

**INTER-INDUSTRY WAGE DIFFERENTIALS IN
INDIAN MANUFACTURING**

**A Dissertation
Submitted in partial fulfilment of the
requirements for the Degree of
Master of Philosophy
(M.Phil)**

by

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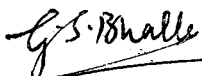
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I certify that the dissertation entitled
"Inter-Industry Wage Differentials in Indian
Manufacturing", submitted by Mr Rakesh Kumar, in
fulfilment of six credits out of the total twenty-
four credits for the Degree of Master of Philosophy
(M.Phil.) of this University, is to the best of my
knowledge, his original work, and may be placed
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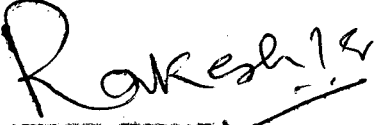
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CHAPTER 1

INTRODUCTION

1.1 EMERGENCE OF THE WAGE SYSTEM

There will be few to deny that in dealing with the wages question one is dealing with something that is very intimately related to the conditions of our modern economic system, and that the problems which one meets derive their essential shape from the special features and institutions of that system; for example, from the form in which property is owned and its distribution and from the nature of production and the division of labour. If we examine the features which distinguish wages as they are paid today from other ways in which work in times past was performed and paid for, and seek to define the character of the present wage system in these terms, we shall see that some fundamental distinctions exist which give a unique character to the actual problems with which the modern industrial system is faced. One important respect in which they differ is in the differing degree of economic freedom enjoyed by the worker, this in turn depending on the relationship in which he stands to economic property - either owning it, or not owning it, or himself being regarded as property in the possession of a master. It is the form which property rights take which determines the form of

relationship between men-between social groups or classes. Under both slavery and serfdom the freedom of the worker is closely circumscribed by law; but under the wage system the worker is bound by no such legal ties.

This view, however, is not the whole of the matter, and on examination turns out to be so one sided a picture as to contrast in some respects grotesquely with reality. In the actual wage system of modern industrial civilization the choice of the labourer has been drastically curtailed. The limitation of choice, it is true, is no longer a legal limitation as of old; it is an economic limitation which is as effective of its kind as the legal compulsions which it has supplanted. This limitation consists in the fact that, in the conditions of modern capitalism, the labourer is a member of a propertyless class; a fact which narrows his freedom of choice and confines it to those means of livelihood which do not require the possession of any land or capital. In other words; it confines his choice as a rule, to hiring out the labour of his hands for a wage.

One can accordingly say, that in every case in history where a wage system has appeared, the rise of this system seems to have been preceded by the removal of legal restrictions which bind the worker to a particular master and the growth of a propertyless class, or a proletariat,

willing to hire itself for wages because it has no alternative livelihood.

The second development particularly occurred in a variety of ways. Partly it occurred through the natural growth of population, in excess of the numbers that could be accommodated on the land; and existing land, becoming scarce in relation to the demand for it, acquired a considerable value in the hands of its owners and grew to be only obtainable at a price. There developed a propertyless class as a result of the progressive impoverishment of a section of the peasantry by indebtedness and the mortgaging of their land to traders and money lenders. As a final stage in the process came power machinery and factory production, which by competition took away the livelihood of the handloom-weaver or hand tool maker, and forced all except those who had the means to set up a factory themselves to migrate to the towns and seek wage employment.

1.2 WAGE THEORIES: A SURVEY

In treating wages, we can either confine ourselves to the causes, which operate on them generally, and en masse; the laws which govern the remuneration of ordinary or average labour; without reference to the existence of different kinds of work which are habitually paid at different rates, depending in some degree on different laws,

or we can take into consideration the quite wide differences which are found, both in wages per hour and per piece, between different grades of workers, and between different districts and different industries inside the same country.

Traditional theories of wages, mainly dealing with the first question have been of a fairly rigid kind: that is they have given a fairly simple and definite statement of the factors which determine the level of wages. Most of them have implied that the level of wages cannot, save in rather exceptional cases, be permanently altered (at least, without corresponding damage to wage-earners in some such form as unemployment) by interferences with the free play of economic forces in the labour market, whether this interference takes the form of trade union action to compel employers to employ men at a certain standard wage or of legislative action by the state to impose a minimum wage.

