ECONOMIC REFORMS AND REGIONAL INDUSTRIAL EFFICIENCY IN INDIA

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Preface

The book entitled “Economic reforms and Regional Industrial Efficiency in India” deals with the level of employment and the wages of workers with which wage policy is decided. The government of India is in a dilemma over decades as to how the wage policy is to be framed.

Labour force and Industrial relations are crucial factors for conducive environment to have work efficiency with justification. Can the one hand employers try to control and reduce the wage bill on outputs. On the older hands war. Kens try to push up wages to the possible maximum.

Moreover wage differentials due to differences in skill requirements were common and it is a Question of the hour to decide upon. Without productivity neither an employer nor a worker can survive.

Wage payment system, wage structure and its canposition that covers basic wage, dearness allowance, bonus, incentives and fringes benefits do play accordingly.

As far as Regional efficiency in India is concerned, the role played by employers and trade unions are at daggers drawn. However the work atmosphere and varions facilities available with the existing labour force stands to gain and try to meliorate the situation.

All these put together is made up of arguments for and against at the same time keeping the weefare of the workers in mind and sustainability for profit inforder to have the production system on the go. The book throws light on the above features succinctly .

Content

CHAPTER – I
INTRODUCTION

The various aspects of changes in economic, technological and organizational management that have taken place in the liberalized India of the post 1991 period as well as their implications for labour remuneration and organizations. Here, the calls for organizational and human resource changes to meet the technological and managerial changes to become globally competitive.

People to recognize that changes are needed. People will get a better idea of the picture if they appreciate the fact that the various dimensions of the change, particularly the economic and technological changes are linked with labour and human resource management in the organization. Managing organizations change has two elements in common: a strong change, manager to initiate the process of change; and the change process covering areas like work cultures, operations structure and strategy. It is suggested that winning the trust of the people during the implementation of change is of crucial importance.

The policy makers and scholars are interested in knowing the impact of globalization on the structure and performance of the National (domestic) Economy and Industry on employment and the labour market, and on the structure of an organization and its management practices. The adoption of new methods of production and technologies would require a paradigm shift entailing the integration of innovation in product and processes with the new ways of designing the organizations. Globalization and technological change have brought about radical changes in the conditions prevailing in the labour market, organizational culture; and the way workplace is managed including trade unions and industrial relations.

The major objective of the Economic and Industrial Policy (1991) was to transform and integrate the Indian industrial and financial sectors with the global market. The measures included the

privatization of public sector organizations, modernization and technological change, training of manpower and upgradation of skills, and ths rehabilitation of sick units.

Prime Minister Manmohan Singh said "our government is committed to employment generation and to strengthen the manufacture base in the country for which it is necessary that industry and labour must work together and ensure a climate of industrial peace and good industrial relation"[1].

For the smooth functioning of the organization, harmonious relations among the employers, workers and unions are desirable However, a key feature of the industrial relations in India has been the confrontational relationship between the employer/management and trade unions and the role played by the state through labour laws. Some of their provisions restrict the flexibility of labour.

In recent years, companies have been able to use the process of productivity bargaining as an effective mechanism to bring about successful changes in the workplace. However, productivity bargaining and productivity linked wage schemes cannot succeed unless accompanied by other innovations in the areas of human resource management and industrial relations.

Currently trade unions are in a more difficult position as the firms want to reduce the production costs, companies are adopting innovative techniques for management of human resources and are working towards the improvement of wages and working conditions without resorting to collective agreements. This reduces the role and importance of trade unions.

The trade union movement in India is characterized by formation and fragmentation of unions on the basis of political ideologies. The trade union movement, started from the era of excessive exploitation, resistance to exploitation through strikes, work stoppages, and the like were common in India but now they are struggling for their survival in the era of globalization which brings

[1] The Hindu, Saturday, December 10, 2005, p. 12

massive retrenchment, downsizing, outsourcing or subcontracting bringing survival with employment as a big question for them.

The membership of unions in the organized sector at the state as well as central levels is decreasing due to the practice of downsizing and also due tc closing down of the establishments. "Over 10 lakh industrial units in the country have closed in the past few years because of the open import policy of the centre, and more than crore workers have lost their jobs."[2] As a result the unions are facing heavy financial crisis. From the history of trade union movement it has been seen that the political leaders are very much involved in unionism. But in the present scenario the outside leaders are found exploiting the unions for their own political benefit instead of promoting welfare of the working class for which emergence of inside leadership has become the need of the hour. In India the unification and multiplication of the trade unions are quite common. The splitting of the unions due to ideological differences is also a great threat towards their strength with respect to collective bargaining. It is the right time to form one union in one industry which increases the bargaining power.

Wages and allowances, bonus are the major issues of industrial strikes in Indian context. It is strongly advocated that collective bargaining and voluntary arbitration as the major ways to prevent the occurrences of industrial disputes. The Central and State Governments should take effective measures regarding maintenance of industrial peace and progress which are important for the sustainable development of Indian production units,

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.

[2] The Hindu, November 7, 2005, p. 7

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 who cannot claim permanency. This indirectly reduces their wage costs also.

The need for a National Labour and 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, 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 dependents. Wages also represent a cost of employers. 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 being a 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 having 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 hitherto it has 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 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 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 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

safeguard the present economic requirements as well as the long term security needs of the employees and 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 froce participation ratee in %	Trade Union Membership (000s)
		Selected (in 000)	Annual Growth %		
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	28,611	2.60	42.20	3,587
7	Pakistan	51,292	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

Source: Industrial Relations Indicators-Asia

Indian labor force size is more than half of it of China's which 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 1980-06 shows 2 percent while countries stand above this percentage, except China. Moreover, Indian trade union movement is historical and 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 games 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, Tamil Nadu". 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"[3].

"INTUC President G.Ramanujam has urged the centre to appoint a National Wage Policy Commission immediately to maintain peace on the industrial front"[4]. 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"[5].

"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"[6].

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".[7] Thus the study related to Labour and wages is very essential for formulation of new industrial labour and wage policy in India.

[3] Indian Express, Madurai Edition, Thursday, June 10, 1993, p.5
[4] Indian Express, Madurai Edition, July 18, 1989.
[5] Indian Express, Madurai Edition, Thursday, July 9, 1992, p.7.
[6] Indian Express, Madurai Edition, Thursday, July 9, 1992, p.7.
[7] Indian Express, Sunday, Aug.13, 1989, p.1.

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.

Indian industries not only concentrated on the local demand but also to export of products. India's exports mainly consist of textile products. Over the five year plan periods, Indian planners had heavy concentration on the industrial sector. Historically, industrial development has proceeded in three stages. In the first stage, industry is convened with primary products. The second stage concerned 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 proceeded 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 setup. Priorities were given to the increased in production of iron and steel

industries, expansion of capacity in respect of other commodities such as cement, fertilizer and chemicals. The modernization which have come to the existence 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. 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 in view 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) commonly called as 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 line with levels providing in the developing countries. This will help to open up our economy to international competition and thus strengthen the process of globalization.

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 incremental capital-output ratio (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 loosing competitive ability. The plan also seeks to generate 50 million additional jobs to bring about reduction in employment.

Nowadays, 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 facing. This is one of the factors for weak trade union organization. The industrial labor in India is diversified by 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 a\one has accounted for about one-third of selected disputes in the 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[8] is the serious threat to industrial harmony in India. The West Bengal and Kerala had the largest number of trade unions. West Bengal occupies the first place of industrial unrest.[9]

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.[10]

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

[9] Sunilkumar (2001), “Productivity and Factor Substitution Theory and Analysis”. Deep and Deep Publication Pvt. Ltd. p. 243.

[10] Abdul Aziz (1972), "Industrial Wage Structure in Mysore State", University of Mysore.

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[11] and Johri[12] 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 conciliator, though he had no role in the settlement. The workload

[11] A. Fonseca, Wage Determination and Organised labor in India. Oxford University Press, London 1964.

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

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.

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"[13]. 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

[13] Rifkin (1995) as given by RC Data, New Technology and Textile workers, Economic and Political Weekly, Sep 25, 1999 P. 41.

various schemes of rationalization and scientific management. Productivity also serves as a guideline for the future planning of production. "Issues like production, productivity are not the headaches of the management alone. Otherwise industry will collapse and job will be lost"[14].

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 depends 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 increases in wages should be closely correlated with increase in productivity.

Beyond a certain level of higher wages tend to bring about just the opposite results - inflation, loss of production and shrinking markets caused by reduced purchasing power in the hands of wage earners. 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.[15] The close down by Hindustan Lever, Mafatlal Engineering, Bata Shoe factory

[14] Budda Deb Bhattacharya, Chief Minister of West Bengal, The Hindu, August 28, 2005, p.10.

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

have all been prompted by this factor. Thus a study on the nature of relationship between labour wage rate and productivity is very much needed for Indian industries.

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 later is called piece wage.

In the time rate, the wages are paid at a fixed rate according to the period of time employed which is 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, time rate payment is based on quality of work whereas in piece rate, 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 gii/en 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 time rate is needed for a deeper look into the problems of wages and for formulating a labour and 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.

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 example, 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 aid on piece rate svstem in Industries such as iron and steel and chemicals. Wage analysis ombining those industries with varying percent of workers on piece and time rate would reveal the most common problems and also solutions pertaining to Indian Industries.

The advantages of higher wages are as follows:

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 greater 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.

The disadvantage of higher wages is as follows:

I. Beyond a certain level highe' 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.[16]

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

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 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 wage structure".[17] The following table explains the industrial disputes classified on the basis of causes, in percentage.

TABLE 2

Industrial Disputes Classified on the Basis of Causes (%)

Year	Wage & Allowance	Bonus	Personnel	Retren - chment	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	11,7	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	1.1	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
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	11.7	14.2	9.3	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: Labour Bureau, Indian Labour 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

[17] CVS. Rao, "Productivity, Technology and Industrial Relations in the Textile Industry", Indian Journal of industrial Relations. Vol.25, No:2. October, 1989.p.150

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 - 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

a) Basic 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 is 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".[18] 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.

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

[18] T.S. Papola, Principles of Wage Determination, Somaiya Publication, Bombay, 1970, p. 117.

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.[19]

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

[19] R.C. Sharma, "The concept of fringe benefits in Indian Industry".

fixation has become a complicated one and as a result, the purchasing power of workers is eroded by the low real wages.

The Government announced the new industrial policy on 24th 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 competitiveness. The pursuit of these objectives will be tampered 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 what is the impact of New Economic Policies on the management of labour and wages in Indian industries. So this study makes an attempt to study about wages, labour and their relationships in piece rate and time rate industries for the pre (1982-91) and post reform (1991-2003) periods.

Significance of the Study

The availability of accurate statistical information on labour and wages are very essential for effective and timely action. A successful and socially significant labour and wage policy can be build up only on the strong foundation of correct and meaningful data on various aspects of the problem, such as level of employment, labour productivity, 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. Moreover, earlier studies on labour, wage and productivity nexus in Indian Industries have based only on limited industries. The present study has covered 146 industries at three digit level (disaggregate) during the period 1982-1983 to 2002-2003.

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

Objectives

1. To analyze the growth rates of employment, wage rate, capital intensity fixed capital stock and value added among all piece and time rate industries for the pre reform (before 1991) and post reform (after 1991) periods, at the State and National level.
2. To analyze partial productivity indices and TFP among piece and time rate industries for the pre reform (before 1991) and post reform (after 1991) periods, at the State and National level.
3. To find out the nature of the relationship between wage and other related variables among piece and time rate industries for the pre-reform (before 1991) and post-reform (after 1991) periods, at the State and National level.

