile Mill. He pointed out that there is substantial increase in production per worker under piece rate system.

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[18] V.B. Singh,"Wage Patterns Mobility and Savings of Workers in India-A Study of kanpur Textile Industry",Lalveni Publishing House,Bombay-new Delhi-Calcutta-madras.

The high production leads to deteriotion in the quality. The cost of production per unit of output goes down and workers earning goes up. Most of the worker prefer piece rate system, because it gives higher earnings. A smaller part of workers prefer the time rate system because there are no fluctuations in the earnings like piece rate system. The main drawback of this study is that the labor productivity was not measured empirically.

Zile Zingh Goyat[19] has studied about wage and productivity trends in India for selected industries in the period 1960-71. The main source of data is ASI. This study reveals that the labor productivity increased significantly in all industries. The important finding of this study is that the capital intensity has been main factor for increasing labor productivity. Capital intensity is also increasing significantly in all the industries. This indicates that more and more capital capital could be required for generating employment in the industries. This is not feasible in India, because India has scare resource. The capital productivity has declined in the study period for all industries.The level of capital has increased significantly in the following industries such as Iron and Steel, machine Tool, Pharmaceutical and Agricultural- implementing industry which are operating under capitalintensive techniques. In this study the real earnings, ages and salary also increased significantly in all industries during the study period. There is high positive correlation between labor earnings and labor productivity. That is the labor productivity is the important factor for wage detrermination. But the TEP found a downward trend in all the industries during the study period. This was due to decline in the capital productivity.

[19] Zile Zingh Goyat(1996),"Wage Productivity Trends in India-A Case Study of some industried". Spell Bound Publications Pvt.Ltd.Rohtac.

C. Main' Sastry'[20] has studied about wage structure in organized industrial sector for the period 1956-1984. The main source of study is ASI. The interesting finding of this study is that the nominal wage is positively correlated with man days lost in the industrial sector. This implies that the when labor unrest is higher there is the possibility of rise in wages. The wage elasticity is higher in relation to cost of living index than to labor productivity.

The wage of the skilled worker in the private sector was equal to the wage of unskilled worker in the public sector units. The wage level of the unskilled worker in the private sector unit was less than half of the wage of public sector unit.

The occupational wage differentials are to be lowest in the state public sector unit whereas they are the highest in the private sector organization. Per capita nominal wage levels of industrial worker are higher in the industrial forward states, compared to the industrially backward states in India. Inter industry wage differentials are much higher in the backward states as compare to the forward states in India.

This study has analyzed the money wage for consumer goods, basic goods and capital goods industries. The growth rate of money wage is lowest in consumer goods sector and highest in capital goods sector. Demand for labor in capital goods sector is based on skill. This may be the reason for highest growth rate in money wage in capital goods sector.

A.N. Mathur[21] lias analyzed eight organizations located in Tamil Nadu, Andhra Pradesh, Orissa and Bihar which were selected on the basis of size, technology and comparability. The main objectives of this study are

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[20] C.Mani Sastry (1992),"Wage Structure in Organized Industrial Sector",Book Links Corporaation, Hydrabad.

[21] A.N Mathur(1986),"Dynamics of Wages",Bombay Popular Prakashan.

(i) To analyze intra organizational and inter organization differences in wage level and wage structure of industrial organizations.

(ii) To study the relationship between wages of different categories of workman and relate wages with organizational and national variables.

Lakhwinder Singh[22] has analyzed inter Industry wage structure in Punjab. This study provides empirical evidence of the extent and nature of the differences in growth of real wages in various manufacturing industries in Punjab over the period 1973-74 to 1982-83. This study also analyses the trends and stability in the inter industry wage structure and factors affecting inter-industry wages. For this study, 21 three digit industries has been selected. The most significant result is that wide variations are observed in the growth of real wages over the period. The wage differentials have shown considerable dynamism and flexibility. The flexibility of structure of wages is mainly determined by the conditions of product demand and rate of technological change. The labor productivity and capital intensity have emerged as the dominating ones which affect the inter industry structure of wages.

Ramdas[23] attempts to study the impact of union on wages for the period 1960-1980 in the chemicals, textiles and the aggregate of 20 industry groups which represents the manufacturing sector. Chemicals is a relatively more productive one but not strongly unionized. Textiles, on theoilier band has low productivity and has a high degree of unionization. Thus the above two industries are

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22 Lakhwinder Singh (1991),"Changes in the Inter-Industries Structure of Wages: The case of Punjab",India Journal of Industrial Relation, Vol.27,nov.2.PP.26-42.

23 Ramdas (1989),"Trade Unions and wages: A Study of Selected Manufacturing Industries in India",Indian Journal of Industrial Relations,Vol.24,NO.3,pp.269 to 280.

selected for this study. For measuring the degree of trade unionism, the ratio of man days lost in industrial disputes to workers ratio has been used as a proxy for union activities instead of the traditional measures (i.e.) the ratio of unionized workers to selected unionizable workers. The main source of data for this study was CSO. This study concluded that there is no positive influence on money earnings of the workers and unionism.

Vijay K.Seth[24] and Ashok K.Seth have made an attempt to study the labor absorption capability of the Indian manufacturing sector for the period 1960-84. For this study, gross employment, output elasticity have been estimated for the period 1960-1984 and to understand the relationship between labor absorption and the phases of industrialization. These elasticity have also been estimated for three sub periods 1960-65, 1966-75 and 1976-84. To examine and compare the long run and the short run behavior of demand elasticity with respect to change in wage rate and output, employment functions have also been estimated. It has been observed that the labor absorption has lagged behind the rate of growth of output irrespective of the phases of industrialization. The estimates also show negative short and long run elasticity of labor demand with respect to wage rate which is being greater than the positive elasticity of demand for labor which can be inferred in the manufacturing sector.

H.B. Shivamassi and others[25] examine the trends in wages in seven important industries during 1951-61 and to compare them with the trends in labor productivity and the costs of production during the same period. The main source of data was ASI and CMI. The seven

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[24] Vijay K.Seth and Ashok K.Seth(1999), Labor Absorption in the Indian Manufacturing Sector,"Indian journal of Industrial Relations, Vol.27,No.1,pp.19 to 31.

[25] H.B.Shivamassi, N.Rajagopalan and T.R. Venkatachalam (1968),"Wages, Labor productivity and Costs of Production, 1951-61"Economic at Political Weekly, may 4, pp.710 to 716.

industries covered are cotton textiles, jute textiles, iron and steel, cement, paper and paper boards, chemicals and chemical products and sugar. The important conclusions are as follows:

(i) Rise in Real Wages at the overall as well as industry wise, lagged behind without improvement in labor productivity.

(ii) Though the overall trend in money wages was similar to that in real wages, rise in money wages outpaced productivity in cotton textiles, sugar and iron and steel.

(iii) Relatively greater rise in labor productivity may be partly associated with the increase in fixed capital per unit of labor and improvement in management techniques.

(iv) The wage component of selected industrial costs was relatively small and wage-cost ratio declined during the period, except in cotton and jute textiles.

(v) The falling trend in the wage-cost ratio holds good even if the overall share of albor cost.(i.e. salaries and wages) is taken as a percentage of selected cost of industrial output.

Abdul Aziz (1972)[26] analyzed the Industrial wage structure of small, medium and large scale industries using primary and secondary data. It was concluded that the institutional forces were introducing the non-economic as against the purely economic considerations of productivity, capacity to pay and the like in the wage determining process.

Prajapathi Trivedi and Rajan Mookerjee (1989) [27]examined the relationship between monetary incentives and productivity in the

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[26] Abdul Aziz, Industrial wage Structure in Mysore State, University of Mysore, 1972.

[27] Prajapati Trivedi and Rajan Mookerjee,"Comparitive impact of monetary incentives on productive in public and private enterprises. "(A Case Study of the Indian Economy) Indian journal of Industrial Relations Vol.25,NO.July 1989,pp.1-11.

public and private sectors using data on time-series basis for 16 years. They used "Granger - Casuality" concept to test their hypothesis. It was concluded that monetary incentives in public enterprises do not work as well as they do in the private sector.

B.K. Madan (1977)[28] derived the trends in money earnings and real earnings of industrial workers, besides wage - productivity nexus in India using data furnished by Annual Survey of Industries (ASI). when the consumer prices started rising steeply in the wake of the inflationary trend, the real earnings of labor lagged, money earnings being unable to keep pace with the fast rising cost of living. He also concluded that there had been probably a certain contribution to productivity through increased effort. The correlation between changes in productivity and real earnings of the industries and labor was graphically illustrated in which every surge in productivity was accompanied by a spurt in real earnings.

B.N. Golder (1986)[29] analyzed the productivity trends in the Indian Industry with a major methodological improvement for the measurement of selected factor productivity using the Translog index, which is a discrete version of the continuous Divisia index. It was found that the trends of partial productivities had changed remarkably after 1970 and the problem of industrial efficiency was also related to the structure of the economy.

M. Upender (1996) [30] estimated the elasticity of labor productivity so as to find the substitution possibilities of labor for capital in the Indian manufacturing sector. It was found that the wage-rate prevailing in the sector was less than the marginal

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28 B.K.Madan,"The real wages of Industrial labor in India",Monograph No.1,management Development Institute, New Delhi, 1977

29 B.N.Goldar, productivity Growth in Indian Industry, Allied Publishers Pvt.Ltd.New Delhi, 1986.

30 M.Upender,"Elasticity of Labour Productivity in Indian manufacturing",Economic and Political Weekly, may 25, 1996,pp.7-10.

productivity of labor. It was suggested that there was a need to re-direct the Indian manufacturing sector towards greater use of labor - intensive technology until marginal productivity of labor became equal to wage rate.

ASIAN CONTEXTS:

In India, "The second Five year plan sounded more positively emphasizing the relationship between wage increases and productivity improvements and it favored the need for a wage policy which aimed at raising real wages by increasing productivity[31] " There is a similarity in this context with Singapore, "A National Wage Council was established in 1972, composed of representatives of Government, employers and Trade Unions to set guidelines for increase in Wages and fringe benefits and to suggest incentives for encouraging productivity improvements[32]". Moreover, "In Singapore the wage-rates fell, and the gap between its wage rates - hitherto much, the highest in Asia after Japan and those of Hong kong-increased[33]".

WESTERN CONTEXTS:

Assar Lindbeck (1983)[34] has analyzed the slowdown of productivity growth in the developed countries during the Seventies. It was concluded that the macro-economic development revealed and strengthened the negative consequences for productivity growth. In addition, a number of other proximate sources of the productivity

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31 Shahab Dayal, Industrial Relation System in India, Sterling Publishers Pvt.Ltd.,new Delhi, 1980, p47.

32 Theodare Geiger and Frances M.Gerger, The Development progress of Hongkong and Singapore, macmillan Publishions, London, 1975, p.205.

33 Ibid.,p.163.

34 Assard Lindback, The Recent Slowdown of productive Growth, Institute For International Economics Studies, university of Stock holm, Reprint series No.206, march 1983.

growth slow-down has also been identified, such as increased capacity, slack reduction in dynamic returns to scale and reduction in the economic incentives for productive activities by employees and managers.

K.G. Knight and R.A.Wilson (1980)[35] related the incidence of strikes to the degree of worker's discontent and the resistance displayed by employers to demands made by the workers. They have mentioned that all the previous studies in the U.K. using this type of model had emphasized the importance of the sluggish rate of advance in real income as the most important cause of greater worker discontent leading to increased strike frequency. Other important economic influences on strike frequency that have been emphasized are profits, productivity and unemployment. In another study KG.Knight and P.A.Geroski found that high strike frequency was not associated with high wage levels.

[35] K.g.. knight, Department of Economics, University of Warwick coventry, CV47AL.

CHAPTER-III

METHODOLOGY

INTRODUCTION

The present chapter describes the sources of data, concepts, tools, variables, methods of statistical estimation and related Economic interpretations.

SOURCES OF DATA:

The data for this study have been collected from secondary sources. The secondary data for the present study regarding number of persons employed, fixed capital, selected emoluments, wages to workers, depreciation and net value added have been collected for various years from Annual Survey of Industries (ASI), published by the Central Statistical Organisation (CSO) at the three digit level for selected 146 industries.

The consumer price index has been obtained from labor Bureau, Shimla. The product price indices have been taken from various issues of "Index numbers of whole sale prices in India" published by the office of the Economic Advisor, Government of India, New Delhi.

The capital formation index has been collected from various issues of National accounts Statistics published by CSO. Man days lost due to the industrial unrest for the various industries has been collected from the various issues of the pocket book of labor statistics published by labor bureau, Shimla.

ECONOMIC ANALYSIS:

In order to have a comprehensive analysis of Industrial wage policy, the selection of two major classification of Industries such as Piece and Time rate is done with the help of Pilot Study. The selection

of those industries is made after visiting the respective industries at the unit level.

The present study is segmented in to two parts. Analysis I covers all the 146 industries in two groups at the National level (Disaggregate level). The important ratios and other measurements among all industries in selected as divided in for piece rate group covering 51 industries and 95 industries for time rate group.

Analysis II covers selected 6 high piece rate industries and 6 high time rate industries individually for in depth analysis. This kind of classification is made in order to find the individual performance differences of these two groups of industries as well as their influence of their management of labour, mode of wage payments on their efficiency.

MEASURE OF OUTPUT:

In the measurement of output, the important choices arose 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. Each output is expressed in different units and dissimilar products can be aggregated by weights. In such case aggregation of output can be measured only in terms of value. This study has used gross value added at constant prices as a measure of output.

There are two distinct approaches to get the figures of real value added using single deflation method and double deflation method. In single deflation method the value added at constant prices has been obtained by subtracting raw materials from that of gross output at current prices then the value is deflated by the respective whole sale product price index. In double deflation method, the value added at constant prices has been obtained from deducting the value of gross input at constant prices from the value of gross output at constant prices.