From time to time criticism has been levelled against such theories, on the ground that they neglect a number of important relationships (specially a reflex-influence of the wage level on the given factors) and assume that wages are much more rigidly determined by the given factors which these theories emphasize than is really the case; and in recent years such criticism has again gathered force and accumulated some weighty arguments in its train.

These theories, however, can be broadly classified into two main types, according to the type of determining factor on which their emphasis has rested. On the one hand are those theories which have explained wages predominantly in terms of factors which influence the supply of labour power - virtually, cost of production theories of wages.¹ On the other hand are those theories which have treated wages as being determined primarily by certain factors which influence employer's "demand" for labour, such as the supply of capital and/or the productivity of labour.² Some economists (most notably, Marshall) have tried to erect a synthesis of the two types of explanations and to hold a balance between the two sets of determining influence; and so have produced a theory of hybrid type.³

But an important, if subordinate, half of the theory of wages had always dealt with the causes of wage-differences; and in the practical problem of wage regulation this question of particular wages occupies a prominent place.

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1. The Subsistence Theory of Wages. David Ricardo, (1817), Principles of Political Economy and Taxation, ed. R.M. Hartwell, Penguin Books, England, 1971.
 2. As John Stuart Mill put it "Wages not only depend upon the relative amount of capital and population, but cannot, under the rule of competition be affected by anything else." John S. Mill, (1848), Principles of Political Economy, ed. Donald Winch, Penguin Books, England, 1970.
 3. See in particular Principles of Economics, Alfred Marshall (Eighth Edition), Macmillan and Co. Ltd., London, Book VI.

Even in earlier times, wage discrimination was a rule rather than an exception. Enforcement of wage differentials was rampant at all levels, at personal level, at firm level, at industry level and at regional level. This does not imply that all the differentials were exploitative in nature. Some of the disparities in wage rates may have been in the nature of what Adam Smith had characterized as "equalizing differences" - the wage differentials that equalized the "net advantages" in all the occupations.¹ But such "equalizing differences" in wage rates explain only a part and not the whole of the story of the wage differentials. In a world of imperfect competition and unequal bargaining strength of the contracting parties, a good deal of differences of wage rates had their origin in the exploitative relations between the capitalist and the workers. A most glaring example of it can be found in the wage rates paid to male, female and child labour for the same type of work, especially during the early stages of the Industrial Revolution in U.K.

However, with the passage of time, labour became more and more aware of its role in the production process. They organised themselves into trade unions and started fighting for their rights in a concerted manner. This and

1. Adam Smith, The Wealth of Nations (Cannan's Edition), Book I, Ch. X.

the increasing complexity of the production process led to a reduction in the size of wage differentials. However, the remnants of almost all types of wage differentials can be discerned to a greater or smaller degree, even in the present day societies.

It is a fact that labour occupies the place of central importance in the production process. In the light of this fact, the wage rates become one of the most important factors in the socio-economic set up of any society. This particular aspect of economic theory is linked up so intricately with the day-to-day problems of an economy that its neglect can jeopardise the feasibility of any socio-economic programme to the extent of making it practically meaningless.

Despite the overwhelming importance of wage theory, the treatment meted out to this particular aspect of distribution theory seems to be quite inadequate. Notwithstanding the attempt by Adam Smith at an explanation of the wage differentials in the terms of "equalizing" factors, there had always been a tendency to attribute wage differentials to the force of custom. These differentials, once determined by tradition, were thought to remain stable over a considerably long period of time. An instance of

this particular approach can be found in David Ricardo.¹ Secondly, the deep rooted belief in wages-fund doctrine and laissez faire economy led the Classicists to believe that the trade unions and the government had no role to play in the determination of the wage rates. However, during the last phases of the Classical era, this view underwent a change. John Stuart Mill, a great follower of Adam Smith and Ricardo, found the governmental and trade union activities not only desirable but also beneficial.²

Even though the limitations of the assumption of perfect mobility and hence of the competitive system were realized in the latter period of the Classical thought, the Marginalists and the Neo-classicists, again, committed themselves to perfect competition as the determinant of all prices. Wages were considered to be determined just like any other price ignoring the specific nature of this particular factor of production. This was the case till about 1930s when the publication of Joan Robinson's Economics of Imperfect Competition and Chamberlin's Theory of Monopolistic Competition brought about a significant change in the thinking on the question of wages.

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1. The fact becomes quite clear from Ricardo's observation that "If a day's labour of a working jeweler be more valuable than ... (that) ... of a common labourer, it has long been adjusted and placed in its proper position in the scale of value." (emphasis added), see, David Ricardo, (1817), Principles of Political Economy and Taxation, op. cit., p. 63.
 2. John S. Mill, (1848), Principles of Political Economy, op. cit.