4. To analyze the wage productivity relationship between the selected groups of high piece and time rate industries for the pre-reform (before 1991) and post-reform (after 1991) periods, at the State and National level.
5. To make an analysis of labour and wages at the district level with primary data in the individual enterprises and collect the opinions of the employees and employers about the selected variable in the study.
6. To compare the analysis of the selected group of piece and time rate industries and suggest policy measures to frame a suitable labour and wage policy in the Indian industries emerging out of the study.

CHAPTER - II
REVIEW OF LITERATURE

Enresto Noronha[1], (2003) The economic environment has become far harsher and global competition has put new pressures on national industrial regimes. The erosion of trade union power has run alongside the build up of power on the side of transnational corporations. Indian management has today introduced flexibility by restructuring of companies, barring recruitment of permanent category employees, shutting of units or departments, transferring of jobs from bargain able categories, introducing functional flexibility, intensifying the working day through pressure to increase productivity. Opening parallel plants, employing contract workers and subcontracting out production.

Threat of industrial closures has forced unions to give up or curb gains and accept job loss. Norms related to work load have also gone up. Wage freeze and cuts in minimum wages are introduced. The unions also promise that they will not tolerate any misconduct on the part of the workers.

Jyoti and A.S. Sidhu[2] (2003) This study is an endeavor to find the changes in the industrial relations scenario in Punjab, the present study is based on both primary and secondary data. The study covers a period of 20 years from 1982 to 2003. The 20 years has been carried out by dividing the 20 years period into two parts and over all period combined namely, pre-form period 1982-1991 (termed as period I) and post-reform peiod from 1991-2003 (termed as period II) and over all period from 1982-2003 (termed as period III). The data for the study have been taken from the various issues

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1 Enresto Noronha, Indian Trade Unions: Today and Beyond Tomorrow, Changing World Economy and Labour: India Journal of Industrial Relations, Vol. 39, No. 1, July 2003 P95

2 Jyoti and A.S. Sidhu, Industrial Disputes in Punjab: Emerging Trends, India Journal of Industrial Relations, Vol. 39 No. 1, July 2003

of Annual Survey of Industries (ASI), office of the assistant Commissioner of labour and from the sample units.

D.K. Srivastava[3] (2001), Trade Unions in India at present are under great dilemma. After a reasonably comfortable situation, trade unions have been suddenly put to cross roads. Many individual unions have taken steps to prepare themselves for the developing situation.

a) Technologies displace jobs and yet enable the workers affected to bargain for higher wages.
b) Unions resist closure of sick units but can hardly defend their being worked as losing enterprises.
c) Unions favour the growth of small industry but do not like work of large units being contracted out of ancillary small scale units.

The Conclusions of the study are as follows:

1. The debate regarding union - membership density has lost its relevance for several reasons.
2. In spite of constant increase in per capita income of unions the financial conditions of unions contributed to the pitiable.
3. The loss of positive image of unions among sections of the general population is due to many reasons.

Manorajan dhal and kailash Srivastava,[4] (2002) On trade unionism: Organizations are adopting a number of innovative strategies such as restructuring, delaying, diversification, quality and technology upgradation to survive and compete in an open market economy. Skilled workers have succeeded to bargain the terms and conditions of employment with the management without

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[3] D.K. Srivastava, Trade Union situation in India! Views of Central Trade Union Organisations (CTUO), India Journal of Industrial Relations, Vol.36 No.4, April 2001 P 463

[4] Manorajan dhal and Kailsh Srivastava, Trade Unionism: Perceptions and Attitudes of workers, managers and leaders, India Journal of Industrial Relations vol.38 no.2, October 2002 pp. 177-198

the help of unions, but semiskilled as well as unskilled workers still look at the union of fulfill their demands.

The present study was designed keeping in mind the changing economic scenario, there is increase in casual and contract labour, weakening of union power, and adaptation of better people oriented managerial strategies affecting the attitudes of the actors of industrial relations.

The study is an attempt on the attitudes of workers, Managers and Leaders as various dimensions of trade unionism and explore the relationships among the various dimensions of trade unionism.

Moreover the study aimed to examine the difference across age, unions with different political links and literacy with the dimensions of trade unionism and find at predictors of union membership, leadership effectiveness, union success, and union-management relationship.

Regarding the methodology, Data consisted of 102 workers, 51 managers and 50 union official leaders, from South Eastern Railway, Kharagpur, though a structured interview schedule. Using a five Point scale, the opinion of "strongly disagree", to "strongly agree" were taken. The scale was developed using number of sources. Data were also analyzed using multiple regression" Analysis to explore new various dimensions predict union membership, union management relations, leadership effectiveness and success of union.

The following results have been obtained from the study. The attitudes of workers and seven diversions namely, Membership, Function of Union, Participation of members, Union leadership, Political affiliation, Multiplicity and union shivery and Management attitude towards works. The majority of workers wanted unions, thinking that these would improve their socio-economic situation. Workers were satisfied with the approach of management towards, the union. It can be suggested that the management should lay

emphasis on welfare mechanisms, grievance settlement machinery and communication system.

Managers also admitted that the prevailing working conditions were not sufficient to take care of the grievances, welfare aspects, and promotions of the employees. Union management relationship in the organization was found to be satisfactory showing the managerial concern in fulfilling the demands of workers. Management had taken adequate welfare measures, and gave ample opportunities to union leaders to express their view points.

The attitudes were found that leaders were satisfied with the functioning of the various unions. They were committed to the cause of union performing this responsibility in helping the workers in getting them the maximum welfare from their respective organizations.

It was concluded that, the union management relationship was dependent on the union leadership. The success of the union and the basis of successful union leadership are dependent as leader's participation in union activities. They should adopt an open - minded approach to talk to management relationship. The leaders should devote much time solving day-to-day grievances of workers and try to gain this confidence.

Hrushikesh Panda[5] (2001), The manufacturing sector plays an important role as the prime mover of growth of the Economy. World bank (1989) has stated that the decline in employment resulted from an increase in product wages, through, it was argued that this was mainly attributed to job security provided by government. They state that an increase in the wage rate per hour of work. There was an increase in the total number of persons employed by industry. Indifferent industries have entered in to foreign collaboration to bring about changes in product and process technology through

[5] Hrushikesh Panda, technology, factor substitution and employment generation at the firm level. A case of automobile industry in India, The Indian Jouranl of Labour Economics. Vol.44, No.2, 2001.

technical tie-ups with foreign firms and imports of capital goods from abroad thus the onset of liberalization there was a shift in technology.

The model of the study is presented with the labour and other factors of production, materials and capital, are used to produced for a given level of output. Capital or materials are treated as complementary to labour. As labour is a substitute to these factors, consequently there will be a decline in its employment. The important factors affecting the level of employment of a firm would be the level of output, changes in the product and inputs prices and the degree and nature of technical progress. The output, material price, rental price, wage rates, total factor productivity, which are important variables show a shift in technology brought about the firms after liberalization.

It was concluded that, at the aggregate level for of the six firms experienced a decline in the rate of growth of employment after liberalization. Changes in vertical - integration adjusted output and the ratio of wage rate to product price (product wage) were the two most important variables affecting growth of employment during both the regulated and the liberalized period.

The shift in technology after liberalization did not bring about a change in the employment generating capacity of firms in the (Car segment). For firms in these segments, there was no time lag in this adjustment to long-run equilibrium level of employment during the period of liberalization.

Jyoti and A.S. Sidhu,[6] (2004) Industrial conflict between management and labour is a universal phenomenon in both the developing and developed countries. Strike is one of the most common manifestations of industrial conflict. Strike is the most important weapon in the armonry of workers. Although it is not possible to eliminate the problem of strikes, yet it can be contained.

[6] Jyoti and A.S. Sidhu. Workers Proneness to Strikes: An Application of discriminant Analysis. Indian Journal of Industrial Relations Vol. 40 No. 1 July 2004

The purpose of the study is to find whether any significant relationship exists between workers proneness towards strikes and their socio - economic and psychological factors. So the null hypothesis for the study is: HO: There is no significant difference in the profile of two groups in regard in regard to their proneness towards strike.

The present study is based on primary data only. The workers of textile industry of Punjab, who had participated in any strike during the last five years (1996-2001), were interviewed. A sample of 300 workers was drawn for the present study. A structured interview schedule was prepaid consisting of close ended statements and respondents were asked to give their opinion. Discriminate analysis has been used to answer the question why strike proneness is higher in one group as compared to others.

Level of strike proneness was taken as dependent variable with two levels, namely, more prone to strike and less prone to strike. These independent variables were identified using intuitive approach. Accordingly, thirteen variables were identified. Out of these, nine variables were demographic, namely, age education, marital status, family size, job experience, nature of work, wages, origin and membership of union and four were psychographic indicating their perception about strike.

The demographic variables are non-metric while Psychographic variables are metric. Therefore, the non-metric variables were transformed into metric dummy variables by assigning the value of 1 or 0 to make the data fit for the discriminate analysis. The stepwise method has been used to estimate the discriminate functions.

The analysis has shown that only two variables out of thirteen variables are significant in predicting the profile of strike prone workers No demographic variable except membership of union has emerged as a significant variable in differentiating between the profiles of two levels of workers. Moreover, perception of workers about strike as an instrument of awareness has also emerged as a

significant variable differentiating between the profiles of two levels of workers.

It can be said that the difference between profile of more and less prone to strike workers is influenced both by demographic and psychographic factors. But the most important factors which differentiators between workers with two levels of proneness is the membership of union. Raising the education level of workers will force them to view the other side of the coin also and union in that case can not play the foul games for their own benefits. In such circumstances, a worker need not work for group support to resolve his/her grievances. If this is done, the condition would he there for a committed, and less prone to strike workforce.

Sanjay Fuloria[7] (2005) This study estimates production using the data on the companies in the Indian Manufacturing Industry. It assesses whether the top 50 Indian Manufacturing Companies are different in productivity than small Manufacturing Companies, Private Foreign Companies, Privately held Indian Companies, NRI held companies and Foreign Group Companies in the manufacturing sector. The results indicate that in the NRI held companies and Foreign Group Companies the labor Variable is statistically insignificant showing that such companies are largely automated, thus reducing the need for labor. The study employs multiple regression with the assumption of Cobb -Douglas Production Function that has been used to test the hypothesis that different categories of Manufacturing Companies have the same productivity trend.

Data were collected from Centre for Monitoring Indian Economy (CMIE). To find elasticities of inputs to the products, Cobb-Douglas function was used. In addition, Durbin - Watson test has been used to test for auto correction.

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[7] Sanjay Fuloria, Indian Manufacturing Industry: An Analysis using Cobb -Donglas Production Function -. Research Scholar - ICFAI Institute of management Teachers Hyderabad, ICFAI - Journal of Operations Management, Vol. IV. No: 3 August 2005 ICFAI University Press, Hyderabad-82. P-6

It was concluded that the share of labor is pretty low. One possible reason for the decline in labor shares may be measurement and/or missing data effects.

The productivity is greatly influenced by Capital, labour and Materials. The co-efficient of labor variable has a negative sign showing that there is a situation of disguised unemployment. This means that in companies the amount of labor is more than required.