Such studies were made by Balakrishnan and Pushpangadan (1994)[36]. The single deflation method is valid only if the price of materials relative to the price of output is more or less constant for the period. The present study uses gross value added by single deflation method, because "construction of single deflation method is superior to the double deflation method[37] .

Labor Input:

The ASI provides three distinct measures of labor input 1. Man days worked. 2. Number of workers and 3. Number of employees (industrial workers and person other than workers).

Asit Banerji [38], Goldar[39] and Sunilkumar[40] have used the number of employees as a measure of labor input in their studies of productivity. The present study also takes the number of employees as a measure of labor input and all types of labor are treated as homogeneous.

Capital input:

The measurement of capital input is inherently difficult and has been controversial in the literature. An important question is whether to use gross or net capital stock.

Goldar[41] and Sunilkumar[42] have used gross fixed capital stock and allowed 2 percent annual rate of discard of capital in their

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36 Balakrishnan, P.and K.Pushpangadan (1994),"Selected Factor productivity Growth in Manufacturing Industry-EPW,Vol.XXIX, No.31,p.2028.

37 Dholakia, B.H. and R.H. Dholakia (1994),"Selected Factor Productivity Growth in Indian manufacturing"EPW,Dec.31,p.

38 A.Banerji(1976),"Capital Intensity and Productivity in Indian Industry",Macmillian, Delhi, p.19.

39 N.Goldqar (1986),"Productivity in Indian Industry",Allied Publishers, Delhi, P.48.

40 Sunilkumar (2001),"Productivity and factor Substitution Theory and Analysis". Deep and Deep Publications Pvt.Ltd.

41 B.N. Goldar, Employment Growth in organised manufacturing in India,

studies. The same method is followed in the present study also. The measurement of fixed capital stock series is constructed as follows:

$K^t = K_{t-1} + I_t, -dk_{t-1}$

K_t = Gross fixed capital at constant prices by the year t.

I_t = Gross real investment in fixed capital during the year 't\

d = annual rate of discard.

Gross real investment is computed by following expressions. $I_t = B_t – B_{t-1} - D_t / P_t$

B_t = Book value of fixed capital in the year't'

D_t = depreciation in the year 't'

P_t - Price index of gross fixed capital formation.

Finally gross fixed capital stock is adjusted by capacity utilization. The book value of depreciation is not considered in this study. Because it is based on certain norms provided in the income tax act and income generated by the enterprises. It is more of an accounting concept. Working capital has not been included in the capital input, because there is suitable price index for applying price corrections to such data[43].

CONCEPTS AND TOOLS USED FOR THE STUDY:

Wage Rate:

Wage rate is calculated by the ratio of real value of selected emoluments to the number of employees by deflating a series of emoluments at current prices by consumer price index for the industrial worker with base period 1981 - 82=100.

Capital Formation Index:

Economic and Political weekly, April 1, 2000.

42 Sunilkumar(2001),"Productivity and Factor Substitution Theory and Analysis".Deep and Deep Publications Pvt.Ltd.p.243.

43 Asit Banerji, Op.cit. p.23.

Regarding capital measurement, capital formation index has been used for the study instead of machinery price index. It can be derived from ratio of the gross fixed capital formation at current prices and by current fixed capital formation at constant prices.

Capacity Utilisation:

Capacity utilization has been measured as actual output to maximum output. The output in physical units has been calculated by the selected value of output at current prices divided by the prices of respective products at current prices.

Factor Shares:

The share of labor has been obtained by a ratio of selected emoluments to gross value added. Assuming constant return to scale, the share of capital input has been calculated as one minus the share of labor,

Growth Rate:

Growth rates have been calculated as percentage over the previous period, i.e. the growth rate of variable $^{c}y'$ has been calculated as

$$gy_t = \frac{Y_t - Y_t}{Y_{t-1}} \times 100$$

Labor Productivity:

The productivity refers to the efficiency or overall effectiveness of a productive unit. Labor is one of the most important determinant of productivity. The human element plays a vital role in extracting productivity generating capacity, optimum utilization of resources and even minimizing industrial disputes.

Labor productivity is an outcome of a combination of a number of interrelated factors. It is therefore difficult to single them

out and consider their effort individually. However, for this study, the ratio of gross value added at constant prices per employee is defined as labor productivity.

Capital Productivity

The ratio of gross value added at constant prices per rupee of fixed capital is defined as capital productivity.

Selected Factor Productivity:

If different partial productivity indices move in opposite direction, then no definite conclusion can be drawn about the overall efficiency of the industry. In such situation the selected factor productivity helps us to understand the overall efficiency of industry. The ratio between the real output and real factor input is defined as selected factor productivity. Real factor input is measured as the weighted sum of the quantities of different inputs. The various TFP measures found in the literature are different, mainly on account of the differences in the assumption underlying in production function. The important indices of selected factor productivity are as follows:

(1) Kendrix index
(2) Solow index
(3) CES index and
(4) Translog index (Divisa Index)

In the present section, an attempt is made to compute and analyze the above four indices.

Kendrick Index :

This index[9] is based on the assumption of a linear production function of the following form: $Y = aL + bk$

Where Y is output
L is labor
and K is capital employed.

a and b are the parameters. Then, TFP growth index for year t may be shown as

$$A = \frac{Y_t}{a_0 L_t - b_0 K_t}$$

Where a_0 is the base year wage rate and b,, is the base year price of capital services.

Under the assumptions of constant returns to scale and payment to factors according to their marginal product, the selected earning of capital and labor in the base year is exaclly equal to output of that year. The main defect of this measure is that it is based on a lin ear production function and it fails to allow for the possible diminishing marginal productivity of factors.

Solow Index (A_t):

This index[44] is based on Cobb-Dougles Production Function. The following formula has been obtained for slow Index.

$$\frac{\overline{A}}{A} = \frac{\overline{Y}}{Y} - \left[(1-\beta)\frac{\overline{L}}{L}\right] + \beta\frac{\overline{K}}{K}$$

where Y denotes output, L labor, K capital and P the income share of capital. Bar stands for time derivative. From the above equation the discrete form is obtained as

$$\frac{\Delta A}{A} = \frac{\overline{\Delta Y}}{Y} - \left[(1-\beta)\frac{\overline{\Delta L}}{L}\right] + \beta\frac{\overline{\Delta K}}{K}$$

The Solow Index[45] is obtained using the following identity taking Ao as unity A_t

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44 R.M.Solow,"Technical change and the aggregate production Function", Review of Economic and statistics, 1957 pp. 312-327.

45 L.R. Christensem, D.W.Jorgenson and a Lau,L.J."Transcedental Logarithemic production

$$A_{t-1} = A_t \left[1 + \frac{\Delta \mathbf{A}}{\mathbf{A}} \right]$$

Divisa Index-translog Index:

The translog index of technological change is based on transcendental logarithmic (Translog) Production Function, characterized by constant returns to scale.

Where Y is output

K is Capital

L is labor input

$\alpha \mathbf{s}$ And $\beta \mathbf{s}$ are the parameters to be estimated.

Assuming conditions of competitive equilibrium, Translog Production Function can be used to derive the translog measure of Selected Total Factor Productivity Growth (TFPG) which is a discrete approximation to the Divisia Index. The translog measure of TFPG is given by

$$\Delta \log \mathbf{TFPG} = \Delta \log \mathbf{Y(t)} - \mathbf{s}_t \log L(t) - (1-s_t) \Delta \log K(t)$$

Where $\mathbf{S}$ and (1-S) are the shares of labor and capital in value added and

computed as $\bar{S} = \frac{(S_t - S_t - 1)}{2}$ and $(1 - \overline{S_t} = \frac{1 - S_t) - (1 - S_t - 1)}{2}$

The main advantages of these function are allowing for variable elasticity of substitution and does not require the assumption of I licks neutrality.

In the present study, the Translog index has been used for measuring TFP. The advantage of this index is elasticity of substitution between the inputs to vary with the level of inputs.

Frontiers Review of Economics and Statistics, Feb 1973, pp 213-227.

For data obtainable at yearly intervals (discrete point of time), the most commonly used discrete approximation to divisia index[46] is given

by TFPG = (InQ_{t-1} – mQt-1) = .5 E (Si_t, -I Si_{t-1}) ln(Xi_t,) Xi_{t-1}.,) Where q denotes output, $Xi_($ denotes the quantity of the i^{lh} input for the year 't' and Sj(is the share of input 'L in output for the year 't'

Capital Output Ratio:

The concept of capital output ratio expresses the relationship between the value of capital investment and the value of output. It refers to the amount of capital required in order to produce a unit of output.

Productivity growth has been a major contributing factor in the growth of the industry. The productivity of capital depends upon many factors such as availability of resources, amount of capital investment, the degree and the nature of technological advancement, the efficiency of labor, the quality of managerial and organizational skill and the existence and extent of utilization of Economic overheads.

In this context, an effort has been made to show how much of fixed capital is required to produce one rupee worth of output. For estimating capital output ratio, gross fixed capital stock at constant prices is used as a measure of capital input. The working capital has not been considered. The capital output ratio indicates the relationship between the existing stock of capital and resultant flow of current output.

$$COR = \frac{\text{Fixed Capital Stock at Constant Prices}}{\text{Volume of Production at Constant Prices}}$$

[46] Leo Torquist (1936),"The bank of Finland's Consumption Price Index", Bank of Finland monthly Bulletin,No.10,pp.1-8.

Capital Intensity:

The labor productivity mainly depends upon the quality of capital. A worker working with better tools will be more productive than a worker who has inferior tools. Advanced countries are more productive than underdeveloped countries in both industrial and agricultural sector. Improvements in the tools and machines take place as a result of technological progress. So study about capital intensity is very necessary.

Capital intensity is defined as the ratio of gross fixed capital stock at constant prices and the number of employees. That is, gross fixed capital per unit of labor is defined as the capital intensity.

Regression:

Multiple regression had been computed with the real wage rate as the dependent variable and labor productivity, capital intensity, employment and wage share of value added as independent variables separately for the selected 146 industries covering 51 piece rate industries and 95 time rate industries as two groups.

ANALYSIS -I

TRENDS IN THE EMPLOYMENT OF LABOR

Employment is one of the important economic variables attracted by the recent decades of changes that are taking place in the Indian Industries. A developing country like India cannot afford industrial inefficiency and at the same time soaring unemployment. A labor abundant country should make use of the available labor force instead of spending huge amount of capital as substitutes for labor.

In the industrial sector, the current defensive strategy of preserving and providing benefits to existing workers has raised the labor costs and worsened the over-all environment to employment growth. The restrictions imposed against retrenchment of labor and closure of factories have raised the long term cost of industries through the hiring of additional labor. In addition fast growth in money wages slowed down employment growth when employers started economizing on labor to reduce costs.

Administrative action to reduce disparities of wages between the public and the private sector, between the rural and the urban sector, between the organized and the unorganized sector can have only a marginal impact if the rate of growth of employment is unfavorable to the labor force.

Therefore, wage policy has to be backed by an employment policy. The Government should request the second National Commission on labor to review the present situation and suggest measures for a revolution of the national wage policy, accompanied by an income and employment policy. Obviously, substitution of capital for labor is taking place. If this trend continues in a labor surplus economy like India, it shall act as a serious impediment in improving the overall real wages of labor in the economy, though it may improve the wage level of these who are able to retain their

employment. A national wage policy must therefore, be accompanied by a full employment policy, failing which it defeats its very purpose.

Employment in the organized manufacturing sector in India remained virtually stagnant in the 1980s. In sharp contrast, there has been a substantial increase in employment in this sector in the 1990s[1]. Since a process of major Economic Reforms was initiated in India in 1991, the marked acceleration in employment growth in organized manufacturing in the 1990s may be due to be the result of the economic reforms. The period of study is divided into two sub periods 1982-90 and 1991-98. The first sub period relate to the pre-reform period, while the second sub period is related to the post-reform period.

TABLE : 1

GROWTH RATE OF LABOR

S.No	Growth rate of Labor (in Percent)	Number of industries under Piece Rate System			Number of industries under Time rate System		
		1982-98	1982-90	1991-98	1982-98	1982-90	1991-98
1.	Negative / Less than 0	10 (19.6)	18 (35.3)	6 (11.7)	15 (15.7)	24 (25.2)	15 (15.7)
2.	0 to 5	17 (33.3)	1 1 (21.5)	19 (37.2)	44 (46.3)	44 (46.3)	43 (45.2)
3.	5-10	9 (17.6)	8 (15.7)	12 (23.6)	25 (26.3)	11 **(U**.7J	22 (23.4)
4.	Above 10	15 (29.5)	14 (27.5)	14 (27.5)	11 (11.7)	16 (16.8)	15 (15.7)
	Total Selected industries	51	51	51	95	95	95

Source : computed from the ASI data sources for the selected industries.

The issue of employment expansion with productivity has been an important aspect of policy planning and research. This study seeks to examine the trends in employment in the two major classification of piece rate and time rate industries. 19.6 per cent of selected industries recorded the negative growth rate of employment in piece rate industry group during the period 1982-98. 33 per cent of selected industries registered the range of 0 to 5 per cent, 17.6 per cent of selected industries in the range of 5 to 10 per cent and 29.5 per cent of selected industries above 10 per cent growth rates in piece rate industry group during the overall study period (1982-98).

In the pre reform period 35.3 per cent of selected industries noticed the negative growth rate of employment in the piece rate industry group. 21.5 per cent of selected industries in the range of growth rate of employees 0 to 5 per cent and 15.7 per cent of selected industries in the range of 5 to 10 per cent and 27.5 per cent of selected industries above 10 per cent.

For the post reform period, 11.7 per cenl of selected industries registered the negative growth rate of employment in the piece rate industry group. 37.2 per cent of selected industries in the range of 0 to 5 per cent growth rate of employment and 23.6 per cent of selected industries in the range of 5 to 10 per cent and 27.5 per cent of selected industries in above 10 per cent .

From the above table, the interesting point is to note that, the declined growth rate of employment in the pre-reform period was higher than that of post-reform period in the piece rate industry group. This indicates that the new economic policy is not creating employment in this group piece rate of industries.