Thus we find, from a brief survey of the economic literature that the wage theory was given a step-motherly treatment till about fifty years ago. This lack of interest in the problems of wage determination and in the explanation of wage differentials, in particular, has been mainly responsible for the lack of analytical tools and the inadequate data base regarding the wage problems. However, since 1930's a fairly good amount of literature on wages and related problems has been pouring in. The question of wages is no longer considered to be the determination of a single rate. It is the whole gamut of wage rates which operate in an economy, that has become the focal point of the modern wage theory.¹

1.3 IMPORTANCE OF THE STUDY

Wage theory is full of interesting research problems both on the theoretical as well as on empirical plane.

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1. For example, D.J. Robertson comments that "while for some purposes in economic theory it is perfectly proper to refer to wages as the price of labour, in actual fact we are talking about a large range of prices of diverse types of workers" (emphasis added). See, D.J. Robertson, The Economics of Wages, Macmillan, London, 1961, p. 63. Also see John T. Dunlop, "The Task of Contemporary Wage Theory" in John T. Dunlop, (ed.), The Theory of Wage Determination, Macmillan, London, 1964. Prof. Frank C. Pierson suggests that contemporary wage theory is concerned with "...how choices among alternative wage policies are made, what determinants shape wage relationships, and what effects follow from wage changes." See Frank C. Pierson, "An Evaluation of Wage Theory" in New Concepts of Wage Determination (New York: McGraw-Hill Book Company, Inc., 1957).

Importance of wage analysis lies basically in its implications for the wage policy which is an important and sensitive policy issue in the present day under-developed countries.

The I.L.O. defines the term 'Wage Policy' to mean "legislation or government action calculated to affect the level or structure of wages, or both, for the purpose of attaining specific objectives of social and economic policy".¹

Thus a wage policy seeks to influence the level or structure of wages or both. This it can do either by formulating broad guidelines for the fixation or revision of wages in the economy generally or by laying down a detailed scheme for the regulation of wages in individual industries or in the economy as a whole in terms of precisely formulated norms and standards. A wage policy aims at imposing a discipline on all wage payments in the economy so that excessive, inadequate or inappropriate wage payments may not come in the way of the fulfilment of the objectives, economic and social, which the country has set for itself in pursuit of steady national development.

1. Problems of Wage Policy in Asian Countries (Geneva: I.L.O., 1956), p. 39.

"No Government can avoid having a wage policy. Even non-intervention is a policy. Since Government must be concerned about the general level of economic activity, they must also be concerned about the general wage level".¹

It is not in the purely technical sense of even non-intervention amounting to a policy that the question of evolving a wage policy is being considered here. Wage policy should be an active and vigorous instrument for the purpose of achieving the economic and social goals set up by society.

The role of wage policy in contributing to society's economic and social goals is somewhat different in developed countries from what it is in developing countries. Broadly speaking, wage policy assumes importance, if not concern, in a developed country only during an economic or national emergency, such as, for instance, a serious adverse balance of payments or a severe inflation, particularly during war. The state then tries to cope with the emergency by applying a wage policy which might place severe restraints on excessive wage increases for a limited period. Any restrictive wage policy would, therefore, have to interfere with the normal course of wage fixation and is viewed with disfavour except in a

1. B.C. Roberts, National Wage Policy in War and Peace (London: George Allen and Unwin Ltd, 1958) Chapter 1.

national emergency. Says B.C. Roberts: "In Britain and America intervention has been looked upon as a regrettable necessity rather than as a desirable activity on the part of the Government".¹

Not so in underdeveloped countries. There, wage policy is not looked upon as a desperate remedy for a difficult situation in a serious economic and social crisis. In underdeveloped countries wage determination is considered a matter of such fundamental public importance that it can't be left to the uncontrolled activity of employers and trade unions. The capacity of the economy as a whole is a relevant consideration in all major wage changes.