One important impact of this study is that in the manufacturing sector, the share of labor should be increased substantially if we are to compete globally. This does not mean that the labor force should be increased just for the sake of increasing which would lead to the problem of disguised unemployment.

Mucesh Kumar and Partha Basu, Technological change, Efficiency change, Scale change and change in Total Factor Productivity in Indian Sunrise Industries: A Data Envelopment Analysis, The ICFAI Journal of Industrial Economics, Vol. 1. No: 4. November 2004.

Mucesh Kumar and Partha Basu[8] (2004) This study Data Envelop Analysis uses (DEA) technique to analyze the productivity growth of some important sunrise industries in India during the transition period. To identify the major source of productivity change in these industries, the malmquist productivity index is decomposed into its different components such as Technological change, Technical Efficiency change and Scale efficiency change under the assumption of variable returns to scale.

Reading data, ASI, National Accounts Statistics (NAS) of whole sale prices in India, a monthly publication Government of India, were used.

[8] Mucesh Kumar and Partha Basu, Technological change, Efficiency change, Scale change and change in Total Factor Productivity in Indian Sunrise Industries: A Data Envelopment Analysis, The ICFAI Journal of Industrial Economics, Vol. 1. No: 4. November 2004.

The total factor productivity growth was calculated for Sunrise Industries in India over the period 1977-78 to 92-93 and it was concluded as follows,

1. The contributes of TFP to output growth is less than 1/3 relative to the contribution of the physical inputs.
2. On an average, TE change as well as Scale Efficiency change resulted in loss in productivity change.
3. The higher technological progress has always been accompanied by loss in efficiency by most of the industries.

VK. Reddy and IRS. Sarma[9] (2006) in their study made an attempt to analyze the productivity trends of 14 major states and all India textile Industry for pre and post liberalization periods using Divisia total factor productivity index. The present study is based on the secondary data and covers the period from 1979-80 to 2000-2001. ASI reports published by CSO were used. Textile and Manufacture of textile products industries have been selected for 14 major states and for All India with proper concardination of National Industrial classification (NIC) 87 and NIC 1998 codes.

Since the data collected were in amount in prices, to bring the data into constant prices (1981-82 as the base year) appropriate price correction has been used. It was concluded that in most of the states, the TFP growth rates are relativity lower and negative in pre-liberalization period. This study identified the factors that have influenced the productivity. The export intensity variable is positively significant for textiles where as negatively significant in case of manufacture of textile products for All India. The relative degree of concentration (output / No. of factories) is positive and it is a significant factor contributing to productivity in all the states.

[9] VK. Reddy and IRS. Sarma, Productivity in India Textile Industry: Trends and Determinants, The ICFAI Journal of Applied Economics, Vol. V. No: 1 January 2006

K.R. Prasad, R. Prabakar Rao and V. Pandit[10] (2006) This paper attempts to reconcile both the conventional Cobb-Douglas (CD) and Trans log (TL.) production functions, and brings about a comparison between conventional versus modified or augmented Production function of three major Indian manufacturing Industries such as textiles, cement and pharmaceuticals. Cross section data for the years 1993-1994 and 2001-2002 to identify the changes in the production technology over the new policy regime were used.

The firm selection was done at random and the number of firm in textile was 40, in cement it was 48 and pharmaceuticals the same was 50. Material input and energy along with conventional labor and capital were used. Expenditure on wages and salaries is taken as a proxy for labor, the gross fixed assets for capital, the expenditure on raw materials for material input and expenditure on fuel and water for energy were considered. Gross value added has been taken as the dependent invisible. It was concluded that all the variables used in the study exhibit significant nonlinearities and also interaction among them. Additional explanatory variables might not be individually statistically significant while their interaction terms are statistically significant. This highlights the importance of interactions among explanatory variables in explaining the output of manufacturing sector.

V.B. Singh[11] (1973) has made a study about wage structure of cotton mill workers in various centers in India. The purpose of his analysis was to find out wage differential in different centers. He has compared the daily average wage rates of different category in different years in same and different centers. His technique of analysis was based on coefficient of variations and analysis of

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[10] K.R. Prasad, R. Prabakar Rao and V. Pandit, Some aspects of manufacturing technology in three select industries of India. ICFAI Journal of Industrial Economics, Vol. Ill No.2 ,May 2006

[11] V.B. Singh, "Wage Patterns Mobility and Saving of Workers in India - A Study of Kanpur Textile Industry", Lalveni Publishing House, Bombay -New Delhi - Calcutta - Madras, 1973.

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 of same category of workers in different centers. As a result the wage rates have varied 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 to workers and management have been obtained from opinion survey. From the workers point of view, the wage differentials arise due to degree of skill, 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 will not increase the productivity of workers. But in case of low paid workers, the reduction in wage disparities wi I 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. The high production which leads to deteriorates in the quality. The cost of production per unit of output goes down and workers earnings go up Most of the workers 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[12] (1996) 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

[12] Zile Singh Goyat (1996), "Wage Productivity Trends in India - A Case Study of some industries". Spellbound Publications Pvt. Ltd. Rohtalc.p.37

important finding of this study is the capital intensity has been main factor for inc-easing labor productivity. Capital intensity is also increasing significantly in all the industries. This indicate that more and more capital could be required for generating employment in the industries. This is not feasible in India, because India has scarce capital 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 capital intensive techniques. In this study the real earnings, wages and salary also increased significantly in all industries during the study period. There is highly positive correlation between labor earnings and labor productivity. That is the labor productivity is the important factor for wage determination. But the TFP was found downward trend in all the industries during the study period. This was due to decline in the capital productivity.

C. Mani Sastry[13] (1992) has studied 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 when the labor unrest is higher there is the possibility of rise in wages. The wage elasticity is higher in relation tc 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 the lowest in the state public sector unit whereas they are the highest in the private sector organization. Per capital nominal wage levels of

[13] C. Mani Sastry (1992), "Wage Structure in Organized Industrial Sector", Book Lings Corporation, Hyderabad

industrial worker are higher in the industrial forward states, compared to the industrially backward state in India. Inter industry wage differentials are much higher in the backward states as compared to 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 the lowest in consumer goods sector and the 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. Mathu[14] (1986) has 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,

(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[15] (1991) 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 to analyses trends and stability in the inter industry wage structure and factors affecting inter-industry wages. For the present 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

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[14] A.N.Mathur (1986), "Dynamics of Wages", Popular Prakasham, Bombay, p. 142

[15] Lakhwinder Singh (1991), "Changes in the Inter-Industries Structure of Wages: The case of Punjab", Indian Journal of Industrial Relation, Vol.27, Nov.2, PP.26-42.

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.

16 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.

Ramdas[16] (1989) 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 represent the manufacturing sector. Chemicals is a relatively more productive but not strongly unionized. Textiles, on the other hand, have low productivity and has a high degree of unionization. Thus the above two industries are 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[17] (1991) and Ashok K.Seth have an attempt to study the labor absorption capability of the Indian manufacturing sector for the period 1960-84. For this study, gross employment, output elasticities have been estimated for the period 1960-1984 and to understand the relationship between labor absorption and phases of industrialization. These elasticities have also been estimated for three sub periods 1960-65, 1966-75 and 1976-84. To examine and

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16 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.

17 Vijay K.Seth and Ashok K.Seth (1991), Labor Absorption in the Indian Manufacturing Sector,", Indian Journal of Industrial Relations, Vol.27, No 1, pp.19 - 31.

compare long run and short run behavior of demand elasticities 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[18] (1968) examine the trends in wages in seven important industries during 1951-61 and to compare them with trends in labor productivity and costs of production during the same period. The main source of data was ASI and CMI. The seven 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:

Rise in Real Wages at the overall as well as industry wise, lagged behind without improvement in labor productivity. 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. 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. The falling trend in the wage-cost ratio holds good even if the overall share of labor cost. (i.e. salaries and wages) is taken as a percentage of selected cost of industrial output 19 Abdul Aziz, Industrial Wage Structure in Mysore State, University of Mysore, 1972.

Abdul Aziz[19] (1972) analyzed the Industrial wage structure of small, medium and large scale industries using primary and

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

[19] Abdul Aziz, Industrial Wage Structure in Mysore State, University of Mysore, 1972

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[20] (1989) examined the relationship between monetary incentives and productivity in the 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[21] (1977) 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[22] (1986) 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

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[20] Prajapathi Trivedi and Rajan Mookerjee, "Comparative impact of monetary incentives on productivity in public and private enterprises", Indian Journal of Industrial Relations, Vol.25, No.1, July 1989, pp. 1-11

[21] B.K. Madan, "The real wages of Industrial labour in India", Monograph No.1, Management Development Institute, New Delhi, 1977.

[22] Goldar, B.N. (1986) Productivity Growth in Industry, Allied Publishers private Ltd., New Delhi.

remarkably after 1970 and the problem of industrial efficiency was also related to the structure of the economy.

M.Upender[23] (1996) 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 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 Goldar, B.N. (1986) Productivity Growth in Industry, Allied Publishers private Ltd., New Delhi.raising real wages by increasing productivity[24] 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[25]. 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".[26]

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23 Goldar, B.N. (1986) Productivity Growth in Industry, Allied Publishers private Ltd., New Delhi.

24 Shahab Dayal, Industrial Relation System in India, Storting publishers Pvt. Ltd., New Delhi, 1980, p47.

25 Theodore Geiger and Frances M. Gerger, The Development progress of Hongkong and Singapore, Macmillan Publications, London, 1975, p 205

26 Theodore Geiger and Frances M. Gerger, The Development progress of Hongkong and Singapore, Macmillan Publications, London, 1975, p 163

WESTERN

Assar Lindbeck (1983)[27] 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 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)[28] related the incidence of strikes to the degree of worker's discontent and the resistance displayed by employers to demands made by 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 K.G.Knight and P.A.Geroski found that high strike frequency was not associated with high wage levels.

The working definitions of the terminologies and variables used for the present study are presented in the following pages.

ANNUAL SURVEY OF INDUSTRIES (ASI)

The Annual Survey of Industries (ASI) is the principal source of industrial statistics in India. It provides statistical information to assess and evaluate, objectively and realistically, the changes in the growth, composition and structure of organised manufacturing sector

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[27] Assard Lindback, The Recent Slowdown Of Productivity Growth, Institute For International Economic Studies, Universities of Stock holm, Reprint series No.206, March 1983.

[28] K.G. Knight, Department of Economics, University of Warwick Coventry, CV47AL.

comprising activities related to manufacturing processes, repair serviceSi gas and water supply and cold storage. Industrial sector occupies an important position in the Indian economy and has a pivotal role to play in the rapid and balanced economic development. Viewed in this context the collection and dissemination of ASI data, on a regular basis, are of vital importance. The survey is conducted annually under the statutory provisions of the Collection of Statistics Act 1953, and the Rules framed there under in 1959.

The ASI adopted from the Deginning a very simple design. All units with 50 or more workers operating with power, and units having 100 or more workers operating without power were covered under the census sector. Even the sample sector which comprised of units employing less than 50/100 workers (operating with or without power) in the major States were covered fully over a span of two years. This procedure continued till ASI 1986-87 by which time the total number of factories in the country grew enormously. Accordingly, the definition of the census sector was changed from ASI 1987-88 to the units having 100 or more workers irrespective of their operation with or without power. All the units in the frame of 12 less industrially developed States and Union Territories were surveyed on complete enumeration basis. The rest of the universe was covered on sampling basis through an efficient sampling design adopting State X 3 digit industry group as stratum so as to cover all the units in a span of three years. This design continued till ASI 1996-97.