In time rate industry group, 15.7 per cent of selected industries registered the negative growth rate of employment during the overall study period (1982-98). 46.3 per cent of selected industries recorded in the range of 0 to 5 per cent growth rate of employment and

26.3 per cent of selected industries in the range of 5 to 10 per cent and I 1.7 of selected industries above 10 per cent .

For pre-reform period, 25.2 per cent of selected industries, noticed to negative growth rate of employment in the time rate industry group. 46.3 per cent of selected industries noticed in the range of 0 to 5 per cent of growth rate of employment and I 1.7 per cent of selected industries in the range of 5 to 10 per cent and 16.8 per cent of selected industries in the range above 10 per cent .

For post reform period, 15.7 per cent of selected industries registered the negative growth rate of employment in time rate industry group. 45.2 per cent of sample industries recorded in the range of 0 to 5 per cent of growth rate of employment and 23.4 per cent selected industries in the range of 5 to 10 per cent and 15.7 per cent of selected industries in the range of above 10 per cent .

TABLE : 2

GROWTH RATE OF CAPITAL

SI. No.	Growth rate of Capital in percent	Number of industries under Piece Rale System			Number of industries under Time Rate System		
		1982-98	1982-90	1991-98	1982-98	1982-90	1991-98
1.	Negative / Less than 0	0 (0)	1 (1.9)	0 (0)	0 (0)	0 (0)	1 (1.0)
2.	0 to 10	0 (0)	4 (7.8)	0 (0)	0 (0)	2 (2.1)	3 (3.3)
3.	10 to 20	11 (21.6)	12 (23.5)	7 (13.8)	12 (12.6)	8 (8.4)	28 (29.5)
4.	20 to 30	10 (19.6)	9 (17.6)	12 (23.6)	35 (36.8)	34 (35.6)	24 (25.3)
5.	30 to 40	6 (11.7)	7 (13.8)	12 (23.6)	17 (I7.9)	14 LI 5.8)	13 (L3.6)
6.	40 to 50	1 (1.9)	2 (3.9)	3 (5.9)	14 (I5.8J_	12 (12.6)	9 (95)
7.	Above 50	23 (45.2)	16 (31.4)	17 (33.5)	17 (17.9)	25 (25.5)	17 (17.8)
	Selected Industries	51	51	51	95	95	95

Source: computed from the ASI sources of data

In the overall period, (1982-98) 21.6 per cent of selected industries noticed the growth rate of capital in the piece rate industry in the range of 10 to 20 per cent. 19.6 per cent of selected industries in the range of 20 to 30 per cent of growth rate of capital and 11.7 per cent of selected industries of 30 to 40 per cent and 1.9 per cent of selected industries 40 to 50 per cent of growth rates of capital during the period 1982- 1998. 45.2 per cent of selected industries achieved higher rate of capital that is in the range of above 50 per cent of average annual growth rate of capital. The important point is to note that no one has negative growth of capital during the study period.

In the pre reform period, nearly 2 per cent of the selected industries noticed the negative growth rate of capital in the piece rate industry group. 7.8 per cent of selected industries in the range of 0 to 10 per cent growth rate of capital, 23.5 per cent of selected in the range of 10 to 20 per cent , 17.6 per cent selected industries in the range of 20 to 30 per cent , 13.8 per cent of selected industries in the range of 30 to 40 per cent and 3.9 per cent of selected industries in the range of 40 to 50 per cent . The higher average annual growth rate of capital of above 50 per cent was achieved in 3 1.4 per cent of selected industries during the pre reform period.

For Post Reform period, 13.8 per cent of selected industries recorded the growth rate of capital in the range of 10 to 20 per cent , 23.6 per cent of selected industries in the range of 20 to 30 per cent , as well as in the range of 30 to 40 per cent and 5.9 per cent in the range of 40 to 50 per cent of growth rate of capital during the post reform period. The higher growth rate of capital of above 50 per cent was achieved in the 33.5 per cent of selected industries during this period.

The important point is to note that the overall and post reform periods, all the selected piece rate industries have positive and above

10 pet-cent average annual growth rate of capital. The below 10 per cent of average annual growth rate capital was achieved in 7.8 per cent of selected industries and nearly 2 per cent of selected industries have negative growth during the pre reform period.

For overall study period, 12.6 per cent of selected industries noticed the growth rate of capital in the time rate industry group in the range 10 to 20 per cent . 36.8 per cent of selected industries in the range of 20 to 30 per cent,17.9 per cent of selected industries in the range of 30 to 40 per cent , 15.8 per cent of selected industries in the range of 40 to 50 per cent and 17.9 per cent of selected industries in the range of above 50 per cent of growth rates of capital during the study period.

For pre reform period, 2.1 per cent of selected industries recorded the growth rate of capital in the range of 0 to 10 per cent in time rate industry group. 8.4 per cent of selected industries in the range of 10 to 20 per cent , 35.6 per cent of selected industries in the range of 20 to 30 per cent ,15.8 per cent of selected in the range of 30 to 40 per cent , 12.6 per cent of selected industries in the range of 40 to 50 per cent and 25.5 per cent of selected industries in the range of above 50 per cent growth rate of capital during the period 1991-98 in time rate industry group.

For post reform period, only one per cent industry is seen having the negative growth rate capital in time rate industry group. 3.3 per cent of selected industries in the range of 0 to 10 per cent, 29.5 per cent of selected industries in the range of 10 to 20 per cent, 25.3 per cent of selected industries in the range of 20 to 30 per cent, 13.6 per cent of selected industries in the range of 30 to 40 per cent, 9.5 per cent of selected industries in the range of 40 to 50 per cent and 17.8 per cent of selected industries in the range of above 50 per cent growth rate of capital during the period 1991 -98 in time rate industries group.

It can be said that the growth rate of capital was higher in the piece rate industry group than that compared with time rate industry group during post reform period. That is nearly 60 per cent of selected industries have above 30 per cent of growth rate of capital during the post reform period in the piece rate industries. But, nearly 40 per cent of selected industries have above 50 per cent of growth rate of capital during this period in the time rate industry group. This indicates that huge increase in investments in the piece rate industry group may be clue to the liberalization process. On the whole, the growth rate of capital has increased in the industrial manufacturing sector in India.

CAPITAL INTENSITY

The new technology has given an opportunity for the Indian industries to make use of an average worker who has limited skills previously, to become familiar with new technology as the computer controlled system are user-friendly. Further, the traditional kind of labor involvement and interaction in the work spot have been treated as one of the variables to be eliminated from the industries to reduce labor costs, increase productivity and thus profitability.

New technology brings changes in the job content and responsibility, job displacement, redundancy and redeployment, retraining, union co-operation and mutual agreement which are extremely important in realizing the benefits of new technology. New technology requires huge initial capital for which the gestation period is also long. Still the fact remains that new technology is capable of selectively replacing the human element in performing the actual work. The worker at same stage of production is removed. This has happened not only in developing countries but also in the advanced countries. "Technology displacement and loss of job opportunity have affected the united states"[2].

Thus this is the right time to study the impact of new technology on wage levels in selected industries in India. The following table presents the trends in Capital Intensity.

TABLE: 3
TRENDS IN CAPITAL INTENSITY

Growth rate in percent	Number of industries under piece Rate System			Number of industries underTime Rate System		
	1982-98	1982-90	1991-98	1982-98	1982-90	1991-98
Negative Less than 0	0 (0)	0 (0)	2 (3.9)	0 (0)	0 (0)	2 (2.1)
0 to 10	0 (0)	0 (0)	4 (7.8)	0 (0)	4 (4.2)	6 (6.3)
10 to 20	9 (17.6)	6 (11.8)	16 (31.4)	23 (24.2)	11 (11.7)	34 (35.8)
20 to 30	14 (27.5)	15 (29.4)	1 1 (21.6)	27 (28.4)	34 (35.8)	22 (23.1)
30 to 40	8 (15.7)	10 (19.6)	4 (7.8)	26 (27.4)	15 (15.7)	13 (13.7)
40 to 50	3 (5.8)	5 (9.8)	4 (7.8)	10 (10.5)	18 (18.9)	7 (7.3)
Above 50	17 (33.4)	15 (29.4)	10 (19.7)	9 (9.5)	13 (13.7)	11 (11.7)
Selected Industries	51	51	51	95	95	95

Source: computed from the ASI sources of data.

For this study, it is found that all the selected industries under piece rate industries group have been noticed a minimum above 10 per cent growth of capital intensity during the period 1982-98. 33.4 per cent of selected industries have above 50 per cent of growth of capital intensity during the period. This results indicate that the piece rate industries are transformed from labor intensive into capital intensive.

During the pre reform period, it is also found that all selected industries have noticed a minimum above 10 per cent growth of

capital intensity during this period. Nearly 30 percent of selected industries are in the range above 50 percent of growth in capital intensity. But in the post reform period, it was nearly 20 percent. Nearly 58 percent of selected industries registered above 30 percent of growth of capital intensity during the pre reform period under piece rate industry group. It is observed that nearly 35 percent of the selected industries have noticed above the 30 percent of growth of capital intensity during the post reform period. This result indicates that there is no improvement in capital intensity growth in Indian piece rate industry group in post reform period. It may be due to the reason that the growth rate of capital in piece rate industry group was increasing along with the increasing growth rate of labor. That is growth of capital and growth of labor were increasing during this period.

For time rate industry group, it is found that all the selected industries registered 10 to 20 percent growth of capital intensity during the period 1982-98. 9.5 percent of selected industries have registered above 50 per cent of growth capital intensity during his period.

During the pre reform period, it is also found that 4.2 percent of selected industries have registered below 20 per cent growth of capital intensity during this period. 13.7 percent of selected industries have registered above 50 per cenl of growth of capital intensity. For the post reform period 35.8 percent of selected industries have been found below 20 percent growth capital intensity. The point to note is that 35.8 percent selected industries have in the range of 30 to 40 percent growth of capital investments during pre reform period. It is also found that 35.8 percent of selected industries have in the range 20-30 percent growth of capital intensity during the post reform period. On the whole, in both the periods, the growth rate of capital intensity was found to be positive.

VALUE ADDED

Trends in the growth of the manufacturing sector in India have been a much debated issue quite sometime now. Isher Judge Aluwalia concluded that the slow growth of the output is registered in manufacturing at 1979-80[47] Nagaraj[48] in his study revealed that there was 8 percent growth per annum during the period 1981-87 in the registered manufacturing industries. This study also found that consumer durable industries have a less than 3 percent witnessed fastest growth rate of 14 per cent per annum followed by capital goods industries at 10 percent per annum.

For this study, the gross value added at constant prices has been taken from AS1 separately For both time rate and piece rate industries disaggregated at three digit level. The following table presents the trend in growth rate of value added.

TABLE-4
GROWTH RATE OF VALUE ADDED

SI. No.	Growth rate of value added In Percent	Number of industries under price Rate System			Number of industries under Time Rate System		
		1982-98	1982-90	1991-98	1982-98	1982-90	1991-98
1.	Negative Less than 0	3 (5.9)	3 (5.9)	6 (11.8)	0 (0)	4 (4 2)	2 *(2.1)*
2.	0 to 5	5 (9.8)	6 (11.8)	7 (13.7)	4 (4.2)	9 (9.5)	10 (10.5)
3.	5 to 10	1 1 (21.5)	9 (17.6)	1 1 (21.6)	23 (24.2)	17 (17.9)	16 (16.8)
4.	l0 to 15	7 (13.7)	6 (11.8)	6 (11.8)	22 (23.2)	22 (23.2)	21 (22.1)
5.	15 to 20	8 (15.6)	9 (17.6)	4 (17.8)	10 (10.5)	16 (16.8)	15 (15.8)
6.	20 to 25	2 (3.9)	2 (3.9)	5 (27.5)	17 (17.9)	7 (7.4)	9 (9.5)
7.	Above 25	15 (29.5)	16 (31.4)	12 (23.5)	19 (20.9)	20 (21.0)	22 (23.2)
	Selected Industries	51	51	51	95	95	95

Source : computed from the ASI sources of data.

[47] Aluwalia, I.J.,"Industrial Growth in India; Stagnation since the Mid-Sixities",Oxford University Press, 1985

[48] Nagaraj,R."Growth in manufacturing output since 1980; some preliminary findings; July 1, 199, PP.1481-1484.

It is found that 5.9 percent of selected industries under piece rate industry group have negative trend in growth rale of value added for the period 1982-98. The remaining 94.1 per cent of selected industries have positive trend in growth rate of value added. It is observed that 29.5 percent of selected industries under piece rate industries group have above the 25 per cent of growth rate of value added during the pre reform period.

In the pre reform period, it is found that 5.9 per cent of selected industries under piece rate industry group have negative trend in growth rate of value added for the period 1982-90. It is also found that 31.4 percent of the selected industries have above the 25 percent of growth rate in value added.

In the post reform period I 1.8 percent of selected industries have under piece rate industry group have registered negative growth rate in value added. It is observed that 23.5 per cent of selected industries noticed above 25 percent of growth rate in value added during this period.

The interesting point is to note that the growth rate of value added in time rate industry group have positive trend in the period 1982-98. That is all the selected industries have positive growth in valued under lime rate industry group during this period. It is also found that 4.2 percent and 2.1 percent of selected industries have negative trend during pre-reform and post reform respectively. The Table gives 20.9 percent, 21 percent and 23.2 percent of selected industries in the range above 25 percent of growth rate of value added during all the three periods 1982-98, 1982-90 and 1990-98 periods respectively.

Above results indicate that there is no notable difference between piece rate and time rate industry groups in terms of growth rate of value added during the study period. Both time rate and piece

rate industry groups have registered satisfactory growth rate in value added.