Also, higher the level of development of an economic system the easier it becomes to formulate a wage policy. This is because of the fact that as higher levels of development are achieved, the number of dimensions to be taken into account for the formulation of a wage policy are drastically reduced. For example, at higher development levels, the problems of minimum wage or fair wage etc., lose their importance to a great extent. Even the conflict between the problem of economic growth and social justice is reduced. Hence the formulation of wage policy in a developed economy becomes much easier. In a developing country like India, all the compulsions behind the

1. Ibid., Ch. I.

institution of wage policies that obtain in advanced countries are present along with several others. The underdeveloped countries abound in all the acute problems associated with wide spread destitution - poverty, unemployment, inequality and all that. The rising consciousness of the general mass of people moulds the political forces in such a manner that the aspirations of the people are bound to rise to great heights. Non-fulfilment of these aspirations leads to political instability which is quite widespread in the third world countries today. The goal of development with social justice being the most important objective of the economic policy in most of the under-developed countries, underplaying of the distributive aspect of economic development (of which the wage policy forms an important part) can prove to be disastrous.

Professor H.A. Turner, comes to the conclusion "that the tendency towards Government promoted or imposed 'Wage and incomes policies' in the less developed countries will accelerate and that public agencies will accept (if they do not demand) an increasing influence on the level, structure and trend of wages".¹ He gives five reasons why the question of a formal wage policy can't be avoided in

1. In Anthony D. Smith (ed.) Wage Policy Issues in Economic Development (London: Macmillan and Co., 1969), Paper 7, p. 212.

these countries. In the first place, any system of dispersed wage determination has grave risks for social well-being or national economic welfare. Secondly, the Government and other public bodies are involved as major employers in the whole process of wage fixing. Thirdly, economic planning processes involve important considerations of cost. Decisions on investments to create employment, on the attraction of overseas capital, on the encouragement of exports, etc. are concerned with questions of wage policy. Fourthly, the pressures of development produce powerful social tensions because of income inequalities and public intervention becomes inevitable. Finally, the Governments of underdeveloped countries may find it difficult to correct the developments leading to tensions by indirect methods, namely monetary and fiscal policies, and may have to exert direct influence on income distribution.

Seen in this background, formulation of a wage policy becomes an extremely complex and sensitive area of public policy. The architect of a wage policy requires a complete grasp of the objectives of wage policy and also the objective conditions under which this policy has to be implemented. Without a proper understanding of these two variables, the policy maker can't discharge his duty in a proper manner. A remark by the National Commission

on Labour, 1969, seems to be very appropriate here.¹

"Issues concerning wage policy are interconnected with broader economic decisions on the one hand and on the other with the goals set for social policy. So it is obvious that no principle of wage policy can ever be applied in vacuum and in disregard of realities of a situation. Wage policy has to be pragmatic, though it does not follow that it has to be unscientific..."

One of the most important and the least controversial objective of a wage policy is reduction, if not elimination, of any unjustifiable wage disparities that are present in a wage system. The participants in a symposium on "Wage Policy Issues in Economic Development"² held under the auspices of the International Institute of Labour Studies, were critical of the development of high wage islands in underdeveloped countries. The existence of high wage islands, it was felt, had undesirable equity implications, since pronounced remuneration differences for workers performing essentially similar work contributed to the inequalities of income distribution in developing countries. Professor Berg summed up the general attitude thus:

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1. Report of the National Commission on Labour, 1969, Ministry of Labour and Employment, Government of India.
 2. Anthony D. Smith (ed.), Wage Policy Issues in Economic Development, op. cit.

"there is no good economic reason why men doing similar work in different industries should be paid vastly different wage rates... nor is there any economic justification for allowing higher than normal profits to be shared only by workers who happen to be in the highly profitable firms or industries; profits should rather be shared by the society as a whole through government taxing and spending".

There was also a greater agreement that manual skill differentials were large both in comparison with those obtaining in developed economies and more particularly in relation to the differentials needed to induce sufficient workers to acquire the necessary skills for economic development.

Nearer at home, of all the five year plans that have so far been completed, the First Plan which more than any of the others, tried to evolve sound principles in regard to wages, showed much concern for existing anomalies in the wage structure and recommended that¹

"All wage adjustments should conform to the principles of social policy and disparities of income have to be reduced to the utmost"

and that

"the process of standardization of wages should be accelerated. There should be a progressive narrowing down of disparities in the rates of remuneration of different classes of workers in the same unit, of workers engaged in similar occupations in different units of the same industry, of comparable occupations in different industries and in the same industry in different centres".