Before launching of ASI 1997-98 due to constraints of resources in covering a large number of units in the survey and generating the results of the survey in time bound manner, a review of the earlier design was made and a revised design was adopted in ASI 1997-98. The census sector was defined to include units having 200 or more workers and also some Significant Units located from the database of ASI 1993-94 to ASI 1995-96, which, although having

less than 200 workers, contributed significantly to the Value of Output in these ASI years.

Industrial Classification

The Standard Industrial and Occupation Classification 1962 developed on the basis of the UN International Standard Industrial Classification (ISIC) of all Economic Activities 1958 (Rev. 1) was adopted from its first survey in 1960. With effect from ASI 1973-74, the National Industrial Classification (NIC) 1970 developed subsequently on the basis of UNISIC 1968(Rev.2) has been adopted. The NIC 1987 that strictly followed UNISIC 1968 was adopted from ASI 1989-90 to ASI 1997-98. The latest classification, i.e. NIC 1998, developed on the basis of UNISIC, 1990 (Rev. 3) has been adopted from ASI 1998-99.

Reference period & Schedule of enquiry

Reference period for ASI is the accounting year of the industrial unit ending on any day during the fiscal year. Thus, in ASI 2001-02, the data collected from the respective industrial units relate to their accounting year ended on any day between 1st April 2001 and 31 March 2002.

Reference Year for ASI 2001-02 is the accounting year of the factory ending on 31st March 2002 while the survey was conducted in 2002-03.

Factory is one that is registered under sections 2m (i) and 2m (ii) of the Factories Act, 1948. The sections 2m (i) and 2m (ii) refer to any premises including the precincts thereof (a) whereon ten or more workers are working, or were working on any day of the preceding twelve months, and in any part of which a manufacturing process is being carried on with the aid of power, or is ordinarily so carried on; or (b) whereon twenty or more workers are working or were working on any day of the preceding twelve months, and in any part of which a manufacturing process is being carried on without the aid of power, or is ordinarily so carried on.

Fixed Capital represents the depreciated value of fixed assets owned by the factory as on the closing day of the accounting year. Fixed assets are those that have a normal productive life of more than one year. Fixed capital includes land including lease- hold land, buildings, plant & machinery, furniture and fixtures, transport equipment, water system and roadways and other fixed assets such as hospitals, schools, etc. used for the benefit of the factory personnel.

Physical Working Capital is the total inventories comprising of raw materials and components, fuels and lubricants, spares, stores and others, semi-finished goods and finished goods as on the closing day of the accounting year. However, it does not include the stock of the materials, fuels, stores, etc. supplied by others to the factory for processing and finished goods processed by the factory from raw materials supplied by others.

Working Capital is the sum total of the physical working capital as already defined above and the cash deposits in hand and at bank and the net balance receivable over amounts payable at the end of the accounting year. Working capital, however, excludes unused overdraft facility, fixed deposits (irrespective of duration), advances for acquisition of fixed assets, loans and advances by proprietors and partners (irrespective of their purpose and duration), long-term loans (including interest thereon) and investments.

Productive Capital is the total of fixed capital and working capital as defined above Invested Capital is the total of fixed capital and physical working capital as defined above.

Gross Value Of Plant and Machinery represents the total original (un-depreciated) value of installed plant and machinery at the end of the accounting year. It includes the book value of the newly installed plants and machinery and the approximate value of rented in plants and machinery at the time of renting-in but excludes the value of rented-out plants and machinery. Total value

of all the plants and machinery acquired on hire - purchase basis is also included.

Outstanding Loans represent all loans (whether short term or long term, interest bearing or not) outstanding according to the books of the factory as on the closing day of the accounting year.

Workers are defined to include all persons employed directly or through any agency whether for wages or not and engaged in any manufacturing process or in cleaning any part of the machinery or premises used for manufacturing process or in any other kind of work incidental to or connected with the manufacturing process or the subject of the manufacturing process . Labour engaged in the repair & maintenance, or production of fixed assets for factory's own use, or employed for generating electricity, or producing coal, gas etc. are included.

Employees include all workers defined above and persons receiving wages and holding clerical or supervisory or managerial positions engaged in administrative office, store keeping section and welfare section, sales department as also those engaged in purchase of raw materials etc. or purchase of fixed assets for the factory as well as watch and ward staff.

Total Persons Engaged include the employees as defined above and all working proprietors and their family members who are actively engaged in the work of the factory even without any pay, and the unpaid members of the co-operative societies who worked in or for the factory in any direct and productive capacity. The number of workers or employees is an average number obtained by dividing man-days worked by the number of days the factory had worked during the reference year.

Wages And Salaries are defined to include all remuneration in monetary terms and also payable more or less regularly in each pay period to workers as compensation for work done during the accounting year .It includes (a) direct wages and salary (i.e., basic wages/salaries, payment of overtime, dearness, compensatory allowance, house rent and other allowances), (b) remuneration for

the period not worked (i.e., basic wages, salaries and allowances payable for leave period, paid holiday, lay-off payments and compensation for unemployment, if not paid from sources other than employers), (c) bonuses and ex-gratia payment paid both at regular and less frequent intervals (i.e., incentive bonuses, good attendance bonuses, productive bonuses, profit sharing bonuses, festival or year-end bonuses, etc.). It excludes lay off payments which are made from trust or other special funds set up exclusively for this purpose i.e., payments not made by the employer. It also excludes imputed value of benefits in kind, employer's contribution to old age benefits and other social security charges, direct expenditure on maternity benefits and creches and other group benefits. Travelling and other expenditure incurred for business purposes and reimbursed by the employer are excluded. The wages are expressed in terms of gross value i.e., before deduction for fines, damages, taxes, provident fund, employee's state insurance contribution, etc.

Contribution To Provident Fund And Other Funds includes old age benefits like provident fund, pension, gratuity, etc. and employers contribution towards other social security charges such as employees state insurance, compensation for work injuries and occupational diseases, provident fund-linked insurance, retrenchment and lay- off benefits.

Workmen And Staff Welfare Expenses include group benefits like direct expenditure on maternity, creches, canteen facilities, educational, cultural and recreational facilities; and grants to trade unions, co-operative stores, etc. meant for employees.

Total Emoluments is defined as the sum of wages and salaries, employers' contribution as provident fund and other funds and workmen and staff welfare expenses as defined above.

Total Input comprises total value of fuels and materials consumed as well as expenditures such as cost of contract and commission work done by others on materials supplied by the factory, cost of materials consumed for repair and maintenance of factory's fixed assets including cost of repairs and maintenance work

done by others to the factory's fixed assets, inward freight and transport charges, rates and taxes (excluding income tax), postage, telephone and telex expenses, insurance charges, banking charges, cost of printing and stationery and purchase value of goods sold in the same condition as purchased .

Total Output comprises total ex-factory value of products and by-products manufactured as well as other receipts such as receipts from non-industrial services rendered to others, work done for others on material supplied by them, value of electricity produced and sold, sale value of goods sold in the same condition as purchased, addition in stock of semi- finished goods and own construction.

Depreciation is consumption of fixed capital due to wear & tear and obsolescence during the accounting year and is taken as provided by the factory owner or is estimated on the basis of cost of installation and working life of the fixed assets.

Net Value Added is arrived by deducting total input and depreciation from total output.

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 primary as well as secondary sources. The secondary data for the presert study regarding number of employed, fixed capital, selected emoluments, and wages to workers, depreciation, output 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 primary data have been collected from selected district where selected units which have been chosen.

The consumer price index has been received from labour Bureau, Shimla. The product price indices have been taken from various issues of "Index numbers of whole sale prices in India" published by 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 Central Statistical Organisation (CSO). Man days lost due to the industrial unrest for the various industries has been collected from the various issues of pocket book of labor statistics published by labor bureau, Shimla.

Analysis

In order to have a comprehensive analysis of Industrial labour and 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 economic and managerial analysis of the present study is segmented in to three parts. Analysis I covers the selected 146 industries in two groups at the National level (Disaggregate level). So 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 among the selected industries for an in depth comparative 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 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)[1]. 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. Present study uses gross value added by single deflation method, because "construction of single deflation method is superior to the double deflation method"[2].

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[3], Goldar[4] and Sunilkumar[5] 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[6] and Sunilkumar[7] have used gross fixed capital stock and allowed 2 percent annual rate of discard of capital in their

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

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

3 A.Baneji (1976), "Capital Intensity and Productivity in Indian Industry", Macmillan, Delhi, p.19.

4 N.Goldar, "Productivity Growth in Indian Industry", Allied Publishers private Ltd, New Delhi, 1986, P.48.

5 Sunil. Kumar, S. (2001) Productivity and Factor Substitution: Theory and Analysis, Deep and Deep Publications, New Delhi.

6 B.N. Goldar, Productivity Growth in Indian Industry, Allied Publishers Private Limited, New Delhi, 1986,

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

$$K_t = K_{t-1} - dK_{t-1}$$

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 in 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 capital input. Because, there is no suitable price index for applying price corrections to such data[8].

Concepts and Tools Used for the Study

Wage Rate

The wage rate is calculated by the ratio of real value of selected emoluments to the number of employees by deflating a

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[7] Sunil. Kumar, S. (2001) Productivity and Factor Substitution : Theory and Analysis, Deep and Deep Publications, New Delhi.

[8] Ajit Banerji, Op.cit. p.23.

series of emoluments at current prices by consumer price index for the industrial worker with base period 1981-82=100.

Capital Formation Index

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 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 determinations 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.

Total Factor Productivity

If different partial productivity indices moving 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 weighted sum of the quantities of different inputs. The various TFP measures found in the literature different mainly on account of the differences in the assumed underlying production function. The important indices of selected factor productivity are as follows:

1. Kendrik index
2. Solow index
3. CES index and
4. Translog index (Divisia 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

$$A_t = \frac{Y_t}{a_0 L_t + b_0 K_t}$$

Where a_0 is the base year wage rate and b_0 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 exactly equal to output of that year. The main defect of this measure is that it is based on a linear production function and it fails to allow for the possible diminishing marginal productivity of factors.

Solow Index (At)

This index[10] is based on Cobb-Douglas Production Function. The following formula has been obtained for Solow Index.

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

where Y denotes output, L labor, K capital and 3 the income share of capital. Bar stands for time derivative. From the above equation the discrete form is obtained as

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9 J.W., Productivity Trends in United States, NBER, Princeton University Press, Princeton, 1961, P.8

10 R.M. Solow, "Technical Change and the Aggregate Production Function" Review of Economic and Statistics, 1957 pp.312-327

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

The Solow Index is obtained using the following identity taking A_o as unity

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

Divisia Index - Translog Index

The translog index[11] of technological change is based on Transcendental logarithmic (Translog) Production Function, characterized by constant returns to scale.

Log Y = aQ + aL (logL) + a" (logK) + c^ t + Vz f3LL (lop L)2 +
1/2(3KK(logK)2 + pLK (logL) (logK) + pLt (logL)t + (3Kt (logK)t + 1/2p ttt2

Where,
Y is Output, K is Capital, L is Labor input, αs and βs are the parameters to be estimated.