TRENDS IN CAPITAL OUTPUT RATIO:

The concept of capital-output ratio expresses the relationship between the value of capital investment and value of output. It refers to the amount of capital required in order to produce a unit of output. The concept of capital output ratio is applicable not only to an economy but also to its different sector, that is, different capital output ratios for different sectors of an economy depending on the techniques (capital intensive or labor intensive) used by them. The overall capital output ratio for a country is the average measure on the sectoral ones. For estimating capital output ratio, gross fixed stock at constant prices is used as a measure of capital input.

TABLE : 5

CAPITAL OUTPUT RATIO

SI No	Capital Output Ratio	Number of industries under Piece Rate System			Number of industries under Time Rate System		
		1982-98	1 982-90	1991-98	1982-98	1982-90	1991-98
1.	Below 1:1	22 (43.0)	37 (72.5)	14 (27.5)	37 (38.9)	69 (72.6)	20 (21.0)
2.	1:1 to 2:1	22 (43.0)	13 (25.5)	18 (35.0)	44 (46.3)	19 (20.0)	43 (45.3)
3.	2:1 to 3:1	7 (14.0)	1 (2.0)	12 (23.5)	6 (6.3)	5 (5.3)	20 (21.0)
4.	Above 3:1	0 (0)	0 (0)	7 (14.0)	8 (8.5)	2 (2.1)	12 (12.7)
	selected Industries	51	51	51	95	95	95

Source: Computed from the ASI source of data.

It is found that 86 percent of the selected industries under piece rate industry group below the range 2:1 for the study period. For

pre reform period, the capital output ratio for piece rate industries found that 98 percent of the selected industries in the ranging not above 2:1. But at the same time, it was only 62 per cent in the post reform period. The interesting point to note is that there is none of selected industries on the capital output ratio which lies above 3:1 during the overall and pre reform periods. But it was found 14 percent of selected industries lies above 3:1 during post reform period. Similar trend is also found in the time rate industry group. This indicates that the piece rate industries and time rate industries (over all Indian manufacturing) is transformed from labor intensive into capital intensive ones. That is increasing trend in capital output ratio indicates that government policy towards reduction in employment in Indian Manufacturing.

The new economic policy led to increase in capital output ratio in both piece rate and time rate industry groups in Indian manufacturing. There has been a tendency in name of technological upgradation, modernization and productivity to introduce capital intensive technologies, but these tendencies have resulted in the fall in the level on employment.

TRENDS IN CAPACITY UTILISATION:

Capacity utilization of a firm means the degree to which all resources are fully employed or the efficiency of the firm to utilize the resources at its disposable to achieve the possible maximum output.

In a capital starved country, the importance of the fullest possible utilization of industrial capacity both in public and private sectors can hardly be over emphasized. This is necessary not only to ensure the optimum utilization of scarce capital resources that have already have been invested in the industry, but also to create new capital for further development. In the present study, the index of capacity utilization is defined as ratio of the actual output to maximum output in any year during the selected period. In the annual

survey of industries(ASI) physical units of output are not given separately. For this study, output in physical units can be calculated by the selected value of output which is divided by the corresponding price of output. The following table gives the growth rate of labor in Indian Industries during 1982- 1998,

TABLE: 6

GROWTH RATE OF CAPACITY UTILIZATION

Degree of Capacity Ulization (in percent)	**Number of industries under Piece Rate System**			**Number of industries under Time Rate System**		
0 to 20	1 (1.9)	8 (15.7)	1 (1.9)	1 (1.1)	6 (6.3)	0 (0)
20 to 40	14 (27.4)	13 (25.5)	8 (15.7)	9 (9.4)	30 (31.6)	3 (3.1)
40 to 60	13 (25.5)	13 (25.5)	12 (2.3.5)	44 (46.4)	35 (36.8)	18 (18.9)
60 to 80	20 (39.2)	15 (29.4)	19 (37.2)	38 (40.0)	24 (25.3)	58 (61.1)
Above 80	3 (6.0)	2 (3.9)	1 1 (21.7)	3 (3.1)	0 (0)	16 (16.9)
Selected Industries	51	51	51	95	95	95

Source: computed from the AS1 sources of data.

For this study, it is found that, only 1.9 percent of selected industries under piece rate industry group have the rale of capacity utilization in the range of 0 to 20 per cent during the period 1982-98. 27.4 percent and 25.5 percent of industries were found the rate of capacity utilization in the range of 20-40 percent and 40 to 60 percent respectively during this period. Nearly 45 percent of selected industries are in the range of above 60 percent of rate of capacity utilization in the overall period.

In the pre reform period, it is observed that 15.7 percent of selected industries have been noticed that the rate of capacity utilization in the range below 20 percent. 25.5 percent and 29.4

percent of industries were found the rate of capacity utilization in the range of 20-40 percent and 40-60 percent during this period. Nearly 33 percent of selected industries are in the range of above 60 per cent of rate of capacity utilization in this period. It is observed that 40 percent of selected industries in the range of above 40 percent of rate of capacily utilization the post reform period. This results indicates that the liberalization policy has positive impact on capacity utilization in the piece rate industry group.

In time rate industry group, it is found that only one industry has below the 20 percent rate of capacity utilization during the period 1982-98. 9.4 percent and 46.4 percent of industries have found the rate of capacity utilization in the range of 20-40 percent and 40-60 percent respectively during this period. Nearly 43 percent of selected industries are in the range above 60 per cent rate of capacity utilization in this period.

For the pre reform period, it is observed that 6.3 percent of selected industries lie below the 20 percent rate of capacity utilization. It is observed that nearly 31.6 percent and 36.8 percent of selected industries have the rate of capacity utilization respectively. But in the post reform period it is observed that 61.1 percent of selected industries have in the range of 60-80 percent rate of capacity utilization and 16.9 percent of selected industries in the range above 80 percent rate of capacity utilization. It indicates that the liberalization policy has positive impact on rate of capacity utilization in the time rate industry group. From the above results, the both time rate and piece rate industry groups were found to have conducive atmosphere to proper utilization of capacity during the post reform period.

TRENDS IN LABOR PRODUCTIVITY

Productivity is an index of economic measure of efficiency with which human resources as a whole are utilized in the production

process. The productivity would be as indicator of real wages and relative prices. In the recent years productivity has been used as objective and scientific measure for lasting the trends in the major sectors of the country's economy and prospects. A better appreciation of productivity can help us in understanding critical issues clearly and lead to the formulation of appropriate economic policies and management practices.

Labor is one of the most important determinants of productivity. The human elements play a vital role in extracting productivity generating capacity, optimum utilization of resources and even minimizing industrial disputes.

The labor productivity would be a major factor in the choice of technology and employment of labor. When labor productivity increases the country's economy would show improvements in national income. It also would help in finding out the over all improvement of the unit, whether the introduction of a new labor-saving device or new wage system has led to a significant increase or decrease in the productivity of labor. The Indian planners from first five year plan onwards realized that the key to solving the problem of India's poverty lies in raising the levels of labor productivity.

TABLE : 7

GROWTH RATE OF LABOR PRODUCTIVITY

SI. No.	Growth rate of Labor Productivity In Percent	Number of industries under Piece Rate System			Number of industries under Time Rate System		
		1982-98	1982-90	1991-98	1982-98	1982-90	1991-98
1.	Negative / Less than 0	4 (7.8)	2 (3.9)	8 (15.6)	1 (1.0)	2 (2.1)	4 (4.2)
2.	0 to 5	4 (7.8)	4 (7.8)	14 (27.4)	6 (6.3)	15 JJ5.6)	17 (17.9)
3.	5 to 10	20 (39.2)	13 (25.4)	14 (27.4)	34 (3.5.7)	25 (26.3)	22 (23.2)
4	10 to 15	13 (25.4)	13 (25.4)	3 (5.8)	29 (30.5)	20 (21.0)	19 (20.0)
5.	15 to 20	3 (5.8)	8 (15.6)	3 (5.8)	10 (10.5)	18 (19.0)	13 (13,7lJ
6.	Above 20	7 (14.0)	1 1 (21.9)	9 (18.0)	15 (16.0)	15 (16.0)	20 (21.0)
	Selected Industries	51	51	51	95	95	95

Source: computed from the ASI sources of data.

In this study, it is found that 7.8 per cent of selected industries in piece rate industry group have negative trend in labor productivity for the period 1982.98. In the remaining 82.2 per cent of selected industries there was positive trend in labor productivity growth. It is observed that 7.8 per cent of selected industries registered the in the range of 0 to 5 per cent growth rate of labor productivity. 39.2 per cent of selected industries in the range of 5 to 10 per cent , 25.4 per cent of selected industries in the range of 10 to 15 per cent , 5.8 per cent of selected industries in the range of 15 to 20 per cent of growth rate labor productivity during the study period 1982-98 in piece rate industry group. 14 per cent of selected industries have above 20 per cent growth rate during this period.

It is observed that in 3.9 per cent of selected industries in piece rate industry group was negative trend in labor productivity during the pre reform period. Nearly 60 per cent of selected industry was above 10 per cent growth rate labor productivity in this period.

It is found that in 15.6 per cent of selected industries in piece rate industry group there was negative trend in labor productivity during the post reform period. It is also found that nearly 30 per cent of selected industries have more than 10 per cent of average annual growth rate of labor productivity. The growth rate of labor productivity in pre reform period was higher than the growth rate of labor productivity in post reform period as far as piece rate industries are concerned.

It indicates that the liberalization process has negative effect on labor productivity in piece rate industry group. But the overall efficiency of piece rate industry group in terms of labor productivity was satisfactory during the study period.

It is observed that only one industry under time rate industry group was negative trend in during the study period. The remaining 99 per cent of selected industries were positive trend in labor productivity during the study period. It is found that 2.1 per cent and 4.2 per cent of selected industries were negative trend during the pre reform and post reform periods respectively. There is no significant difference in growth rate of labor and post reform periods in time rate industry group. It is concluded that the impact of time rate industry group in terms of labor productivity during the study period is satisfactory.

In general in both piece rate and time rate industry groups, the labor productivity trend is found to be positive. It may be due to the increase in capital in these industries under study period.

TRENDS IN CAPITAL PRODUCTIVITY:

Capital productivity mainly depends upon quality of capital. A worker working with better tools and machines will be more productive than a worker who has interior tools and machines. The following table presents the details of capital productivity.

TABLE: 8

GROWTH RATE OF CAPITAL PRODUCTIVITY

SI. No	Growth rate of capital Productivity	Number of industries under Piece Rate System			Number of industries under Time Rate System		
	In percent	1982-98	1982-90	1991-98	1982-98	1982-90	1991-98
1.	Negative / Less than 0	38 (74.5)	39 (76.4)	38 (74.5)	82 (86.6)	80 (84.2)	78 (82.1)
2.	O to 5	4 (7.8)	3 (5.8)	3 (5.8)	2 (2.1)	4 (4.5)	7 (7.3)
3.	5 to 10	3 (5.8)	2 (3.9)	2 (3.9)	2 (2.1)	2 (2.1)	4 (4.5)
4.	Above 10	6 (11.9)	7 (13.9)	8 (15.8)	9 (9.2)	9 (9.2)	6 (6.1)
	Selected industries	51	51	51	95	95	95

Source: computed from the ASI sources of data.

In this study, it is found that 74.5 percent of selected industries under piece rate industry group have negative trend in capital productivity for the period 1982-98. The remaining 25.5 per cent of selected industries have positive trend in capital productivity growth. It is observed that 76.4 per cent and 74.5 percent of selected industries have negative trend during pre-reform and post reform periods respectively. This result indicates that there is no improvement in capital productivity growth in Indian piece rate industry groups in post reform period.

It is observed that 86.6 percent of the selected industries under time rate industry group have negative trend in capital productivity during the study period. It is also found that nearly 84 percent and 82 percent of selected industries have negative growth in capital productivity during pre-reform and post reform periods respectively under time rate industry group.

It is found that both time rate and piece rale industry group have negative trend in capital productivity in during study period.

There is no positive impact of liberalization on these industry groups with regard to capital productivity.

TOTAL FACTOR PRODUCTIVITY :

Low Total factor productivity Growth (TFP_G) or its negative trend is a commonly observed feature in most of the developing economics. Ahluwalia (1991)[49] finds a positive trend in TFP in Indian manufacturing. Balakrishnan and Pushpangadan (1994)[50] find negative trend in the same period. Persistence of negative phase of selected factor productivity growth in Indian manufacturing sector has become a controversial issue. There are two different methods of estimation the growth accounting methods has been used in Indian studies. In particular Pushpangadan and Balakrishnan pointed out that an estimation of (TFP) through value added variable and with the aid of double deflation in place of the practise of single, would tail to establish the 'turn around' phenomenon. But Dholaka and Dholakia (1994)[51] argued that double deflation method so as hot to set a distorted picture of the direction. These finding leads to generate a unified view on the growth path followed by TFP in Indian industries. However, single deflation method has been used for this study.

TRENDS IN TOTAL FACTOR PRODUCTIVITY GROWTH IN INDIAN MANUFACTURING

In the period of liberalization, India's Economic policies are geared towards economic growth. Rise in productivity in all sectors in essential to put the country on the growth path. There are many studies that systematically analyze productivity in aggregate

[49] I.J. Ahluwalia (1992),"Productivity growth in Indian manufacturing", Oxford University Press, Delhi.

[50] P.**B**alakrishnan and K.Pushpangadan(1994), "Total Factor Productivity Growth in Manufacturing Industry; A fresh look",EPW, july 30.

[51] B.H Dholakia and R.H. Dholakia (1994),"Total Factor Productivity Growth in Indian manufacturing",EPW, Dec.31.

manufacturing sectors of the economy. The present study, analyse the trends in growth of TFP in Indian manufacturing industry, before and after the introduction of economic reforms under the major classification of piece rate and time rate industry groups at disaggregate level.