1. Planning Commission, First Five Year Plan.

Regarding standardization of wages, the Supreme Court ruled that:

"The basic principle of standardization of wages is to bring all wages to the standardized level by raising wages which are unduly low and lowering wages which are unduly high. It is improper to direct that the existing wage scales which are higher than the fixed standard shall continue to prevail".¹

Referring to the existence of dualistic wage structure in the Indian Economy, the National Commission on Labour adds.²

"Wage differentials consequent on the dualism, that is, simultaneous existence of the modern capital - intensive sector and the traditional labour-intensive sector are, therefore, inevitable and desirable. But this does not necessarily mean that all existing differentials are scientific or based on differences in productivity. Steps should, therefore, be taken to standardize job classifications and reduce differentials, wherever necessary to suitable limits on a scientific basis".

The conclusion arrived at is that in all the official documents on Wage Policy much concern had been shown for existing wage disparities and there is a growing realization on the part of our policy framers that all unjustifiable wage differentials should at least be reduced, if not eliminated.

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1. Birla Cotton Spinning and Weaving Mills Ltd, Delhi V Its Workmen, 1962, L.L.J.I., p. 642.
 2. The Report of the National Commission on Labour, 1969, op. cit.

It is, however, only one of the many types of differentials that we propose to analyse in the present study. To be specific the objective of the present study is to investigate the inter-industry wage differentials in the Indian Economy.

However, before going over to the main subject matter of our study we must try to acquaint ourselves with various types of wage differentials that characterize wage structure in any economy. The following section deals with this aspect.

1.4 TYPES OF WAGE DIFFERENTIALS

The structure of the present day economies is so complex that an overall analysis of all types of wage differentials at a single point of time is quite difficult. Since the wage differentials arise out of certain characteristics of labour force, certain broad groups of labour force can be identified which have more or less similar characteristics. It is not to suggest water tight compartmentalization of labour force into these groups. Various types of differentials have, as will be seen shortly, a tendency to shift over to and even merge into the others. For example, skill differentials may reflect themselves in inter-industry and inter-regional differentials. The most representative classification, in our view, has been the

one given by Clark Kerr.¹ He notes five major types of differentials that constitute the wage structure of any economy. These are:

- i) Inter-personal Differentials;
- ii) Inter-firm Differentials;
- iii) Inter-regional Differentials;
- iv) Inter-occupational Differentials;
- v) Inter-industry Differentials.

The above list is by no means exhaustive. Other types of differentials can also be discerned. For example, we may have wage differentials based on racial heterogeneity or on the basis of sex differentiation. But all of these types of differentials can be put under one or the other of the above headings. Besides, some other types of differentials are gradually losing their importance.

Let us try to look into the causes of various types of differentials. The first on the list are the inter-personal differentials which are, to a greater degree, exploitative in nature. Such personalized rates, reflecting the merit of the worker or the prejudices of the individual employer used to be quite common when the size of the firms was very small, technology was not as complex as it is today, and finally, the workers were unorganized. The ever increasing size of the firms, the increasing complexity of the production process and the

1. Clark Kerr "Wage Relationships - Comparative Impact of Market and Power Forces", in John T. Dunlop(ed.), The Theory of Wage Determination, Macmillan, London, 1964, pp. 173-193.

development of the institutionalized labour markets have reduced the scope of this type of wage differentials. The movement towards centralization of hiring by employers and the experience in several countries with governmental wage controls as well as trade union pressures have aided this change. The interpersonal wage differentials of the exploitative nature have thus lost ground. Even then, we can find differentials based upon racial factors etc. though they are not as wide spread as they were in the initial phases of capitalist development.

The second type of wage differentials are the inter-firm wage differentials. A number of reasons that go into the making of these differentials can be thought of. Even when various firms are operating within the same labour market area, they tend to pay different wage rates to workers performing similar functions. This may be due to the efforts put in by various firms to attract more and the best labour force to their respective firms. Higher wages in a firm may also be paid in order to induce workers to perform their functions more efficiently and to raise their productivity. These types of wage differentials are more common in the imperfect and restricted labour markets. Another factor that can cause inter-firm differentials is the lack of knowledge on the part of the labour force about alternative job opportunities in other labour market areas. This restricts mobility and causes temporary shortage

or oversupply of particular skills in a particular labour market. This results in differential rates of payment to the workers by different firms.