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

$$\Delta \log TFPG = \Delta \log Y(t) - S_t \Delta \log L(t) - (1-S_t)\Delta \log K(t)$$

Where S and (1-S) are the shares of labor and capital in value added and computed as

$$\bar{S} = \frac{(S_t - S_t - 1)}{2} \text{ and } (1-\bar{S}_t) = \frac{(1-S_t)-(1-S_t-1)}{2}$$

[11] L.R. Christensem, D.W. Jorgenson and Lau, L.J. "Transcendental Logarithmic production Frontiers" Review of Economics and Statistics, Feb 1973, PP 213-227

The main advantages of these function are that allow for variable elasticity of substitution and does not require the assumption of Hicks 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.

For data obtainable at yearly intervals (discrete point of time), the most commonly used discrete approximation to divisia indix[12] is given by

$$TFPG = (InQ_t - InQ_{t-1}) = .5\Sigma(Si_t + Si_{t-1})In(Xi_t)(Xi_{t-1})$$

Where q denotes output, Xi, denotes the quantity of the ith input for the year 1' and Sit is the share of input 't' in output for the year T.

Capital Output Ratio

The concept of capital output ratio express 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.

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

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 outpu

$$\text{COR} = \frac{\text{Fixed Capital Stock at Cons tan t Pr ices}}{\text{Volume of Pr oduction at Cons tan t Pr ices}}$$

Capital Intensity

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

Wage Differentials

Wage differentials refer to the wage differences which exist between different occupation and different individuals in the same occupation. Correlation Correlation coefficients between the selected variables such as employment and wages, fixed capital and output, fixed capital and employment were worked out for the selected industries.

Regression

Multiple regression had been computed on the one hand, the real wage rate as the dependent variable and on the other, labor productivity, capital intensity, employment and wage share of value added as independent variables separately for the selected 146 industries comprising 51 piece and 95 time rate industries as two groups as well as for the an in depth study of 12 industries comprising high percentage of piece wage and time wage rate industries each 6 for three periods of time as over all, pre reform and post reform periods.

CHAPTER - IV
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 closures 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 up by an 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. Since, the present analysis covers 51 piece rate and 95 time rate wage payment industries of disaggregate data at the all India level, individual performances of each industry not feasible. Hence the selected measure about the variable for all industries in piece and time wage groups is presented in the ranges of less than zero, 0 to 5, 5 to 10 and above 10. The number of industries of the selected measure fall in each range in each group in presented respectively.

The over period taken for the study is 1982-2003 which is divided into first sub period related to the pre-reform period (1982-1991) and while the second sub period (1991-2003) is post-reform period.

The following table 3 presents the growth rate of labour under piece and time wage rate grower of industries in India.

TABLE 3

Growth Rate of Labor

SI No.	Growth rate of Labor (in percent)	Number of industries under PRS			Number of industries under TRS		
		1982-03	1982-91	1991-03	1982-03	1982-91	1991-03
1.	< 0	10 (19.6)	18 (35.3)	6 (11.7)	15 (15.7)	24 (25.2)	15 J15.7)
2.	O t o 5	17 (33.3)	11 (21.5)	19 (37.2)	44 (46.3)	44 (46.3)	43 (45.2)
3.	5-10	9 (17.6)	(15.7)	12 (23.6)	25 (26.3)	11 (11.7)	22 (23.4)
4	Above 10	15 (29.5)	14 (27.5)	14 (27.5)	11 (11.7)	16 (16.8)	15 (15.7)
	Selected industries	51	51	51	95	95	95

Source: computed from the ASI data sources for the selected industries. Note: Figures n parenthesis are given in percentages.

PRS - Piece Rate System

TRS - Time Rate System

[1] B. N. Goldar, Employment Growth in organized manufacturing in India, Economic and political weekly, April 1, 2000.

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 classifications of piece rate and time rate industries. 19.6 per cent of selected industries recorded the negative growth rate of employment is piece rate industry group during the period 1982-2003. 33 percent of selected units registered the range of 0 to 5 per cent, 17.6 per cent of selected industries are in the range of 5 to 10 per cent and 29.5 per cent of selected industries show above 10 per cent growth rates in piece rate industry group during the study period.

For pre reform period 35.3 per cent of selected industries noticed negative growth rate of employment in the piece rate industry group. 21.5 per cent of selected industries are 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 lie above 10 per cent.

For the post reform period, 11.7 per cent of selected industries registered negative growth rate of employment in the piece rate industry group. 37.2 per cent of selected industries are in the range of 0 to 5 per cent growth rate of employment and 23.6 per cent of selected industries are in the range of 5 to 10 per cent and 7.5 per cent of selected industries lie in above 10 per cent growth rate of labor.

From the above table, the interesting point to note is 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 implemented in the year 1991 did not create employment in this group.

In time industry group, 15.7 per cent of selected industries registered the negative growth rate of employment during the overall study period (1982-2003). 46.3 per cent of selected industries are 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 11.7 of selected industries above 10 per cent.

For pre-reform period, 25.2 per cent of selected industries are noticed to have negative growth rate of employment in the time rate industry group. 46 per cent of selected industries are noticed in the range of 0 to 5 per cent of growth rate of employment and 11.7 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 the post reform period, 15.7 per cent of selected industries registered negative growth rate of employment in time rate industry group 45.2 per cent of simple industries are recorded in the range of 0 to 5 per cent of growth rate of employment and 23.4 per cent selected industries are 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.

It is under stood that the growth rate of labour in the time rate industries are almost more in the pre reform period than the post reform period except in the third group of range. Thus, it is seen that on the whole in both piece and time wage industries, the impact of economic reform with regard to the growth rate of labour seem to have fallen.

Trends in the Growth of Capital

The overall trends in growth rate of capital in piece rate and time rate industry groups in India are presented in the table 4. The following table presents trends in growth rate of capital.

TABLE 4
Growth Rate of Capital

Sl. No.	Growth rate of Capital (in percent)	Number of industries under PRS			Number of industries under TRS		
		1982-03	1982-91	1991-03	1982-03	1982-91	1991-03
1.	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 (17.9)	14 (15.8)	13 (13.6)
6.	40 to 50	1 (1.9)	2 (3.9)	3 (5.9)	14 (15.8)	12 (12.6)	9 (9.5)
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. Note: Figures in parenthesis are given in percentages.

PRS - Piece Rate System

TRS - Time Rate System

For overall period, (1982-2003) 21.6 per cent of selected industries are 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 1982-2003. 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 note is that no one has negative growth of capital during the study period.

For the Pre reform period, nearly 2 per cent of the selected industries are noticed the negative growth rate of capital in the piece rate industry group. 7.8 per cent of selected industries are in

the range of 0 to 10 per cent growth rate of capital, 23.5 per cent of selected are in the range of 10 to 20 per cent, 17.6 per cent of selected industries are in the range of 20 to 30 per cent, 13.8 per cent of selected industries are in the range of 30 to 40 per cent and 3.9 per cent of selected industries are in the range of 40 to 50 per cent. The higher average annual growth rate of capital of above 50 per cent was achieved with 31.4 per cent of selected industries during me pre reform period.

For the Post Reform period, 13.8 per cent of selected industries are recorded the growth the ate of capital in the range of 10 to 20 per cent, 23.6 per cent of selected industries are in the range of 20 to 30 per cent, 23.6 per cent of selected industries are in the range of 40 to 50 per cent and 5.9 per cent was in the range of 40 to 50 per cent of growth rate of capital during the post reform period. The highest 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 selected piece rate industries have positive and above 10 per cent average annual growth rate of capital. The below 10 per cent of average annual growth rate capital was achieved in 8 per cent of selected industries and nearly 2 per cent of selected industries have recorded negative growth during the Pre reform period.

As far as time rate industries are concerned, in the overall study period, 12.6 per cent of selected industries are noticed the growth rate of capital in the range 10 to 20 per cent. 36.6 per cent of selected industries lie in the range of 20 to 30 per cent, 17.9 per cent of selected industries are in the range of 30 to 40 per cent, 15.8 per cent of selected industries are in the range of 40 to 50 per cent and 17.9 of them lie 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 are in the range of 10 to 20 per cent, 35.6 per cent of selected industries are in the range of 20 to 30 per cent, 15.8 per cent of selected are in the range of 30 to 40 per cent, 12.6 per cent of selected industries are in the range of 40 to 50 per cent and 25.5 per cent of selected industries fall in the range of above 50 per cent growth rate of capital during the period 1991-2003 in time rate industry group.

For post reform period, only one per cent of the industry are registered the negative growth rate of capital in time rate industry group. 3.3 per cent of selected industries are in the range of 0 to 10 per cent, 29.5 per cent of selected industries are in the range of 10 to 20 per cent, 25.3 per cent of selected industries are in the range of 20 to 30 per cent, 13.5 per cent of selected industries are 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 are in the range of above 50 per cent growth rate of capital during the period 1991-2003 in time rate industries group.

The growth rate of capital was higher in the piece rate industry group in 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 are made in the piece rate industry group as a result of liberalization process. Generally, the growth rate of capital is increased in the industrial manufacturing sector.

Capital Intensity

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 system are user friendly. Further the traditional kind of labor involvement in the process of production 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 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 some stages 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 employment and wage levels in selected industries in India. The following table 5 presents the trends in capital intensity.

[2] Rajkin (1995) as given by R.C. Datta, New Technology and Textile Works, Economic and Political Weekly, Sep 25, 1999, p.41

TABLE 5
Trends in Capital Intensity

Growth rate in percent	Number of industries under PRS			Number of industries under TRS		
	1982-03	1982-91	1991-03	1982-03	1982-91	1991-03
Less than 0	0 (0)	0 (0)	2 (3.9)	0 (0)	0 (P)	2 (2.1)
O t o 10	0 (0)	0 (0)	4 (7.8)	0 (0)	4 (4,21)	6 (63)
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)	11 (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. Note: Figures n parenthesis are given in percentages,

PRS - Piece Rate System

TRS - Time Rate System

For this study, it is found that all the selectee, industries under piece rate industries group noticed above 10 per cent growth of capital intensity during the period 1982-2003. 33.4 per cent of selected industries have above 50 per cent of growth of capital intensity during the period. This result indicates that the piece rate industries are transformed from labor intensive into capital intensive industries.

During the Pre reform period, it is also found that all selected industries have noticed 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 been 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 was due to the growth rate capital in piece rate industry group was increasing at the same time growth rate of labor was also increasing. That is the 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 also above 10 percent growth of capital intensity during the period 1982-2003. 9.5 percent of selected industries have above 50 per cent of growth capital intensity during this period.

During the pre reform period, it is also found that 4.2 percent of selected industries have been noticed below 20 per cent growth of capital intensity during this period. 13.7 percent of selected industries have fallen in above 50 per cent of growth of capital intensity. For the Post reform period 8.4 percent of selected industries have found below 20 percent growth capital intensity. The interesting point note is that 35.8percent 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. But both periods the growth rate of capital intensity was found positive.

Value Added

Trends in the growth of the manufacturing sector in India have been a much debated issue quite sometime now. While

Aluwalia concluded that the slow growth of the output in registered manufacturing at 1979-80[3], Nagaraj[4] 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 the present study, the gross value added at constant prices has been taken from ASI separately for both time rate and piece rate industries which are disaggregated at three digit level. Table 6 presents the trend in growth rate of value added for piece and time rate wage industries.