TABLE:9

GROWTH RATE OF TFP

Sl. No.	Growth rate of TFP In Percent	Number of Industries under Piece Rate System			Number of industries under Time Rate System		
		1982-98	1982-90	1991-98	1982-98	1982-90	1991-98
1.	Negative/ Less than 0	32 (62.7)	27 (52.9)	30 (58.6)	73 (76.7)	72 (75.7)	63 (66.3)
2	0 to 5	7 (13.7)	14 (26.7)	9 (17.4)	11 (11.7)	8 (8.4)	17 (18.0)
3.	5 to 10	5 (9.9)	3 (6.7)	4 (7.3)	2 (2.1)	7 (7.3)	8 (8.4)
4.	Above 10	7 (13.7)	7 (13.7)	8 (15.6)	9 (9.5)	8 (8.4)	7 (7.3)
	Selected Industries	51	51	51	95	95	95

Source: computed from the ASI sources of data.

In this study, it is found that 62.7 per cent of the selected industries under piece rate industry group have negative trend in TFP_G for the period 1982-98. The remaining 37.3 percent of selected industries have positive trend in TFP growth. It is observed that 52.9 percent and 58.6 percent of selected industries have negative trend during pre reform and post reform periods respectively under piece rate industry groups. This results indicates that there is no improvement in TFP_G in Indian piece rate industry group in post reform period.

It is observed that 76.7 percent of the selected industries under time rate industry group have negative trend in TFPG during the study period. It is also found that 75.7 percent and 66.3 percent of

selected industries have negative growth in TFP during pre reform and post reform periods respectively[52].

For post reform period, the 10 per cent of the selected industries have turned around negative trend into positive trend with regard to TFP_G under time rate industry group. This indicates that the liberalization policy has positive impact on time rate industries in terms of TFPG.

Trends in Wage Rate:

The movement of the wage rate in two industry groups, namely piece rate and time rate industries under the study during the period 1982-98 is presented here.

TABLE :10

WAGE RATE IN INDIAN INDUSTRIES

SI. No.	Wage Rate In Rupees	Number of industries under Piece Rate System			Number of industries under Time Rate System		
		1982-98	1982-90	1991-98	1982-98	1982-90	1991-98
1.	Less than 5000	8 (15.7)	9 (17.6)	6 (11.7)	4 (4.2)	6 (6.3)	3 (3 J)
2.	5000-10000	37 (72.6)	37 (72.6)	35 (68.8)	21 (22.1)	23 (24.3)	18 (18.9)
3.	10000 to 15000	6 (11.7)	5 (9.8)	9 (17.6)	31 (32.6)	31 (32.6)	31 (32.6)
4.	15000 to 20000	0 (0)	0 (0)	1 (2.0)	31 (32.6)	31 (32.6)	27 (28.4)
5.	Above 20000	0 (0)	0 (0)	0 (0)	8 (8.5)	4 (4.2)	16 (17.0)
	Selected Industries	51	51	51	95	95	95

Source: Computed from the ASI sources of data.

For piece rate industry groups 72.6 percent of the selected units have wage rate with the range from Rs.5000 to Rs.10000 per annum. Nearly 12 percent of the selected units of piece rate industry

[52] Rifkin (1995) as given by R.C. Datta, New Technology and Textile workers, Economic and political weekly, September 25, 1999, pl41.

group have wage rate of more than Rs.10000 per annum. That is nearly 88 percent of selected units have wage rate of less than Rs.10,000 per annum and no one has more than the Rs.15000 per annum. But, the wage rate of workers ranging above Rs.20000 was found 17 percent during the post reform period. That is wage rate has been increasing after reforms in time rate industry group.

There is significance difference between piece rate and time rate industry groups in terms of wage rate during the study period. In piece rate industry groups, 11.7 percent, 9.8 percent and 19.6 percent of selected industries have wage rate ranging above Rs.10000 per annum during overall, pre reform and post reform period respectively. The same was nearly 72 percent, 67 percent and 77 percent during overall, pre-reform and post-reform period respectively in time rate industry group. The wage rate in piece rate industry was very low as compared to time rate industry group during study period. This may be due to the reason that the time rate industries are capital intensive in nature. "Relatively high technology industries like iron and steel and cement are able to pay relatively higher wages to workers"[53].

When the various stages of production are conducive to making use of the piece rate system which are applied to each and every worker, then the earnings of such workers will depend on his performance or efficiency. However, workers under piece rate system have to achieve some basic standard of output beyond which they can differ in performance and pay.

In time rate industries, the classification of workers into different groups decide the nature of work, performance, workload, standard hours of work generally eight hours and consequently the pay. While there is scope for getting higher pay in the same slab with respect to individual skill and performance in piece rate industries.

[53] Bagarum Tulpule and R.C. Datta (1999)"Real wages and Productivity in Industry:A disaggregated Analysis,Economic and Political weekly, August 26, 1999

There is no such scope for workers in time rate industries. Trade Unions prefer equal wage for equal work with time rate system that rewards workers uniformly without any discrimination.

When the work is suitable for piece rates and the same piece rate is applied to each worker, then the earnings of each work will depend on his efficiency. Therefore the principle of equal pay for equal work will be roughly operative in piece rates. Hence the use of equal piece rates may not entirely satisfy the principle.

In time rate also the principle implies that a different rate should be fixed for each worker according to his efficiency. If work is done in different localities where the cost of living is unequal, the equal pay would involve unequal money wages to yield equal wages. Besides, differences in wages at different places also occur due to the differences in prices and in cost of living.

TABLE: 11

GROWTH OF WAGE RATE

SI. No	Growth rate of Wage Rate (Percent)	Number of industries under Piece Rate System			Number of industries under Time Rate System		
		1982-98	1982-90	1991-98	1982-98	1982-90	1991-98
1.	Negative / Less than 0	4 (7.8)	3 (6.0)	12 (23.5)	2 (2.1)	6 (6.3)	15 05.7)
2.	0to 5	35 (68.6)	30 (58.8)	28 (54.9)	74 (77.8)	60 (63.1)	63 (66.5)
3.	5 to 10	9 (17.5)	11 (21.5)	8 (15.6)	15 (15.7)	22 (23.1)	15 (15.7)
4.	Above 10	3 (6.0)	7 (13.7)	3 (6.0)	4 (4.4)	7 (7.5)	2 (2.1)
	Selected No Industries	51	51	51	95	95	95

Source: computed from ASI sources of data.

The table shows the growth rate of wage in Indian Industries. From the above table 7.8 per cent of selected industries recorded the negative growth rate of wage rate in piece rate industry group during the study period (1982-98). 68.6 per cent of selected industries

registered in the range of 0 to 5 per cent , 17.5 per cent of selected industries in the range of 5 to 10 per cent and 6 per cent of selected industries in the range of above 10 per cent growth rate of wage rate during the overall study period.

In the pre reform period, 6 per cent of selected industries recorded the negative growth rate of wage in piece rate industry group. 58.8 per cent of selected industries recorded the growth rate of wage rate in the range 0 to 5 per cent ,21.5 per cent of selected industries in the range of 5 to 10 per cent and 13.7 per cent of selected industries are above 10 per cent growth rate of wage rate in piece rate industry group during the pre reform period.

In the post reform period, 23.5 per cent of selected industries registered the negative growth rate of wage rate in piece rate industry group during the period 1982-98. 54.9 per cent of selected industries registered the growth rate of wage rate in the range of 0 to 5 per cent . 15.6 per cent of selected industries in the range of 5 to 10 per cent and 6 per cent of selected industries were above 10 per cent of growth rate of wage rate during the past reform period in the piece rate industry group. From the above table, it can be inferred that the liberalization process has negative impact on growth rate in wage rate in piece rate industry group.

In the time rate industry group, 2.1 per cent of selected industries have manifested the negative growth rate of wage rate during the period 1982-98. 77.8 per cent of selected industries registered growth rate of wage rate in the range of 0 to 5 per cent ,15.7 per cent of selected industries in the range of 5 to 10 per cent and 4.4 per cent of selected industries above 10 per cent during the overall study period.

In the pre reform period, 6.3 per cent of selected industries registered the negative growth rate of wage rate in time rate industry group. 63.1 per cent of selected industries revealed in the range 0 to 5

per cent, 23.1 per cent of selected industries in the range of 5 to 10 per cent and 7.5 per cent of selected industries above 10 per cent of growth rates of wage rate during this period. During the post reform period, it is found that 15.7 per cent of selected industries recorded the negative trend in growth rate of wage rate. 66.5 per cent of selected industries registered in the range of 0 to 5 per cent . Again, 15.7 per cent of selected industries in the range of 5 to 10 per cent and 2.1 per cent of selected industries above 10 per cent of growth rate of wage rate in time rate industry group during this period.

On the whole, in both, time rate and piece rate industry group, it is oberved there is declining growth rate of wage rate in some industries. At the same time, the size of growth rate in both the industries is moving in the same path. That is the distribution of growth of wage rate has a similar path in both group of industries.

The following table gives the share of labour in value added in Indian industries during the period 1982-1998.

TABLE 12

SHARE OF LABOUR IN VALUE ADDED

SI.No	Labour share in value added in Percent	Number of industries under Piece Rate System			Number of industries under Time Rate System		
		1982-98	1982-90	1991-98	1982-98	1982-90	1991-98
1.	Below 10	0(0)	0(0)	1(2.0)	1(1.1)	1(1.1)	3(3.2)
2.	10 to 20	0(0)	0(0)	2(3.9)	8(8.4)	2(2.1)	25(26.3)
3.	20 to 30	7(13.8)	1(2.0)	15(29.4)	31(32.6)	22(23.1)	28(29.4)
4.	30 to 40	17(33.4)	12(23.6)	14(27.4)	32(33.0)	31(32.6)	19(20.0)
5.	40 to 50	9(17.6)	18(35.3)	5(9.8)	5(5.2)	22(23.1)	10(10.5)
6.	50 to 60	9(17.6)	8(15.7)	4(7.8)	12(12.6)	8(8.4)	5(5.2)
7.	60 to 70	4(7.8)	5(9.8)	6(11.8)	0(0)	1(1.1)	1(1.1)
8.	70 to 80	3(5.8)	3(5.8)	1(2.0)	1(1.1)	2(2.1)	(0)
9.	80 to 90	0(0)	1(2.0)	2(3.9)	1(1.1)	3(3.2)	1(1.1)
10.	90 to 100	1(2.0)	0(0)	0(0)	4(4.2)	2(2.1)	1(1.1)
11.	Above 100	1(2.0)	3(5.8)	1(2.0)	0(0)	1(1.1)	2(2.1)
	Selected Industries	51	51	51	95	95	95

Source: computed from the ASI source of data.

The interesting point is to note that, the share of wages in value added in piece rate industry groups, that is 33 per cent of selected units had more than 50 percent of share in value added and no one had below 20 percent of share in value added during the period 1982-98. Under this group of industry, nearly 33 percent of selected industries are in the range of 30 percent to 40 percent of share in value added, which is the highest of number of selected industries. It is also found that 2 percent of selected industries above 100 percent of share in value added.

During the pre reform period, Same trend as in the over all period was found. That is in both the pre reform and overall periods, nearly 60 percent of selected units lie in the range below 50 percent of share in value added. But in the post reform period, it was nearly 70 percent. That is, the share of wages in value added for piece rate industry groups had declined during the liberalization period as compared to pre liberlization period. It can be said that the liberalization has led to the transformation of labour intensive into capital intensive in the piece rate industries.

Nearly 80 percent of the selected units in time rate industry group had the share of wages in the value added below the range of 50 percent. It is also found that nearly 3 percent of selected industries below 20 percent of share in value added during the pre-reform period. At the same time, it is nearly 30 percent of selected industries during the post reform period. That is the share of wages in value added in time rate industry groups had declined during the liberlization period.

The interesting point is to note the share of wages in value added in time rate industry groups. Nearly 90 percent of selected units in the range below 50 percent of share in value added industriers indicates that mostly the time rate industry group are capital intensive in nature. The high share of wages in value added in piece rate

industry group indicates that mostly the industry group are labour intensive in nature. It can be inferred that there is significance difference in share of wages in value added between time rate and piece rate industry groups.

DETERMINANTS OF WAGE RATE

(All Piece rate and Time Rate industries)

In order to determine the factors affecting the level of wages in Indian Industry, assuming a log linear relationship between wage rate and related variables such as labour productivity index, employment and capital intensity are treated as independent variables. This model is given by

Log W = a0 + Log Lp + log Emp + log CI, where

W – average wage rate index,

Lp - average labour productivity index,

Emp - average employment index

CI - capital intensity index.

Productivity is an important factor influencing the wage rate. Because, productivity provides a convenient starting point for the theory of factor prices. However beyond a certain wage level which is higher than the labour productivity brings about just the opposite results-inflation. Improvements in wages can result mainly from increased productivity. Increase in wage should result mainly from productivity increases so that inflation would be controlled. So this variable included in the model and the expected sign of labour productivity is positive.

Over the years, industrial laborers have organized themselves into trade unions. The demand for high wages in the wake of rising pricing and rising cost of living has often been backed by trade union action. Industrial disputes affect employees and employers engaged in any manufacturing industry. Increase in wage rate leads to increasing

labour supply but at the same time the demand for labour is becoming low, Consequently employers are forced to cut the level of employment. There is an inverse relationship between wage rate and employment. Hence, the expected sign of employment is negative.

Wage level mainly depends upon the skill of the worker. A worker is provided with better tools and machinery will be more productive than a worker who has inferior tools and machinery. Improvements in the tools and machines take place as a result of technological advancement which leads to increase in skill of the workers. Here capital intensity is used as a proxy variable for skill of the worker. The expected sign of capital intensity is positive because the wage rate and the skill of the workers have direct relationship.

TABLE 13

DETERMINATION OF WAGE RATE IN PIECE RATE INDUSTRY

SI. No	Time Period	Regression Co-efficients				R^2
		B_0	B_1	B_2	B_3	
1.	1982-98 (overall)	4.273416* (0.391909)	-0.100801 (0.097104)	-0.044495 (0.052702)	0.185690* (0.045879)	0.32
2.	1982-90 (Pre-reform)	3.975477* (0.525562)	0.048250 (0.114786)	-0.078458 (0.085262)	0.147848* (0.045572)	0.24
3.	1991-98 (Post-reform)	3.890606* (0.316015)	-0.051098 (0.079053)	-0.033364 (0.042558)	0.193500* (0.045899)	0.38

Source: Computed from ASI sources of data.