Besides these, there are some other factors like the nature of product market, efficiency of capital and the extent of trade union organization that affect inter-firm wage differentials. These factors were pointed out by Nassau Senior more than a century ago. Nevertheless, these factors still have their importance in explaining inter-firm wage differentials. Differences in product market depend upon: (i) the fashions, (ii) the foreign demand, and (iii) storability of commodities.¹ All these factors influence the derived demand for different types of labour in different firms producing diverse types of products. Senior, however, believed that trade unions, by destroying individual incentives, tended to depress wages in the unionized firms.² The modern economic analysis shows, on the other hand, that this may not necessarily be the case. Unionization, in fact, has tended to narrow down the inter-firm wage differentials, through raising the wage rates in the low-paying firms.³

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1. See L.R. Salkever, Toward a Wage Structure Theory, Humanities Press, New York, 1964, pp. 44.
 2. L.R. Salkever, *ibid.*, pp. 44.
 3. Clark Kerr, *op. cit.*, pp. 173-193.

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A third type of wage differentials are the inter-regional wage differentials. Inter-regional or inter-area differentials, as they are called, are not "pure" differentials. In order to explain these differentials one must keep in mind the fact that to the extent the industrial structure in different regions varies, the average regional wage rate will also vary. In the regions having a greater proportion of 'high-wage paying industries', the average regional wage rate will also be higher than that in the regions specializing in 'low-wage paying industries'. This particular component of the inter-regional wage differentials is better known as the "structural effect" or the "structural component" of the regional wage differentials.

Inter-regional variations in the industrial structure, however, do not explain the whole amount of variations in regional wage rates. Besides the "structural component" of the regional wage variations there is a "regional component" as well. This component owes its existence to the specific features of the labour force in different regions as also of the regional labour markets. For example, a regional labour market may be 'labour surplus' or 'labour shortage' market. Depending upon whether the inter-area mobility of labour force is high or low, the regional wage rates will tend to vary. Secondly, the local labour market itself may

be imperfect in a number of ways. First of all we may have the condition of imperfect dissemination of knowledge. Depending upon the variation in the degree of imperfection introduced by this variable, the regional wage rates may tend to differ. Another feature that may make the labour market imperfect is the control over the demand for and supply of labour. This brings us to the role of employer's and the worker's organizations in the determination of wage rates and hence explanation of the variation in them.

Still another factor that may account for inter-regional wage differences is the 'cost of living' in different regions. This factor as an explanation of regional wage structure was, first of all, pointed out by Quesney.¹ Another factor that can go to explain variations in regional wage structure is the 'level of agriculture wages'. Agriculture wage rates compete with the industrial wage rates and hence affect the supply of labour to industry. If the agriculture wage rates differ between regions, there is every reason to believe that industrial wage rates will also differ between regions, in so far as the latter are dependent upon the former.

Another factor that seems to be quite important is the industrial productivity in different regions. This

1. See L.R. Salkefer, op. cit.

factor also, like the regional wage rates, is affected by two sets of variables - the industrial structure, and the "other" local factors like educational composition of the population, the quality and the quantity of other resources available and their utilization etc. A variation in these "other" local factors between the regions will also be reflected in the regional wage differentials to the extent productivity of labour force determines the level of wages.

Besides these factors, the Government policy may also cause (deliberate) imbalances in the industrial wage rates over the regions. In the regions that are lagging behind others in the levels of industrial development, an artificial jacking up of the wage rates in the initial periods may become necessary.

To quote John R. Abersold, the inter-regional wage differentials arise mainly because of; relative abundance of natural resources; differences in labour productivity; differences in cost of living; rate of capital formation; extent of union organization; size of communities; rates of population growth; economic characteristics of areas; labour supply in relationship to capital; inertia of workers; quality of labour supply; and tradition.¹

1. John R. Abersold, Problems of Hourly Rate Uniformity (Philadelphia: University of Pennsylvania Press, 1949), pp. 48-58, quoted in Jules Backman, "Wage Determination" (D. Van Nostrand Company, Inc. 1959), pp. 38.

Occupational Wage Differentials:

Occupational wage differentials, are the most important, and in our opinion the most fundamental differentials. These differentials, in one form or the other, give rise to almost all other types of wage differentials. These are particularly important from the point of view of the inter-industry wage differentials. In fact, a large part of the inter-industry wage differentials can be explained in terms of the occupational wage differentials. The existence of occupational wage differentials coupled with the fact that different industries require different occupational structure might contribute significantly towards the inter-industry wage differences. It is this overwhelming importance of occupational wage structure in the explanation of the overall industry wage structure that has prompted us to devote a separate sub-section to this particular type of wage differentials.