TABLE 6 Growth Rate of Value Added

Sl. No.	Growth rate of value added in Percent	Number of industries under PRS			Number of industries under TRS		
		1982-03	1982-91	1991-03	1982-03	1982-91	1991-03
1	Less than 0	3 (5.9)	3 (5.9)	6 (11.8)	0 (0)	4 (4.2)	2 (2 1)
2.	O t o 5	5 (9.8)	6 (11.8)	7 (13.7)	4 (4.2)	9 (9.5)	10 (10.5)
3.	5 to 10	11 (21.5)	9 (17.6)	11 (21.6)	23 (24.2)	17 (17.9)	16 (16.8)
4.	10 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 (7.8)	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.

Note: Figures in parenthesis given in percentages.

PRS – Piece Rate System TRS – Time Rate System

[3] Aluwalia, I.J., "Industrial Growth in India; Stagnation since the Mid-Sixties", OUP, 1985.

[4] Nagaraj.R. "Growth in manufacturing output since 1980; some preliminary findings; July 1, 1989, PP.1481-1484.

It is found that 5.9 percent of selected industries under piece rate industry group have negative trend in growth rate of value added for the period 1982-2003. 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.

For Pre reform period, it is found that 5.9 per cent of salected 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.

For Post reform period 11.8 percent of selected piece rate industries have registered negative growth rate in value added. It is observed that 23.5 per cent of selected industries have been 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 1982-2003. That is all the selected industries have positive growth in valued under time 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 1982-2003, 1982-91 and 1991-2003 periods respectively.

Above results indicates 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 sectors. That is different capital output ratios for different sectors of an Economy depending on the t3chniques (capital intensive or labor intensive) used by them. The overall capital-output ratio for a country is the average of the sectoral ones. For estimating capital-output ratio, gross fixed stock at constant prices is used as a measure of capital input. The following table 7 presents the capital-output ratios of the selected piece and time rate industries.

TABLE 7

Capital Output Ratio

Sl. No.	Capital Output Ratio	Number of selected industries under PRS			Number of selected industries under TRS		
		1982-03	1982-91	1991-03	1982-03	1982-91	1991-03
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.

Note: Figures in parenthesis are given in percentages.

PRS – Piece Rate system

TRS – Time Rate system

It is found that 86 percent of the selected industries are under piece rate industry group have below the capital-output ratio ranging 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 the same time,

it was only 62 per cent in the post reform period. The interesting point is to note that there is no existence 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 piece rate industries lies above 3:1 during post reform period.

The same trend was found in the time rate industry group This indicates that the piece rate industries and time rate industries at the over all Indian manufacturing are transformed from labor intensive into capital intensive ones. That is increasing trend in capital output ratio indicates that government policy favoring capital intensity which leads towards reduction in employment in Indian Manufacturing.

The new economic policy led to an 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 up gradation, 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 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) physcial units of output are not given. For this study, output in physical units can be calculated by the selected value of output is divided by corresponding price of

output. The following table gives te growth rate of capacity utilization in Indian Industries during 1982-2003.

TABLE 8

Grown Rate of Capacity Utilization

Degree of Capacity Utilization (in Percent)	Number of industries under PRS			Number of industries under TRS		
	1982-03	1982-91	1991-03	1982-03	1982-91	1991-03
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 (23.5)	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)	11 (21.7)	3 (3.1)	0 (0)	16 (16.9)
Selected Industries	51	51	51	95	95	95

Source: computed from the ASI sources of data.

Note: Figures in parethesis are given in percentages.

PRS – Piece Rate System

TRS – Time Rate System

For the present study, it is found that, only 1.9 percent of selected industries under piece rate industry group have the rate of capacity utilization in the range of 0 to 20 per cent during the period 1982-2003. 27.4 percent and 25.5 percent of industries were found with the rate of capacity utilization in the range of 20 to 40 percent and 40 to 60 percent respectively during the over all period. Nearly 45 percent of selected industries are in the range of above 60 percent of rate of capacity utilization in this period.

In the pre reform period it is observed that 15.7 percent of selected industries have been noticed with the rate of capacity utilization in the range below 20 percent. 25.5 percent each in the range of 20 to 40 per cent and 29.4 percent of industries were found the rate of capacity utilization in the range 40-60 percent during this

period. Nearly 33 percent of selected industries are in the range of above 60 per cent 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 capacity utilization the post reform period. This results indicates that the liberalization policy have positive impact on capacity utilization in the piece rate industry group.

In time rate industry group, it is found that only one per cent of the industries have below the 20 percent rate of capacity utilization during the period 1982-2003. 9.4 percent and 46.4 percent of selected industries have been found with the rate of capacity utilization in the range of 20-40 percent and 40-60 percent respectively during this period. Nearly 45 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 have below the 20 percent rate of capacity utilization. It is observed that nearly 31.6 percent and 36.8 percent of selected industries have 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 have 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 better 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 measures 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 in the employment of labor. When labor productivity is increasing, the country's economy would show improvements in National income. It also would help in finding out the overall improvement of the unit. The introduction of new labor-saving device or new method of production has led to a significant increase or decrease in the productivity of labor. The Indian planners from the first five year plan onwards, realized that the key to solving problems of India's poverty lies in raising the levels of labor productivity. The following Table 9 presents the growth rate of labour productivity.

Table 9 Growth Rate of Labor Productivity

Sl. No	Growth rate of Labor productivity (in Percent)	Number of industries under PRS			Number of industries under TRS		
		1982-03	1982-91	1991-03	1982-03	1982-91	1991-03
1.	Less than0	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 (15.6)	17 (17.9)
3.	5 to 10	20 (39.2)	13 (25.4)	14 (27.4)	34 (35.7)	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)	1 3 (1 3 . 7)
6.	Above 20	7 (14.0)	11 (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. Note: Figures in parenthesis are given in percentages.

PRS - Piece Rate System TRS - Time Rate System

For this study, it is found that 7.8 per cent of selected industries in piece rate industry group had negative trend in labor productivity for the period 1982 - 2003. The remaining 82.2 per cent of selected industries had positive trend in labor productivity growth. It is observed that 7.8 per cent of selected industries have registered 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 were in the range of 10 to 15 per cent, 5.8 per cent of selected industries were in the range of 15 to 20 per cent of growth rate labor productivity during the study period 1982-2003 in piece rate industry group. 14 per cent of selected industries were above 20 per cent growth rate during this period.

It is observed that 3.9 per cent of selected industries in piece rate industry group were 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 15.6 per cent of selected industries in piece rate industry group was in the negative trend in labor productivity during Post reform period. It is also found that nearly 30 per cent of selected industries were more that 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.

It indicates that the liberalization process which had negative effect on labor productivity in piece rate industry group. However, the efficiency of piece rate industry group in terms of labor productivity was satisfactory to some extent during the study period.

It is observed that only one per cent of the industry under time rate industry group had negative trend in during the study period. The remaining 99 per cent of selected industries had 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 had negative trend during the pre reform and post reform periods respectively.

There is no significance difference in growth rate of labor productivity and post reform periods in time rate industry group. It can be inferred that the impact of time rate industry group in terms of labor productivity is satisfactory during the study period.

In both piece rate and time rate industry groups, almost the labor productivity was found to be in the positive trend. It was mainly due to increase in capital in these industries during study period.

TRENDS IN CAPITAL PRODUCTIVITY

The capital productivity mainly depends upon quality of capital. A worker working with better provisions and facilities will be more productive than a work who have less. The following table presents the details of capital productivity.

Table 10

Growth Rate of Capital Productivity

Sl. No.	Growth rate of capital Productivity (in percent)	Number of industries under PRS			Number of industries under TRS		
		1982-03	1982-91	1991-03	1982-03	1982-91	1991-03
1.	Less than 0	38 (74.5)	39 (76.4)	38 (74.5)	82 (86.6)	80 (84.2)	78 (82.1)
2.	0to5	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)	7 (13.9)	8 (15.8)	9 (9.2)	6 (6.1)
	Selected Industries	51	51	51	95	95	95

Source: computed from the ASI sources of data. Note: Figures in parenthesis are given in percentages.

PRS - Piece Rate System

TRS - Time Rate System

For the present 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 1982-2003. 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 84.2 percent and 82.1 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 rate industry group have negative trend in capital productivity in during study period and there is no impact of liberalization on the introduction of new capital in these industry groups.

Total Factor Productivity

Low Total factor productivity Growth (TFPG) or its negative trend is a commonly observed feature in most of the developing economics. Ahluwalia (1991)[5] finds a positive trend in TFP in Indian manufacturing. Balakrishnan and Pushpangadan (1994[6] finds 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 of the growth accounting methods which had 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 practice of single, would tail to establish the 'turn around' phenomenon. But

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

[6] P.Balakrishnan and K. Pushpangadan (1994), "Total Factor Productivity Growth in Manufacturing Industry; A fresh Look", EPW, July 30.

Dholaka and Dholakia (1994)[7] 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. Single deflation method has been used for the present study.

TRENDS IN TOTAL FACTOR PRODUCTIVITY GROWTH IN INDIAN MANUFACTURING (1982-2003).

India's Economic policies are geared towards economic growth. Rise in productivity is all sectors in essential to put the country on the growth path. There are many studies that systematically analyze productivity in aggregate manufacturing sectors of the economy. In thi study, the trends in growth of TFP in Indian manufacturing industry have been analysed, before and after the introduction of economic reforms under the major classification of piece rate and time rate industry groups at the disaggregate level. The following table 11 presents the growth rate of Total Factor Productivity (TFP).

Table 11 Growth Rate of Total Factor Productivity

Sl. No.	Growth rate of TFP (Percent)	Number of industries under PRS			Number of industries under TRS		
		1982-03	1982 -91	1991 -03	1982 -03	1982 -91	1991 -03
1.	Less than 0	32 (62.7)	27 (52.9)	30 (58.6)	73 (76.7)	72 (75.7)	63 (66.3)
2.	0 t o 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. Note: Figures n parenthesis are given in percentages.

PRS - Piece Rate System

TRS - Time Rate System

[7] B.H Dholakia and R.H. Dholakia (1994), "Total Factor Productivity Growth in Indian Manufacturing", Economic and Political Weekly, Dec. 31.

In the present study, it is found that 62.7 per cent of the selected industries under piece rate industry group have negative trend in TFP growth for the period 1982-2003. The remaining 37.3 per cent 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 result indicates that there is no improvement in TFP_{Growth} 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 TFP Growth during the study period, it is also found that 75.7 percent and 66.3 percent of selected industries have negative growth in TFP Growth during pre reform and post reform periods respectively.

For post reform period, the 10 per cent of the selected industries have been transformed from negative trend into positive trend in TFPG under time rate industry group. This indicates that the liberalization policy have positive impact on time rate industries in terms of TFP Growth.

Trends in Wage Rate

The movement of the wage rate in the selected industry groups, namely piece rate and time rate industries under the study during the period 1982-2003 have presented in the table 12.

Table 12 Wage Rate In Indian Industries

Sl. No.	Wage Rate In Rupees	Number of industries under PRS			Number of industries under TRS		
		1982-03	1982 -91	1991-03	1982-03	1982-91	1991 -03
1.	Less than 5000	8 (15.7)	9(17.6)	6 (11.7)	4 (4.2)	6 (6.3)	3(3.1)
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. Note: Figures n parentheses are given in percentages.