Note: 1. Figure in parenthesis indicates S.E

2. *indicates 1 per cent level of significance.

WAGES TRENDS IN PIECE RATE INDUSTRIES:

From the table 13, the results suggest that capital intensity is positively influenced by wage increases. On the other hand, labor

productivity and employment exert a negative influence on wage rate. However both labor productivity and employment are statistically insiginificant.

Our statistical analysis reveals that capital intensity that is the skill of the worker really increases the level of wages. There is no doubt about increase in capital intensity which evoke enhanced efforts by labour, but there are other factors also such as management style and sturcture, production system which provide the content within labor effort could result in increasing efficiency and productivity. Our previous results suggested that the growth rate of labour productivity and capital intensity have positive trends in all periods. This result indicates that the increase in labour productivity was due to increae in capital intensity. For both pre reform and post reform periods, capital intensity is the only variable which is influenced by change in wage level in the piece rate industry group.

TABLE 14
DETERMINATION OF WAGE RATE
IN TIME RATE INDUSTRY

SI. No	Periods	Regression Co-efficients				R^2
		B_0	B_1	B_2	B_3	
1.	1982-98 (overall)	3.887874* (0.361058)	0.242003* (0.060846)	-0.056158 (0.052429)	-0.005674 (0.030747)	0.24
2.	1982-90 (Pre-reform)	3.955045* (0.405508)	0.236933* (0.061809)	-0.140900** (0.061436)	0.533000*** (0.033244)	0.38
3.	1991-98 (Post-reform)	4.037113* (0.345034)	0.193530* (0.060580)	-0.035270 (0.048649)	-0.00040 (0.034384)	0.16

Source: Computed from ASI sources of data.

Note: 1. Figure in parenthesis indicates S.E
2. *indicates 1 per cent level of significance.
3. **indicate 5 per cent level of significance.
4. ***indicate 10 per cent level of significance.

WAGES IN TIME RATE INDUSTRIES:

The regression analysis suggests that Labour productivity has positively influenced wage increases for the periods 1982-98, (over all) 1982-90 (pre reform) and 1991-98 (post reform). Variables such as employment and capital intensity are statistically insignificant for the overall and post reform periods. But these are statistically significant for the pre reform peiord. That is, employment exerts a negative influence on wages and capital intensity.

The main difference between piece rate and time rate industries in terms of wage rate that is wage mainly influenced by capital intensity in piece rate industry group and the same is influenced by labor productivity in time rate industries. This may be due to the time rate industries are mostly organized and the trade unions are strong and aggressive. The trade unions demand higher wages for any productivity increaes. But Piece rate industries have no strong trade unions as the nature of production, segmentation of work process is different from time rate industries.

ANALYSIS - II

The present study attempts to analyze the trends in wage and related variables in piece rate and tune rate industries at the All India level during the period 1982-98. This part of analysis covers the high piece and time rate industries with six industries in each category for an in depth analysis towards the objectives of the study. A study about the performance of individual industries is necessary to have a better understanding of the phenomenon as well as for the delineating the area of remedial action for Industrial Wage Policy. In order to find out the wage and productivity nexus at the individual industry level, the present section tabulates selected six major industries each under high piece rate and high time rate industry groups. They are Cotton Textiles, Leather, Matches, Beedi, Jute spinning and wool spinning industries have been selected for the category of high piece rate industry group. Iron and steel, chemicals, sugar, cement, tyre and tubes and fertilizer industries which have been selected under the category of high time rate industry group. The basis for the selection of industries for the present study has been guided by a number of factors. Firstly these are major industries in India. Secondly these industries are most suited with regard to the measurement of performances with more than 75 per cent of highly piece rated industries and highly time rated industries in India.

TRENDS IN EMPLOYMENT, VALUE ADDED AND CAPITAL

Employment is one of the important economic variables attracted by the recent decades of changes that are taking place in the Indian Industries. A labor abundant country should make use of the available labor force instead of spending huge amount of capital on the substitutes to labor. Wage policy should be framed in such a way as to create more employment in the country.

TABLE: 15

Growth of Employment, Capital and Value added in the Price Rate and Time Rate Industries in India

SI No.	Industry	Growth Rates in Percent								
		Employment			Capital			Value added		
		1982-98	1982-90	1991-98	1982-98	1982-90	1991-98	1982-98	1982-90	1991-98
	Piece Rate Industries									
1.	Cotton Textiles	-1.94	-2.63	0.97	14.7	13.3	16.8	2.9	1.96	4.3
2.	Leather	1.34	2.9	-0.9	14.8	15.3	14.1	9.14	9.46	8.7
3.	Matches	3.1	1.9	4.7	18.9	11.0	30.3	11.5	8.4	15.8
4.	Beedi	4.9	5.5	4.1	28.7	38.0	15.5	7.1	6.3	8.2
5.	Jute Spinning	0.45	-2.2	2.1	15.5	19.8	9.5	1.9	-2.3	7.9
6.	Wool Spinning	0.66	-0.34	2.1	29.7	33.9	23.7	13.7	12.9	14.8
	Time Rate Industries									
7.	Iron and Steel	1.1	2.2	-0.52	23.3	25.4	20.3	14.8	10.0	21.7
8.	Chemicals	5.3	2.5	9.3	23.1	23.6	22.4	11.9	10.5	14.1
9.	Sugar	-3.4	-5.2	-0.8	24.4	27.7	19.7	14.5	12.6	17.2
10.	Cement	3.6	4.3	2.5	28.7	37.7	15.9	23.1	30.5	12.5
11.	Tyre and Tubes	3.7	4.6	2.5	21.5	22.3	20.6	13.2	12.1	14.9
12.	Fertilizer	2.1	1.4	3.1	21.8	21.2	22.7	11.2	10.9	11.5

Source: Computed from the ASI Sources of Data

The period of study is divided into two sub periods 1982-1990 and 1991-1998. The first sub period relates to the pre reform period and the second period is post reform period. The table shows that the annual average growth rates of employment during the post reform period are higher in the piece rate industries during the pre-reform period except Beedi and Leather. It is evident that especially the small industries such as matches and Beedi have higher growth rate of employment than others industries during the post reform period.

But if we examine the time rate industry, growth rates of employment, it is found that the growth rates for all the industries have fallen during the post reform period except chemicals and fertilizer. The iron and steel and sugar industry have achieved negative growth rate of employment during the post reform period. Sugar industry in particular has achieved negative growth rate employment during pre reform and post reform periods. However the sugar industry has registered a substantial recovery from negative employment of -5.2 percent to -0.8 percent during the post reform period.

The major difference between the piece rate and time rate industry was the growth rate of employment for all the piece rate industries which have positive sign in the post reform period.

Regarding the growth rate of capital, it is found that the wool spinning industry registered the highest growth rate of 29.75 percent during the period 1982-98. The growth rate of capital for all piece rate industry group was positive for pre and post reform periods. The growth rate of cotton textiles and matches during the post reform period is higher than other industries during the pre reform period. The average annual growth rate of capital alone has noticed a substantial group from 11 percent to 30.3 percent.

All the time rate industries have registered high growth rates during the study period. The growth rate of capital has registered only marginal decrease during the post reform period in these industries. But the same in all the industries, growth rates are much lower than pre reform period except fertilizer industry.

Both piece rate and time rate industries have achieved higher growth rate of capital than employment during the study period. But the growth rates of capital has registered marginal decrease in post reform period for Indian manufacturing sector in general.

It is evident that the growth rate of value added for all industries has increased during the post reform period in all piece rate industries. The match industry shows a very high growth rate in value added during pre reform period from 8.4 percent to 15.8 percent. The interesting point is to note that the growth rate of value added for jute spinning is -2.3 percent during the pre reform period, but it is 7.9 percent during post reform period which is a positive sign of improvement.

The industry wise growth rates of value added for all the industries have marginally increased during the post reform period for time rate industry group except cement industry. The cement industry in particular has achieved high growth rate in value added during pre reform period, again the growth rate has fallen during post reform period from 30.5 percent to 12.5 percent.

It is found that the growth rates of value added for all the industries are high and there is significant improvement in their overall level of performance during the post reform period.

TRENDS IN PARTIAL PRODUCTIVITIES AND CAPITAL INTENSITY:

The following table presents the growth of Partial Productivities, capital intensities and labor productivities during 1982-1998.

Table: 15

Growth of Partial Productivities, Capital Intensity and Total Factor Productivity

Industry	Employment			Capital			Value Added		
	1982-98	1982-98	1982-90	1991-98	1982-98	1982-90	1991-98	1982-98	1991-98
Piece **Rate Industries**									
Cotton Textiles	-1.94	-2.63	0.97	14.7	13.3	16.8	2.9	1.96	4.3
Leather	1.34	2.9	-0.9	14.8	15.3	14.1	9.14	9.46	8.7
Matches	3.1	1.9	4.7	18.9	11.0	30.3	11.5	8.4	15.8
Beedi	4.9	5.5	4.1	28.7	38.0	15.5	7.0	6.3	8.2
Jute Spinning	0.45	-2.2	2.1	15.5	19.8	9.5	1.9	-2.3	7.9
Wool Spinning	0.66	-0.34	2.1	29.7	33.9	23.7	13.7	12.9	14.8
Time Rate Industries									
Iron and Steel	1.1	2.2	-0.52	23.3	25.4	20.3	14.8	10.0	21.7
Chemicals	5.3	2.5	9.3	23.1	23.6	22.4	11.9	10.5	14.1
Sugar	-3.4	-5.2	-0.8	24.4	27.7	19.7	14.5	12.6	17.2
Cement	3.6	4.3	2.5	28.7	37.7	15.9	23.1	30.5	12.5
Tyre and Tubes	3.7	4.6	2.5	21.5	22.3	20.6	13.2	12.1	14.9
Fertilizer	2.1	1.4	3.1	21.8	21.2	22.7	11.2	10.9	11.5

Source: Computed from the ASI sources of Data

Regarding the growth rate of capital intensity, it is observed that the figure shows mixed trend during 1991-98. In cotton textiles, leather and matches in the piece rate industry group, it has increased. Particularly in the match industry a sharp increase is noticed from 9.14 percent to 26.7 percent. This result indicates that piece rate industries, formerly labor intensive, have adopted capital intensive techniques in the post reform period. On the whole, strictly speaking, it is found that capital intensity seems to be crucial factor that has resulted in increasing value added.

The interesting point is to note that the growth rate of capital intensity is found to be increasing in some industries and marginally declined, in some others in piece rate industrial for all the time rate industries during 1991-98. For both piece rate and time rate industries, it is observed that the growth rate of capital intensity has mixed trend during the post reform period, positive effect on labor intensive industries such as cotton textiles and matches.

On the other hand, the growth rates of labor productivity has registered marginal increase during post reform period for all piece rate industry groups. Interestingly in the jute spinning industry a sharp increase is noticed from 0.9 percent to 7.9 percent during the post reform period from pre-reform period.

But in time rate industry group, the industry wise growth rates of labor productivity during the post reform period are found that growth rates for all the industries have fallen except iron and steel industry. This may be due to inefficient use of productive resources in the post reform period. Moreover, most of these industries are run by government and quasi government. The growth rates of labor productivity for both time rate and piece rate industry groups are positive in the study period. The positive trend in labor productivity may be due to the positive growth of capital intensity during the study period.

Regarding capital productivity, it is found that all the industries have achieved negative growth rate during the study period for both piece rate and time rate industry groups. However, the table shows that the average annual growth rates of capital productivity during the post reform period are lower with negative sign than the pre reform period. This finding indicates that there is improvement in capital productivity with the liberalization process.

The following Table presents the average annual Capital-Output ratio of the selected six piece and six time rate industries during 1982-1998.

TABLE: 17
AVERAGECAPITAL OUTPUT RATIO

SI.No.	Industry	1982-98	1982-90	1991-98
1.	**Piece Rate Industries**	2.6	1.8	3.8
2.	Leather	1.8	1.5	2.4
3.	Matches	0.92	0.77	1.15
4,	Beedi	0.13	0.08	0.2
5.	Jute Spinning	1.29	0.96	1.8
6.	Wool Spinning	1.56	0.92	2.6
	Time Rate Industries			
7.	Iron and Steel	4.8	3.1	7.4
8.	Chemicals	2.5	1.9	3.4
9.	Sugar	1.9	1.3	2.9
10.	Cement	4.1	3.2	5.6
11.	Tyre and Tubes	2.3	1.6	3.6
12	Fertilizer	3.2	2.5	4.4

Source : computed from the ASI sources of data.

The concept of capital-output ratio expresses the relationship between the value of capital investment and value of output obtained. This shows that the average capital output ratio are low except cotton textiles 2.6: 1 during the study period for piece rate industry group.

The average annual capital output ratio during the post reform period are mostly higher than that of the pre reform period. The growth rate of value added have also increased during this period. The low capital-output ratio indicates that the piece rate industries which were operating under labor intensive techniques have adopted modern technology in the post reform period.

The time rate industry wise capital-output ratio shows that the average capital-output ratios are high except sugar industry during the period 1982-98, In sugar industry, the average annual capital output ratio during the post reform period was higher than that of the pre reform period. Both piece rate and time rate industries have a tendency for up gradation of technology towards modernization during the post reform period. Thus it may be inferred that the new economic policy led to increase in output due to increase in capital in Indian Industries.

TRENDS IN GENERAL WAGE LEVEL:

The basic objective of economic planning in India is to raise the standard of living of its people. All developmental activities taken up under the five year plans are geared towards this objective.

The piece rate industry wise per capita average wage earnings of industrial workers at constant prices were presented in table for the period 1982-98. Average per capital real wage of workers in the cotton textiles is Rs. 11,798 during the study period which is the highest wage among the piece rate industry group. The match industry has Rs.3649 as average wage of workers during the study period which has the lowest wage. The average wage in the post reform period are higher in piece rate industries than during the

pre-reform period. But rise in wage level during the post reform period has been marginal at constant prices.