Occupational differentials in wage rates are generally recognized as vital to the existing system of wages. Not only do they make possible compensation in accordance with skill, effort and working conditions, but they are necessary to ensure a sufficient supply of skilled and trained workers... To the worker in a particular occupation, wage differentials mean additional income for more arduous or more skilled performance. Differentials also indicate

differences in craft or trade prestige.¹

A main focus of dissatisfaction with the present state of the literature on labour markets is the size and nature of wage differentials within narrowly defined occupations. This is not merely our own dissatisfaction; it has often been expressed by others. For example, Professor Richard A. Lester begins a well known article with this sentence: "No satisfactory explanation has been developed for the continued existence of genuine inter-occupation and inter-industry wage differentials".² He goes on to note that neoclassical wage theory presumed that such differentials could not persist, but empirical research uniformly shows that they do.

The theory referred to is more accurately described as classical than as neoclassical. Its best expression is still Adam Smith's chapter "Of Wages and Profits in the Different Employments of Labour and Stock" (Chapter X of Book I), which begins with the famous passage:

"The whole of the advantages and disadvantages of the different employments of labour and stock must, in the same neighbourhood be either perfectly equal or continually tending to

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1. Harry Ober, "Occupational Wage Differentials in Industry", in W.S. Woytinsky and Associates, Employment and Wages in the U.S. (New York, 1953), pp. 466, 473.
 2. Richard A. Lester, "A Range Theory of Wage Differentials", Industrial and Labour Relations Review (July, 1952).

equality. If in the same neighbourhood, there was any employment evidently either more or less advantageous than the rest, so many people would crowd into it in the one case, and so many would desert it in the other, that its advantages would soon return to the level of other employment".¹

Recent research has questioned both the tendency toward equality of net advantages and the existence of mobility that is supposed to bring it about. Some authors have concluded that employed workers are reluctant to change jobs in search of higher wages and that they have very little information about alternative jobs. These findings have been interpreted as denying the presence of an important connection between mobility and wages. Professor Lloyd Reynolds has written:

"Voluntary movement of labour - the only type of movement which is relevant here - seems to depend more largely on differences in availability of jobs than on differences in wage levels. Consequently, people engaged in setting wages often make little explicit reference to mobility as an influence in their decisions. The process of wage determination and labour mobility seem to go on with only a peripheral relation to each other."²

It should be noted that Adam Smith wrote of the tendency toward equality not of wages alone, but of the whole of the advantages and disadvantages of an employment. He recognized that certain non-monetary advantages and disadvantages would be compensated for by persistent

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1. Adam Smith, The Wealth of Nations (Cannan's Edition), Book I, Ch. X, pp. 99.
 2. Lloyd G. Reynolds, The Structure of Labour Markets (New York: Harper and Brothers, 1951), p. 3.

differences in wage levels. Some critics of classical theory have suggested that this formulation makes the theory tautological - some set of non-monetary factors could be adduced to explain any set of wage differentials that might be observed.¹ This is indeed a valid criticism of writers who leave the set of non-monetary factors unspecified or open ended. It does not apply to Adam Smith, because he carefully specified the factors he thought important, and the direction in which he expected them to work. Not being blessed with labour statistics and an electronic computer, he was, of course, not very precise about their magnitude.

In the general context of comparisons of wages among occupations, Smith specified five factors accounting for persistent differentials. It is primarily from the supply side that Smith tried to explain the differences in wage rates between occupational groups. The following factors may affect the supply of qualified workers seeking jobs in any particular occupation or line of work.

1. One statement of this view reads in part as follows "When one confronts the awkward fact that people do not always seek the better paid job, even when they know it is there, the economist has always resorted to the argument that men do not maximise money but net satisfactions... Once the assumption that man maximizes money is replaced by the assumption that he maximizes net satisfactions which are not specified, no predictions of his market behaviour can be made". Kenneth F. Walker, "The Psychological Assumptions of Economics", The Economic Record, 22 (June 1946).

(1) The agreeableness or disagreeableness of the employment; (2) The easiness and cheapness, or the difficulty and expense of learning them; (3) The constancy or inconstancy of employment in them; (4) The small or great trust which must be reposed in those who exercise them; (5) The probability or improbability of success in them.