PRS - Piece Rate System
TRS - Time Rate System

For piece rate industry groups 72.6 percent of the selected units have wage rate with the range from Rs.5000 to Rs. 10,000 per annum. Nearly 12 percent of the selected units of piece rate industry 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 have more than the Rs. 15000 per annum. But after reforms, it is seen that the wage rate of piece rate industry groups has increased.

In time rate system, nearly 75 percent of selected industries have wage rate of more than Rs. 10000 per annum. Nearly 40 percent of the selected industries have a wage rate of more than Rs. 15000 per annum for the period 1982-2003. Before reforms, the 4.2 per cent of selected industries above Rs.20000 per annum as a wage rate. But, the same was found 17 percent during the post reform period. It can be inferred that the 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 ranging above Rs. 10000 per annum as wage rate during overall, pre reform and post reform period respectively. The same were 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 compare to time rate industry group during study period. This may be due to the reason that 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".

When the various stages of production are conductive 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 decides 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. There is no such scope for workers in time rate industries. Trade unions prefer equal wage for equal work with time rate system that reward workers uniformly without any discrimination.

The following table 13 presents growth of wage rate.

Table 13

Growth of Wage Rate

Sl. No.	Growth rate of Wage Rate	Number of selected industries under PRS			Number of selected industries under TRS		
		1982 -03	1982 -91	1991 -03	1982 -03	1982 -91	1991 -03
1.	Less than 0	4 (7.8)	3 (6.0)	12 (23.5)	2 (2.1)	6 (6.3)	15 (15.7)
2.	0 t o 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.

Note: Figures n parenthesis are given in percentages.

PRS - Piece Rate System

TRS - Time Rate System

Table 13 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 (1982-2003). 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 are in the range of above 10 per cent growth rate of wage rate during the overall study period.

For pre reform period, 6 per cent of selected industries have noticed the negative growth rate of wage rate 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

For 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 1982-2003. 54.9 per cent of selected industries registered the growth rate of wage rate in the range of 3 to 5 per cent. 15.6 per cent of selected industries are 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 have negative impact on growth rate in wage rate in piece rate industry group.

In time rate industry group, the 2.1 per cent of selected industries have been noticed the negative growth rate of wage rate during the period 1982-2003. 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 are above 10 per cent during the overall study period.

For the pre reform period, 6.3 per cent of selected industries registered negative growth rate of wage rate in time rate industry group. 63.1 per cent of selected industries have been noticed 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 per cent of selected industries recorded 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. 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 the Post-reform period.

On the whole, both time rate and piece rate industry groups, it is observed that there is a declined growth rate of wage rate in some industries. At the same time, the size of the growth rate in both industries 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 labor in value added in Indian industries during the period 1982-2003.

Table 14 Labor Share in Value Added

Sl. No.	Labor share in value added in %	Number of industries under PRS			Number of industries under TRS		
		1982-03	1982-90	1991-03	1982-03	1982-90	1991-03
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.	20-30	7 (13.8)	1(2.0)	15(29.4)	31(32.6)	22(23.1)	28(29.4)
4.	30-40	17(33.4)	12 (23.6)	14(27.4)	32(33.0)	31(32.6)	19(20.0)
5.	40-50	9 (17.6)	18(35.3)	5(9.8)	5(5.2)	22(23.1)	10(10.5)
6.	50-60	9 (17.6)	8(15.7)	4(7.8)	12(12.6)	8(8.4)	5(5.2)
7.	60-70	4 (7.8)	5(9.8)	6(11.8)	0(0)	1(1.1)	1(1.1)
8.	70-80	3 (5.8)	3(5.8)	1(2.0)	1(1.1)	2(2.1)	(0)
9.	80-90	0(0)	1(2.0)	2 (3.9)	1(1.1)	3(3.2)	1(1.1)
10.	90-100	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. Note: Figures n parentheses are given in percentages.

PRS - Piece Rate System

TRS - Time Rate System

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 1982-2003. 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 overall 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 reform period. It can be said that the liberalization has led to the transformation of labor intensive into capital intensive in the piece rate industries.

Nearly 80 per cent 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 liberalization period.

The interesting point is to note that, 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 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 labor 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

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 labor productivity index, employment and capital intensity are treated as independent variables. This model is given by

Log W = aO + Log Lp + log Emp + log CI,

Where,

W	-	average wage rate index
Lp	-	average labor productivity index
Emp	-	average employment index
CI	-	capital intensity index.

Productivity is an important factor affecting 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 labor 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 expected sign of labor productivity is positive.

Over the years, industrial labours have organized themselves into trade unions. The demand for higher wages in the wake of rising prices and rising cost of living has often been backed by trade union action. Industrial disputes affect groups of employees and employers engaged in any industry. Increase in wage rate leads to increasing labor supply but the demand for labor 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 takes 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 skill of the workers have direct, relationship. The following table 15 presents the regression results in the determination of wage rate in piece rate industries.

TABLE 15

Determination of Wage Rate in Piece Rate Industry

Sl. No.	Time period	Regression Co-efficients				R^2
		Bo	B_1	B_2	B_3	
1	1982-2003 (overall)	4.273416* (0.391909)	-0.100801 (0.097104)	-0.044495 (0.052702)	0.185690* (0.045879)	0.32
2.	1982-91 (Pre-reform)	3.975477* (0.525562)	0.048250 (0.114786)	-0.078458 (0.085262)	0.147848* (0.045572)	0 24
3.	1991-2003 (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. Figures in parenthesis indicate S.E.

2. * indicate 1% level of significance.

Wages Trends in Piece Rate Industries

From the table 15, the results suggest that capital intensity is positively influenced by wage increases. On the other hand, labor productivity and employment exerts a negative influence on wage rate. However both labor productivity and employment are statistically insignificant.

Our statistical analysis reveals that capital intensity that is the skill of the worker really increases the level of wages. There is no doubt that increase in capital intensity which evoke enhanced efforts by labor, but there are other factors also such as management style and structure, production system which provide the content within which labor effort could result in increasing efficiency and productivity. Our previous results suggested that the

growth rate of labor productivity and capital intensity have positive trends in all periods. This results indicate that the increase in labor productivity was due to increase in capital intensity. For both pre reform and post reform periods, capital intensity is only one variable which is influenced by change in wage level in the piece rate industry group. The following table 16 presents the regression results in determination of wage rate in time rate industries.

TABLE 16

Determination of Wage Rate in Time Rate Industry

Sl. No	Periods	Regression Co-efficient				R^2
		Bo	B_1	B_2	B_3	
1.	1982-2003(overall)	3.887874 (0.361058)	0.242003 (0.060846)	-0.056158 (0.052429)	0.005674 (0.030747)	0.24
2.	1982-91 (pre-reform)	3.955045 (0.405508)	0.236933 (0.061809)	-0.140900 (0.061436)	0.533000 (0.033244)	0.38
3.	1991-2003 (post-reform)	4.037113 (0.345034)	0.193530 (0.060580)	-0.035270 (0.048649)	-0.00040 (0.034384)	0.16

Source: computed from the ASI sources of data.

Note: 1.Figures in parenthesis indicate S.E.

2. indicates 1% level Significance

3. ** indicate 5% level significance

4.***indicate 10% level significance

Wages in Time Rate Industries

The regression analysis suggests that Labor productivity has positively influenced wage increases for the periods 1982-2003, (overall) 1982-91 (pre reform) and 1991-2003 (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 period. 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 the wage mainly influence 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 for 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.

ANALYSIS – II

The present study attempts to analyze the trends in wage and related variables between piece rate and time rate industries at the All India level during the period 1982-2003. This part of analysis covers the high piece and time rate industries with six in each category for an in depth calculation towards the objectives of the study. A study of 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 labour and 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 piece rate and time industry groups. They are Cotton Textiles, Leather, Matches, Beedi, Jute spinning and wool spinning industries which have been selected for the category of piece rate industry group. Iron and steel, chemicals, sugar, cement, tyre and tubes and fertilizer industries which have been selected under the category of 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 industries 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. Labour and wage policy should be framed in such a productive way to generate more employment in the country. The overall trends in growth of employment, value added and capital for piece rate and time rate industries in India are presented in the following Table 17.

Table 17

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

Sl.No	Industry	Growth Rates in Percent								
		Employment			Capital			Value added		
		1982-2003	1982-91	1991-2003	1982-2003	1982-91	1991-2003	1982-2003	1982-91	1991-2003
	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 1982-1991 and 1991-2003. The first sub period relates to the pre reform while the second period is after the introduction of reform. The table shows that the annual average growth rates of employment during the post reform period are higher than those industries during the pre-reform period except Beedi and Leather in the group of piece rate industries. 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 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 of employment during pre reform and post reform periods. However the sugar industry has registered a substantial jump in employment from -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 employment for all the piece rate industries 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 1982-2003. 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 growth from 11 percent to 30.3 percent.

All the time rate industries have registered have registered high growth rates during the study period. The growth rate of capital has registered only marginal decrease during the post reform period for 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 have 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 had increased during the post reform period for all piece rate industry groups. The match industry shows that 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 peiod 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 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 1982-2003.

Table 18
Growth of partial Productivities, Capital Intensity
and Total Factor Productivity

Sl.No	Industry	Growth Rates in Percent											
		Labour productivity			Capital productivity			capital Intensity			TFP		
		1982-2003	1982-91	1982-2003	1982-2003	1982-2003	1982-91	1982-2003	1982-91	1982-2003	1982-2003	1982-91	1982-2003
	Piece Rate Industries												
1.	Cotton Textiles	4.8	4.2	5.8	-9.6	-9.7	-9.7	16.9	16.2	18.3	0.05	0.8	-1.0
2.	Leather	8.6	7.4	10.4	-4.3	-5.3	-2.9	13.7	12.7	15.3	0.08	0.6	1.1
3.	Matches	8.2	6.6	10.4	-3.7	-4.8	-2.2	16.4	9.1	26.7	0.73	0.12	1.6
4.	Beedi	3.2	2.3	4.5	-8.3	-14.7	0.88	27.1	36.2	14.0	4.9	6.5	2.9
5.	Jute spinning	3.8	0.9	7.9	-5.3	-8.15	-1.31	17.9	23.9	9.2	8.14	6.9	9.9
6.	Wool spinning	11.9	11.9	12.1	-8.9	-11.1	-5.8	28.3	32.9	21.7	-3.1	-3.6	-2.3
	Time Rate Industries												
7.	Iron and Steel	13.4	7.9	21.2	-5.7	-10.1	0.57	21.5	22.1	20.8	0.85	-2.4	5.4
8.	Chemicals	7.1	8.2	5.5	-6.4	-7.0	-5.5	17.1	20.4	12.4	-3.5	-3.2	-3.9
9.	Sugar	20.8	21.9	19.4	-7.7	-11.4	-2.3	30.6	36.9	21.6	3.0	2.0	4.6
10.	Cement	18.5	24.1	10.4	-6.0	-6.8	-4.9	24.5	31.1	14.1	0.56	2.7	-2.5
11.	Tyre and Tubes	9.6	7.3	12.9	-5.6	-8.7	-1.3	17.8	17.9	17.4	-1.6	-4.1	1.8
12.	Fertilizer	9.5	10.6	8.0	-5.4	-5.5	-5.1	20.4	20.4	20.4	-2.7	-2.1	-3.7

Source: computed from the ASI sources of data

Regarding the growth rate of capital intensity, it is observed that the figure shows sharp decline during 1991-2003 except cotton textiles and matches in the piece rate industry group. Interestingly, 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 seem 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 marginally declined, increasing, in some industries in some others in piece rate industries and for time rate industries during 1991-2003. For both piece rate and time rate industries, it is observed that the growth rate of capital intensity has a 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 increased 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. But the growth rates of labor productivity for both time rate and piece rate industry groups are positive in the study period. The positive 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 than the pre reform period. This finding indicates that there is improvement in capital productivity in the liberalization process.