It is evident that the average wage level for all the time rate industries together has marginally increased from pre reform to post reform period. It is found that the average wage level of time rate industries have higher than that of piece rate industry group during the study period. On the whole, the over all analysis of wage levels seem to have significant difference between the piece rate and time rate industry groups.

The piece rate industry-wise share of labor in value added are found to be above 50 per cent during the study period except wool-spinning. The labor intensive industries like cotton textiles, jute spinning and Beedi industries have higher share in value added during this period. It is observed that a remarkable decrease in the share of labor in value added from 1982-90 to 1991-98. It is surprising to note that the labor share exceeds value added for jute spinning as this industry is struggling for existence over decades.

In the time rate industry wise share of labor in value added, it is observed that all the industries have below 45 per cent. This result indicates that the time rate industries are capital intensive in nature.

It is also found that a notable decrease in the labor share in value added from 1982-90 to 1991-98 for both piece rate and time rate industries. This indicates that these industries are transformed from labor intensive into capital intensive.

The table shows that the growth rate of wage rate for piece rate and time rate industry groups. The average annual growth rates of wage rate during the study period are very meager except Beedi among the piece rate industry group. If we examine the over all industry-wise growth rates of wage rate for piece rate industry group, one can find that the growth rates for all the industries have fallen during the post reform period. The textile industry in particular has

achieved a negative growth rate which was 0.48 percent. At the same time, the growth rates of labor productivity of these industries are increasing in the period of liberalization.

The time rate industry-wise growth rates of wage rate increased marginally during the post reform period except in iron and steel. At the same time, the growth rate of labor productivity had declined during this period.

The point is to note that the growth rate of wage rate is falling when labor productivity is increasing in the piece rate industry' group. At the same time, the growth rate of wage is declined when labor productivity is fallen in the time rate industry group. This analysis indicates that the wage has not increased with labor productivity in piece rate industry group, but in time rate industry group, wage rate is reduced with labor productivity level.

The piece rate industry wise growth rates of TFP during post reform period are higher than those during pre reform period except Beedi industry and cotton textiles. The textile industry and wool spinning industry have achieved a negative growth of TFP during post reform period.

It is found that the growth rates of TFP during post reform period are higher than the pre reform period for iron and steel, sugar and tyre and tubes industries in time rate industry group. It is observed that the growth rate of TFP during the post reform period are lower than the pre reform period for chemicals, cement and fertilizer industry. Thus there seem to be a fluctuating growth path of TFP in Indian Manufacturing sector.

Determinants of Wage Rate:

(Selected High Piece rate and time rate industries)

In order to find out the nature of the relationship between wage rate and related variables such as productivity, employment and

capital intensity, assuming a log linear multiple regression model is fitted. This model is given by

$$\text{Log } w = B0 + B1 \log Lp + B2 \log Emp + B3 \log CI$$

W	-	Wage Rate
Lp	-	Labor Productivity Index
Emp	-	Employment
CI	-	Capital Intensity Index

During the overall period, it is found that there is no relationship between labour productivity and wage rate for all the piece rate industries under study. The variable employment is significant in jute industry only, but capital intensity is positive when related to the wage rate for all the piece rate industries except matches and Beech. The performance of workers and their skill is important in determining wage rate in piece rate industry group during the study period (1982-98). The insignificance of capital intensity in matches and beedi may be due to these industries operated under labour intensive technique.

TABLE: 18
DETERMINATION OF WAGE RATE IN INDIAN PIECE RATE INDUSTRIES

Industry	Regression Co-efficients														
	1982-98					1982-90					1991-98				
	B0	B1	B2	B3	R^2	B0	B1	B2	B3	R^2	B0	B1	B2	B3	R^2
1. Cotton	5.989*	-0.177	-0.257	-0.0824**	0.72	4.109*	-0.122	0.00245	0.226*	0.91	6.778	-0.08113	-0.399	0.0241	0.17
	(0.792)	(0.090)	(0.55)	(0.045)		(0.719)	(-0.078)	(0.124)	(0.044)		(3.621)	(0.141)	(0.666)	(0.075)	
2.Tannery	3.409*	0.535	0.0941	0.119*	0.80	5.214*	-0.103	-0.396**	0.366**	0.84	3.409*	0.05357	0.09413	0.119**	0.80
	(0.734)	(-0.815)	(0.147)	(0.056)		(0.662)	(0.079)	(0.159)	(0.076)		(0.734)	(0.090)	(0.147)	(0.056)	
3. Matches	4.051*	0.103	0.0144	0.0163	0.30	4.051*	0.103	0.01449	0.01639	0.29	2.041	-0.0616	0.597	0.0635	0.66
	(0.532)	(0.076)	(0.139)	(0.054)		(0.531)	(0.076)	(0.137)	(0.054)		(1.214)	(0.093)	(0.284)	(0.078)	
4. Beedi	2.304	0.408	0.156	-0.00374	0.13	-6.959	1.662	1.067	0.162	0.31	3.815*	0.0442	-0.06264	0.0919	0.80
	(2.869)	(0.494)	(0.307)	(0.126)		(7.551)	(1.131)	(0.753)	(0.208)		(0.824)	(0.156)	(0.1551)	(0.88)	
5. Jute	5.468*	-0.107	-0.263**	0.181**	0.84	2.498	0.186	0.200	0.0849	0.76	3.570	0.5049	0.102	0.0962*	0.84
spinning	(0.598)	(0.087)	(0.131)	(0.037)		(1.465)	(0.212)	(0.363)	(0.085)		(0.977)	(0.118)	(0.249)	(0.051)	
6. Wool	3.570*	0.505	0.102	0.0963**	0.84	6.087*	-0.710	-0.400**	0.448**	0.80	4.540**	-0.0245	0.040	0.117	0.33
Spinning	(0.977)	(0.118)	(0.249)	(0.051)		(0.897)	(0.119)	(0.20)	(0.052)		(1.235)	(0.366)	(0.278)	(0.257)	

Source: Computed from ASI sources of data.

Note: 1. Figure in parenthesis indicates S.E

2. *indicates 1% level of significance S.E.

3. **indicate 5% level of significance S.E.

The total value of capital for those industries was very meagre. The positive relationship between labour productivity and wage rate have not been observed in Indian piece rate industry group during the pre-reform period. The coefficient of employment is negative and significant for the tannery and wool spinning during this period. This explains that any increase in wage rate leads to reduction in employment in these industries. The capital intensity is positively related to the wage rate in cotton, tannery and wool spinning It is indicated that the skill of the worker plays major role in determining wage rate in piece rate industry group during the pre reform period.

In piece rate industry group, the labour productivity is not influencing level of wages during the post reform period. There seems to be no evidence of the key variable employment in determining the wage level during the post reform period.

The following table presents the results of the regression analysis related to the determination of wage rate in the selected high time rate industries.

TABLE: 19
DETERMINATION OF WAGE RATE IN INDIAN TIME RATE INDUSTRY GROUP

Industry	Regression Co-efficients														
	1982-98					1982-90					1991-98				
	B0	B1	B2	B3	R^2	B0	B1	B2	B3	R^2	B0	B1	B2	B3	R^2
1. Iron & Steel	-1.305 (2.050)	0.250** (0.135)	-1.055** (0.424)	-0.00038 (0.071)	0.69	4.395** (2.136)	-2.068 (0.178)	0.0626 (0.419)	0.265* (0.081)	0.74	-4.610 (2.910)	0.188 (0.379)	1.490 (0.590)	0.222 (0.424)	0.88
2. Chemicals	5.430* (0.915)	-0.386 (0.190)	-0.0658 (0.187)	0.303* (0.105)	0.62	5.513 (4.424)	0.375 (0.327)	-0.0635 (0.900)	0.274 (0.214)	0.60	7.627** (2.113)	-0.813 (0.633)	-0.137 (0.378)	0.388 (0.481)	0.43
3. Sugar	8.048* (1.189)	-0.151 (0.182)	-0.944** (0.176)	0.368** (0.094)	0.95	5.84* (1.652)	0.08356 (0.221)	-0.673*** (0.228)	0.322** (0.185)	0.97	2.116** (0.645)	0.129*** (0.054)	0.993* (0.144)	0.0145 (0.043)	0.94
4. Cement	3.386* (1.024)	0.819 (0.078)	0.143 (0.254)	0.05044 (0.086)	0.83	3.798 (2.651)	0.190 (0.111)	-0.0181 (0.663)	0.0140 (0.178)	0.87	3.450* (0.649)	0.200** (0.060)	0.105 (0.136)	0.304** (0.066)	0.92
5.Tyre and Tubes	4.551* (0.878)	0.123 (0.118)	-0.194 (0.177)	0.105 (0.082)	0.64	3.647* (0.730)	0.149 (0.092)	-0.0806 (0.145)	0.150** (0.062)	0.91	4.108** (1.743)	0.0955 (0.302)	0.395 (0.378)	0.165 (0.258)	0.46
6. Fertilizer	4.640* (0.691)	0.0337 (0.088)	0.270 (0.182)	0.244* (0.053)	0.91	-0.4512* (0.866)	0.0724 (0.111)	-0.322** (0.163)	0.352 (0.058)	0.96	3.057** (0.964)	-0.0964 (0.094)	0.136 (0.257)	0.131 (0.065)	0.82

Source: Computed from ASI sources of data.

Note: 1. Figure in parenthesis indicates S.E

2. *indicates 1% level of significance S.E.

3. **indicate 5% level of significance S.E.

In time rate industry group, it is found that the labour productivity has influenced the wage rate in Iron and Steel industry during the period (1982-98) It is observed that the employment has negatively influenced on the wage rate in Iron and Steel and Sugar Industry during the study period But the capital intensity is more influencing variable than labour productivity in chemicals, sugar and fertilizer industry. There is no relationship between wage and other related variables is found in cement and tyre and tubes.

The relationship between the labour productivity and wage rate has not been observed for all these industries during the pre-reform period. At the same time the capital intensity index has impact on the wage level for these industries except chemicals and cement.

During the post reform period, the labour productivity has been found to be significant in the sugar and cement industry. But in cement industry the same coefficient is negative. The interesting point is to note that employment has positively influenced wages in Iron and Steel and Sugar industry during the period. The capital intensity has been found to be a significant variable in cement industry alone.

SUMMARY OF FINDINGS, CONCLUSIONS AND SUGGESTIONS

The present chapter provides a brief summary of the earlier chapters. The fust section gives the summary and the second section gives the major findings of the study and the third section gives suggestion.

The need for a National wage policy for the development of the country and for raising the standard of living of the people has been under the consideration of the Government for quite some time. Wage policy implies that there should be a norm for revising wage rate and there should be a well accepted social purpose for effecting change in the wage rate or wage structure. International experience reveals that the Government directly (or) indirectly influences wage determination process in most of the countries. The dilemmas of wage policy is especially true in the nations, such as India, which seeks rapid economic development by essentially democratic means. In practice, region cum industry norms have come to be widely accepted as a rational reference point for wage determination of industrial workmen.

Indian labor force size is more than half of it in China's which stands second m Asia. Whereas all other countries in the Asia have only less than one fourth of Indian labor force size. This point makes us think about the need for having a National wage policy in India. Thus, various aspects of this study on wages become essential for India.

Industrial disputes refer to the differences that affect the groups of employees and employers engaged in the industry. Wages have been and will continue to be. the single major substantial issue in industrial disputes. This cause alone has accounted for about one

third of selected disputes in the country. Thus more studies on industrial wage structure is Very much needed.

Wage may be defined as the price paid for the services rendered in production by the labor. Industrial workmen prefer money earnings to non-cash benefits inspite of erosion of money earnings. Wages are paid by different methods Wages are measured by the period of time the workers employed and in some cases by the contribution made by the labor to the output which is measurable. The former is called time wage payment system and the later is called piece wage payment system.

Piece-rate provides incentive and is a lever to increase production, benefiting all the parties concerned. The majority of workers prefer piece-rate as it gives them higher earning than under the time - rate. The chain of advantages generated by it ensures higher efficiency and satisfied and committed work-force. The only compliant that the workers have, and it is a genuine one, is that the piece-rate causes fluctuation in earnings and consequently creates income uncertainties.

In Japanese Textile industry, the system of time-scale is prevalent. One set of opinion is opposed to it on the ground that the provision of time scale is not an adequate incentive to raise labour productivity. Any time-scale, with suitable efficiency bars, will be a system of incentive wage, and will make the workforce more committed to the job as the increments depend on the years put in as well as efficiency.

Wage analysis combining these industries with varying percent of workers on piece and time rate reveal the most common problems and also after solutions to frame wage policy in India.

Productivity should be viewed as a mult-faceted phenomenon. Sources of productivity will include improvements in technology, management and the quality of human resources. To

consider the contribution of labour in isolation would be a very limited approach, there is a need to realize what productivity can do to employees of all categories, and what they can do to improve productivity.

Productivity is an important factor that influences increase in wage level. The basic objective of the present study is to analyze the wage and productivity trends in 146 Indian Industries covered at three digit level (ASI) during the period 1982-83 to 1997-98. The selected 146 industries were divided into two groups namely piece wage system and time wage system during the period 1982-83 to 1997-98.

In order to find out the problems in detail at the individual industry level, the present study has selected six industries each for piece rate and time rate industry groups. Cotton Textiles, Leather, Matches, Beedi, Jute spinning and Wool spinning industries have been selected for the category of piece rate industry group. Iron and steel, chemicals, sugar, cement, tyre and tubes and fertilizer industries have been selected for the category of time rate industry group,

MAJOR FINDINGS

The growth rate of employment in the post reform period are slightly higher than that of pre reform period in both piece rate and time rate industry groups.

The growth rate of capital was higher in the piece rate industry group when compared with time rate industry group especially during the post reform period that is nearly 60 percent of selected industries have above 30 per cent of growth rate during the post reform period in the piece rate industries. But, nearly 40 per cent of selected time rate industries have above 50 per cent of growth rate of capital during this period. This result indicate that huge increase in investments in the piece rate industry group may be the result of liberalization process. Generally, the growth rate of capital has increased in the both time rate and piece rate industry groups in India.

Multi-skilling is now welcomed in the context of liberalization, calling for updating of technology, workers have now realized the need for acquiring skills in more than one operation. In the view of new technology, many of the existing operations might be found redundant rendering some workers surplus. At the same lime new hands may also have to be recruited. The workers, therefore, have started showing interest in learning new skills enabling them to continue in service in the same industry.

There is no significant difference between the piece rate and time rate industry group in terms of growth rate of value added during the study period. It is also found that the growth rates of value added for both time rate and piece rate industry groups are satisfactory and positive during the study period.

For piece rate industry group 72.6 per cent of selected industries have wage rate ranging from Rs.5000 to Rs. 10000. Nearly 88 percent of selected units have wage rate less than Rs. 10000 and no industry has wage rale more than Rs. 15,000 at constant prices. There should be effective implementation of minimum wage policy in piece rate industries.

In lime rale system, nearly 75 per cent of selected industries have a wage rate more than Rs.10000. Nearly 40 percent of selected industries have a wage rate more than Rs. 15000 during the study period. After reforms it is seen that the wage rate have been increased both piece rate and time rale industry groups.

In both time rate and piece rate industry group, it is observed that there is a declining growth of wage rate in the post reform period as compared to the pre-reform period. The size of growth rate of wages of both industry groups are moving in the same path.

The average capital-output ratio of the tune rate industry group was higher than that of piece rate industry group in this study. The new economic policy has led to an increase in the capital-output

ratio in Indian manufacturing industries. The introduction of complex mechanization and automation is leading to the disappearance of unskilled labour and narrowing the distinction between skilled workers.

The interesting point is to note that the share of wages in value added in time rate industry group nearly 90 per cent of selected industries had 50 per cent of share in value added. In piece rate industry group, nearly 50 percent of selected industries have above the 50 per cent of share in value added. It is also observed the share in wages in value added for piece rate and lime rale industry groups had declined during the period of liberalization process.

For both piece rate and time rate industry group, it is found that labor productivity had positive trend during the study period which may be mainly due to increase in capital intensity. In the context of rapid technological development it is likely that the distinction between the blue collar and white collar employees may disappear with the passage of time because of changes in the manufacturing process and the requirements of skill composition in future.

It is observed that both the time rate and piece rate industry group have negative trend in capital productivity during the study period and there is no impact of liberalization on these industry groups. A similar finding was observed by Mr.Zile Singh Goyat which states that "the decline in capital productivity is associated with increasing capital intensity in Indian Industries is a matter of great concern".

It is found that 62.7 per cent of selected industries in piece rate industry group have negative trend in TFPG for the study period and also there is no improvement in TFPG in post reform period. India's poverty is the outcome of poor productivity. The poverty of productivity extends to labour, capital and use of materials on the one

hand and management and administration on the other. Weak norms of productivity emanate from the basal values of the nations present culture.

It is observed that 76.6 per cent of selected industries under time rate industry group have negative trend in TFP during the study period. But liberalization process has had positive effect on TFP in time rate industry group as it has curtailed the negative trend.

CONCLUSIONS

In short, our industries are characterized by declining capital productivity, declining rate of return on capital and increasing capital intensity. Such tendencies may be countered by devising suitable industrial wages and price policies, better management, fuller utilization of excess capacity, by developing infra-structure facilities maintaining industrial peace and choosing such technology as is suitable to our indigenous, conditions.

The Indian commission of labor concluded that "increases is money wages of industrial workers since independence have not been associated with a rise in real wages nor have real wage increases been commentate with improvements in productivity" appears to be justified. Productivity improvements may result from several sources including technological change and improvements in the rate of utilization of plant/industry capacity. One of the difficulties implicit in the use of productivity as a factor in wage determination is a cyclical nature of some industries and economic activity in general.

It was felt that labor should be involved in the formulation of productivity plans and their implementation, including decisions on technology. Labor will not be motivated to increase productivity unless it has a say in determining the productivity improvement plan, with due regard to the repercussions on the work force, particularly on employment and related aspects. To develop a total productivity plan

each enterprise should undertake exercises in productivity analysis, measurement and monitoring. Parameters of productivity should include labor, capital, energy, materials, consumables, quality, marketing, development of human resources.

On the concept of wages, it was felt that the pay packet should be rationalized. The bulk of payment must be linked to the outcome of work and this implies the notion of standard compensation for standard performance. This will call for the creation of an appropriate work culture, work attitude, commitment and behavior. The basic wage must be made the predominant element in the pay packet and this must be protected against inflation. Ideally, disparate dearness allowance system should be dispensed with and the wage rate itself should be adjusted against inflation. This would perhaps help in building the concept of standard wages for standard performance and also help in eliminating problems arising out of disparate dearness allowance system in different sectors.

All collective bargaining should be conducted within parameters in the form of guidelines to be laid down by a permanent national committee on wages. This committee should be tripartite in nature with representatives of the government, employers and unions and aided by professional experts. These guidelines could be formulated on the basis of continuous collection, analysis and monitoring of data for various sectors.

Pay for knowledge and skill - these are systems that have come into vogue in the last four years and are based on the idea that workers rates of pay should be based on the number of jobs they can perform or the larger total number of job skills they possess rather than on the basis of the work performed on a particular day. The system purports to provide employer benefits relating to greater work force flexibility, leaner staffing, higher output quality, lower rates of absenteeism and turnover and higher productivity.

The main difference between piece rate and time rate industries in terms of wage rate that is the wage mainly influenced by capital intensity in piece rate industry group and the same is influenced by labor productivity in time rate industries. This may be due to the time rate industries are mostly organized and the trade unions are strong and aggressive. The trade unions demand higher wages for any productivity increases. But Piece rate industries have no strong trade unions as the nature of production, segmentation of work process is different from time rate industries.

SUGGESTIONS

There is also a need for harmony between sectors and industries to prevent similar occupants in comparable regional/local circumstances becoming aggrieved about perceived inequities. This is difficult to achieve until the complex phenomena surrounding wages are viewed by the government with an open mind and with a multi-disciplinary approach.

India does not have a clearly defined wage policy. From time to time, however, certain policy regulation has been laid down. The main aim of wage policy as we envisage is to bring wages into conformity with the expectation of a working class and in the process to maximize employment. The wage policy has to be formed taking into account such factors as the price level which can be sustained, the employment level to be aimed at, requirements of social justice and capital formation and need for growth.

In a planned economy, a positive relation between wages and national income is to be established and it is also to be ensured that a rising wage with rising national income does not create any inflationary problem. Further, wages plays not only a distributive but also an allocate function.

A criticism of the 1948 Act relates to the review of minimum wages. Even though the Act provides for at least five yearly review,

the minimum wages are actually reviewed only at much longer intervals. Based on the evidence submitted to it, the NCL concluded, "we have come across several instances where the rates have not been revised even once after they were initially fixed. In some cases, there has been only one revision, thus defeating the main purpose of the act which is preventing the employment of labour at very low real wages. No consistent and uniform policy guidance is available for wage determination in the five-year plans.

An all inclusive "wage policy" would ideally include specific measures on a large number of elements such as savings and investment, price stability, worker efficiency, national allocation of labour, structure and level of wages, competitiveness of the economy in international markets, industrial peace and social justice. However, in the context of the present study the most relevant issue is the establishment of a proper wage-price relationship by means of a suitable decision-making process.

A proper wages policy must ensure that a worker gets such increases as are conducive to economic growth and represent a fair share of the permissible increase in the consumption of the nation as a whole.

It is true that without reliable figures on productivity, prices and earnings, it will be difficult to implement wage-price guide posts in the Indian situation. However, economists can make an intelligent estimate of the trend rates of there means variables, and that these estimates can permit the application of a reasonably sound policy.

Unfortunately, the government's main contribution has been in increasing the confusion, uncertainty and a lack of predictability. To mention, simultaneous commitment to collective bargaining and adjudication, an unconvincing change in attitude from one of the support of industrial wage board to an indifference toward it; an

attitude of ambivalence on the issue of a need-based minimum wage; a wavering response to the need for a wage-price policy;

To sum up, unsettled industrial relation in which both labour unions and employees are losing confidence and faith in the existing institutions and in which workers can only be disillusioned. The time is perhaps over due for the entire system of industrial relation to be revamped and put on a rational basis for a government policy that will be founded upon a general consensus among labor unions, management and employer organization and others connected with the labor relation institutions and practice.

It is felt that there was a need for the generation of reliable and timely micro productive data by the enterprise itself and aggregate productivity data by government agencies. The labor bureau, CSO and NPC could cooperate in this task. The process could be facilitated through networking. It would be necessary to make adequate provision of resources for such an exercise.

Two tier wage system have become numerous over (he past six years. They come in two forms where new employees, for a period of time, work for lower wages than senior workers. The wailing period may run between two years and five years before new employees get the full rate of older workers. Permanent plans provide that junior workers will never catch up with their senior colleagues.

Two - tier wage system was negotiated in recent years along with or instead of wage freezes, with the two tier system agreed lo as a way of avoiding wage cuts for workers currently employed, they have proven to be hard on morale and cause divisiveness among employees. As the number of workers receiving the lower wage increases, it is more likely the lower tier will be eliminated, with higher paid workers requiring to give up a wage increase while lower paid employee catch up.

It is necessary to recognize the need for ensuring that no employee in any sector of the economy should be paid wages which fall below the poverty line. Efforts are needed to identify the sectors in which per capital wages fall below the poverty line with a view to diverting a part of the productivity gain in such sectors to the employees whose wages fall below the poverty line.

The ability of workers to protect themselves from the decline in the purchasing power of the rupee depends on the rate of increase in money earnings. The ability is usually measured in terms of the magnitude of real earnings worked out on the basis of the relevant consumer price index numbers.

Linking of wages with productivity has also paved way for employees identification with the organization and better team work. Although individual capability and motivation is important, efficiency as a group will act as a multiplier factor for productivity gains.

Considering the complexity of today's organizations it is not possible to design an effective wage structure linked to individual's productivity. It is however feasible to measure productivity of a group and establish linkage with earnings.

Instead of linking productivity with basic wage structure, it would be desirable to have a uniform wage structure for the organization as a whole with variable productivity linked earnings specific to particular industry.

Linking earnings with productivity is just one of the approaches towards optimizing human productivity. An integrated strategy encompassing other components of human resource development will ensure development of productivity culture with cascading effects leading to maximum gains in terms of achieving individual and organizational goals.

The pace of industrialization has nol Keen and is still inadequate to meet the needs of the growing population In India the disparities in the industrial development are quite large. A number of economic, political and social factors contribute towards the widening of regional disparities in industrial development in India.

The most recent phase of liberalization started in July 1991 failed to leave any marked impression on the growth of total factor productivity and labor productivity of Indian manufacturing sector at all India and state levels. The phenomenon of strong capital deepening and growing capital inefficiency has been found to be established in Indian manufacturing sector.

The liberalization programme promoted The process of capital deepening which in turn brought only the inefficiencies in the use of labor and capital inputs. The distortions in the labor market, productive trade regime and biases in policy towards the choice of capital intensive projects are the predominant factors which intensified the capital deepening process in Indian manufacturing sectors. The fine Inning of ongoing liberalization, privatization and globalization programme is thus needed to improve the efficiency of factor inputs in the Indian manufacturing sector. In this direction the greater use of appropriate indigenous labour intensive techniques of production becomes a requisite to enhance efficiency of factor inputs and economies of scale.

There is an urgent need to remove the prevailing distortions in the labor market. The removal of labor market distortions will encourage the use of appropriate input mix through greater substitution of labor for capital and thus enhance the employment in The manufacturing sector. The labor saving bias in the technical progress should be wiped out by encouraging the application of labor intensive techniques on wider scale. The approach of greater application of labor intensive technique is congruous with the factor

endowments of the Indian stales and will ease the problem of unemployment. In order to induce a switch over from capital intensive techniques to labor intensive techniques, the government should subsidies the technological development for the fabrication and diffusion of appropriate indigenous labor intensive techniques of production.

There is an urgent need to evolve an efficiency oriented industrial strategy for destroying the realm of inefficiencies in production process that might have emerged in the Indian manufacturing sector during past five decades of planning.

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APPENDIX -I

NIC CODE - INDUSTRIAL CLASSIFICATION IN INDIA -1970/1987

1970	**1987**		**'70**	**'87**		**'70**	**'87**		**'70**	**'87**		**'70**	**'87**
200	200		246	246		287	287		323	323		361	361
201	201		248	248		288	288		324	324		362	362
202	202		250	250		289	289		325	325		363	363
203	203		251	254		290	290		326	326		370	370
204	204		252	257		291	291		HS28	327		371	371
205	205		260	260		292	292		329	329		376	376
206	206		261	261		293	293		330	330		375	375
207	207		262	262		294	294		332	332		376	376
208	208		263	263		299	299		333	333		377	377
209	209		264	265		300	310		334	334		378	378
210	210		266	267		301	311		335	335		379	379
211	211		267	268		302	312		336	336		380	380
215	216		269	269		303	313		339	339		381	381
216	217		270	271		304	314		342	342		382	382
217	218		271	270		306	318		343	343		383	383
219	219		272	273		307	319		345	346		385	386
220	220		273	272		310	300		349	349		386	386
230	230		274	274		311	301		350	350		387	387
231	235		275	275		312	303		352	352		389	389
232	236		276	276		313	304		353	353			
233	231		279	279		314	305		354	354			
234	232		280	280		317	307		355	355			
235	233		281	281		318	308		356	356			
236	234		284	284		319	309		357	357			
241	242		285	285		320	320		358	358			
242	241		286	286		321	321		360	360			