The following Table 19 presents the average annual Capital-Output ratio of the selected twelve piece and time rate industries during 1982-2003.

Table 19

Average Annual Capital Output Ratio

Sl.No	Industry	1982-03	1982-91	1991-03
	Piece Rate Industries			
1.	Cotton Textiles	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. 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 is higher than that of the pre reform period. The growth rate of value added has 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 1982-2003. In sugar industry, the average annual capital output ratio during the post reform period are higher than the pre reform period. Both piece rate and time rate industries have a tendency of up gradation of technology towards modernization during the post reform period. Thus it may be inferred that the new economic policy!ed to increase in output due to increase in capital - output ratio in Indian industries.

Trends in General Wage

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 1982-2003. 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 have Rs.3,649 as average wage of workers during the study period which has the lowest wage. The average wage during the post reform period are higher than those piece rate industries 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 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 1982-91 to 1991-2003. It is surprising to note that the labor share exceeds value added for jute spinning as this industry is struggling for existence over decades.

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 1982-91 to 1991-2003 for both piece rate and time rate industries. This indicates that these industries are transformed from labor intensive into capital intensive.

The table shows 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 growth rate -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 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 tabor 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

Log w = BO + B1 log Lp + B2 log Emp + B3 log CI,

Where,

W - Wage Rate
Lp - Labour 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 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 piece rate industries except matches and Beedi. The performance of workers and their skill is important in determining wage rate in piece rate industry group during the study period (1982-2003). The insignificance of capital intensity in matches and beedi was due to these industries operated under labour intensive technique.

Table 20
Determination of Wage Rate in Indian Piece Rate Industries

Industry	Regression Co- Effcients														
	1982-98					1982-90					1991-98				
	B0	B1	B2	B3	R^2	B0	B1	B2	B3	B4	B0	B1	B2	B3	R^2
1. Cotton	5.989 (0.792)	-0.177 (0.090)	-0.257 (0.55)	-0.0824 (0.045)	0.72	4.109 (0.719)	-0.122 (-0.078)	0.00245 (0.124)	0.226 (0.044)	0.91	6.778 (3.621)	-0.08113 (0.141)	-0.399 (0.666)	0.0241 (0.075)	0.17
2. Tannery	3.409 (0.734)	0.535 (-0.815)	0.0941 (0.147)	0.119 (0.056)	0.80	5.214 (0.662)	-103 (0.079)	-0.396 (0.159)	0.366 (0.076)	0.84	3.409 (0.734)	0.05357 (0.090)	0.09413 (0.147)	0.119 (0.056)	0.80
3. Matches	4.051 (0.532)	0.103 (0.076)	0.0144 (0.139)	0.0163 (0.054)	0.30	4.051 (0.531)	0.103 (0.076)	0.01449 (0.137)	0.01639 (0.054)	0.29	2.041 (1.214)	-0.0616 (0.093)	0.597 (0.284)	0.0635 (0.078)	0.66
4. Beedi	2.304 (2.869)	0.408 (0.494)	0.156 (0.307)	-0.00374 (0.126)	0.13	-6.959 (7.551)	1.662 (1.131)	1.067 (0.753)	0.162 (0.208)	0.31	3.815 (0.824)	0.0442 (0.156)	-0.06264 (0.1551)	0.0919 (0.88)	0.80
5. Jute spinning	5.468 (0.598)	-0.107 (0.087)	-0.263 (0.131)	0.181 (0.037)	0.84	2.498 (1.465)	0.186 (0.212)	0.200 (0.363)	0.0849 (0.085)	0.76	3.570 (0.977)	0.5049 (0.118)	0.102 (0.249)	0.0962 (0.051)	0.84
6. Wool spinning	3.570 (0.977)	0.505 (0.118)	0.102 (0.249)	0.0962 (0.051)	0.84	6.087 (0.897)	-0.710 (0.119)	-0.400 (1.20)	0.448 (0.052)	0.80	4.540 (1.235)	-0.0245 (0.366)	0.040 (0.278)	0.117 (0.257)	0.33

Source: computed from ASI sources of data

Note: 1. Figure in paranthesis indicate S.E

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

3. ** indicates 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 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 such as employment in determining the wage level during the post reform period.

The following presents the results of the Regression Analysis related to the determination of wage rate in the selected high time rate industries.

TABLE 21

Determination of Wage Rate in Indian Time Rate Industry Group

Industry	Regression Co- Effcients														
	1982-98					1982-90					1991-98				
	B0	B1	B2	B3	R^2	B0	B1	B2	B3	B4	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)	-0.268 (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)	0.91
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 (0.2580	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 indicate S.E

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

3. ** indicates 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 1982-2003. It is observed that the employment has negatively influenced on wage 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 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 the industries during the pre-reform period. At the same time the capital industry 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 significant in the sugar and cement industry. But in cement industry the same coefficient is negative. The interesting point note that the employment has positively influenced on 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 AND CONCLUSIONS

The present chapter makes an attempt to give a brief summary of the earlier chapters. The first section gives the summary and second section gives the major findings of the study.

The need for a National Labour and 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 a revising wage rate and there should be a well accepted social purpose for effecting change in the wage rate or a wage structure. The dilemma of labour and wage policy is especially true in the Nations, such as India, which seek rapid economic development by essentially democratic means.

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

Industrial disputes refer to the differences that affect the groups of employees and employers engaged in the industry. Employment and 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 labour and wages is very much needed.

Wage may be defined as the price paid for the services rendered in production by labor. Industrial workman prefer money earnings to non-cash benefits in spite 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 consideration made by labor to the output which is measurable. The former is called time wage and later is called piece wage.

Piece rate provides incentives 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 complaint 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 textiles industries, 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 work force more committed to the job as the increments depend on the years put in as well as efficiency.

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

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

NATIONAL LEVEL

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 indicates that huge increase in investments in the piece rate industry group may be the result of liberalization process. Generally, the growth rate of capital is 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 time 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 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 rate more than Rs. 15,000 at constant prices.

In time rate 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 for the study period. After reforms it is seen that the wage rate have been increased both piece rate and time rate industry groups.

In both time rate and piece rate industry group, it is observed that there is declined 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 time rate industry group was higher than that of piece rate industry group under this study. The new economic policy has led to an increase in the capital-output ratio in Indian manufacturing industries. The introduction of compels mechanization and automation in leading to the disappearance of unskilled labor 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, 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 time rate industry groups had declined during the 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 distraction between the blue collar and white collar employees may disappear with passage of time because of changes in the manufacturing process and requirement of skill composition id future.

It is observed that both the time rate and piece rate industry group have negative trend in capital productivity during the period and there is no impact of liberalization on these industry groups. A

similar finding was observed by Zile Singh goyal which states that "the decline in Indian industries is a matter of 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. The poverty of productivity extends to labor, capital and use of materials on the one hand and management and administration on the other. Weak norms for productivity emanate from the basal values of the nation 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 processes have positive effect on TFP in time rate industry group as it has curtailed the negative trend.

STATE LEVEL

The industrial performances at the State level are also very important. The State of Maharashtra is the leading one in the industrial performance in India. Poor industrial performance is noticed in Orissa, Kerala, West Bengal and Andhra.

After liberalization, the productivity gap in these States has been widening. On an average, 1.25% growth in TFP is observed in 1982 to 2003. Moreover there exists interstate variation in the labor and capital productivity.

Strong capital deepening and growing capital inefficiency has been found in almost all the states in India. Labor saving bias in the technical progress should be wiped out by labor intensive techniques.

It is imperative to wipe out unrealized technical potentials to the tune of about 25 per cent. On the whole, Economic Reforms had a positive impact on Indian Industries at the State and National levels.

CONCLUSION

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 labor policy, 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 sine independence have not been associated with a rise in real wages not 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 labor and 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 labor and 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 which is 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 or local circumstances becoming aggrieved about perceived inequities. This is difficult to achieve until the complex phenomena surrounding labor and wages are viewed by the government with an open mind and with a multi-disciplinary approach.

India does not have a clearly defined labor and wage policy. From time to time, however, certain policy regulations have been laid down. The main aim of labor and wage policy as we envisage is to being wages into conformity with the expectation of a working class and in the process to maximize employment. The labor and 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, management of a positive relation among labour, 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 allocative function.

A criticism of the 1948 Act relates to the review of minimum wages. Even though the Act provides for at least five yearly reviews, 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 labor at every 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 labor, 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 labor and 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 labor 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 relations to e 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 labour 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 the past six years. They come in two forms - where new employees for a period of time, work for lower wages than senior workers. The waiting 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

It is necessary to recognize the need for ensuring that no employee in any sector of the economy should be paid wages wr ich 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 not been 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 since July 1991 failed to leave any marked impression on the growth of total factor productivity and labour 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 at both national and state levels.

The liberalization programme promoted the process of capital deepening which in turn brought only the inefficiencies in the use of labour and capital inputs. The distortions in the labour 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 tuning 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 labour market. The removal of labour market distortions will encourage the use of appropriate input mix through greater substitution of labour for capital and thus enhance the employment in the manufacturing sector. The labour saving bias in the technical progress should be wiped out by encouraging the application of labour intensive techniques on wider scale. The approach of greater application of labour intensive technique is congruous with the factor endowments of the Indian states and will ease the problem of unemployment. In order to induce a switch over from capital intensive techniques to labour intensive techniques, the government should subsidize the technological development for the fabrication and diffusion of appropriate indigenous labour 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-1

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		328	327		371	37
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			

MAJOR CLASSIFICATION OF INDUSTRIES AT THE THREE DIGIT LEVEL IN INDIA:

200-219	MANUFACTURE OF FOOD PRODUCTS
220-228	MANUFACTURE OF BEVERAGES TOBACCO AND RELATED
230-236	MANUFACTURE OF COTTON TEXTILES
240-248	MANUFACTURE OF WOOL SILK AND MANMADE FIBRE TEXTILES
250-259	MANUFACTURE OF JUTE AND FIBRE TEXTILTILE (EXCEPT COTTON)
260-269	MANUFACTURE OF TEXTILE PRODUCTS (INCL- WEARING APPAREL)
270-279	MANUFACTURE OF WOODEN AND WOOD PRODUCTS
280-289	MANUFACTURE OF PAPER AND PAPER PRODUCTS
290-299	MANUFACTURE OF LEATHE RAND LEATHER PRODUCTS
300-309	MANUFACTURE OF BASIC CHEMICAL PRODUCTS
310-319	MANUFACTURE OF RUBBER, PLASTIC, PETROLEUM AND COAL
320-329	MANUFACTURE OF NON METALLIC MINERAL
330-339	MANUFACTURE OF BASIC METAL AND ALLOYS
340-349	MANUFACTURE OF METAL PRODUCTS AND PARTS
350-369	MANUFACTURE OF MACHINERY AND EQUIPMENT
370-379	MANUFACTURE OF TRANSPORT EQUIPMENT
380-389	MANUFACTURE OF OTHER MANUFACTURING INDUS.