In the first place, for example, one would expect people to shun the more disagreeable or the more dangerous occupations unless the wages in those trades were sufficiently higher than elsewhere to offset this extra disagreeableness or danger. The result of this common dislike for some trades would be to make applicants for employment in those trades more scarce than elsewhere; and this very scarcity would tend to raise the wages in those occupations. Similar considerations would apply to an occupation which involved a greater chance of unemployment or wide uncertainty of earnings. On the other hand, if certain trades were particularly pleasant or interesting, or carried with them some special social distinction or prestige, or special privileges or chances of advancement, one would expect popular preference to flood these trades with applicants for employment and cause labour there to be cheaper than elsewhere.

Also, people would be likely to shun those employments which required a costly education or training or a long

period of probation or apprenticeship during which nothing was earned; and this would tend to raise wages in those employments until they were higher than elsewhere. The expenditure on the preliminary training would then be in the nature of a capital outlay which would only be undertaken if the higher wage to be gained in the future seemed to make the outlay worthwhile. The difference between the wages of skilled labour and those of common labour, is founded upon this principle.

Smith's next factor is very different from the other three, which arise entirely from worker's preferences. He argues that wages will be higher the greater the trust reposed in the worker. But this can't mean that goldsmiths and jewellers dislike being trusted. Rather, Smith seems to be arguing that the number of trust worthy people is small relative to the need for them, so that at wages no higher than those of ordinary jobs there would be excess demand. The bidding up of wages for such occupations reduces the number of workers demanded and induces additional workers to conduct themselves in such a way that they will be considered trustworthy. Clearly trustworthiness is but one example of a large set of characteristics related to the quality and productivity of labour and its value to the employer.

The role in wage determination of differences in quality among workers was developed by Alfred Marshall in the concept of "efficiency earnings". He argued that competition does not tend to equalize the hourly or weekly money wages of individuals in the same occupation, but rather tends to equalize their earnings per unit of work performed. Differences in weekly earnings are consistent with competitive labour markets if they correspond to differences in productivity.¹

One might, further, expect employments which required some scarce natural aptitude, to offer an abnormally high wage. But in this case the favoured person could well be considered as receiving an exceptional type of "scarcity - price" or "rent" of a scarce natural quality.

But in the actual wage system under which we live "equality of net advantages" is very far from being realised; and the extent to which wages vary more widely than the advantages and disadvantages of different occupations is considerably greater than can be reasonably explained by the final cause that we have mentioned. Most of the unpleasant work of the community is among the lowest rather than the most highly paid, as is much of the

1. Alfred Marshall, Principles of Economics, 8th Ed. (London: Macmillan and Co., 1930), pp. 546-49.

work involving danger to health and life. Low wages are frequently combined with fluctuating and inconstant employment; and the level of incomes in skilled occupations and trained professions is generally higher by considerably more than can be called a reasonable interest on the capital laid out in the preliminary training. Clearly some further explanation of wage differences is required.

This further explanation is supplied as soon as we remove the artificial assumption that every wage earner has an equal chance of entering any occupation. In actuality this is far from being the case. The chief reason lies in the fact that differences of income once established are apt to perpetuate themselves in a world where the cost of training for an occupation is an expense which the individual wage earner has to find out of his own pocket. It is this fact that the supply conditions of different grades of labour are so largely affected by the prevailing wage-differences between those grades which is apt to make any attempt to talk about fair or 'normal' wages of one grade relatively to another an argument in a circle.

But the existing wage-differences may not only affect the supply of labour in different grades by their influence on the number of people who can afford the cost of training; they may also do so by their influence on conventional notions as to what is and is not a "disagreeable" trade.

So apart from the factors mentioned earlier, a large part of the occupational wage differentials can be explained in terms of the obstacles to the horizontal movement (so to speak) between different grades of labour.

1.5 INTER-INDUSTRY WAGE DIFFERENTIALS

Differences in average earnings among industries represent a combination of true inter-industry differences (the relative wage levels of different industries for workers in the same occupational category and geographical area), geographical differences (the relative wage levels of workers in the same industry and occupation, but in different geographical area), occupational differences (the relative wage levels of different occupational groups in the same establishment) and differences in personal characteristics of the labour force (the relative wage levels of workers who are in the same establishment and occupation but who differ in age, sex, race or other personal characteristics).

It simply is not possible to eliminate occupational, geographic, and other differentials from the wage figures for various industries. However, a large part of the total inter-industry differentials can be explained in terms of occupational differentials, defined broadly, as the relative wage levels of different occupational groups

in the same industry. Based upon the nature of the product and the technique of production employed, every industry requires a different type of occupational structure (skill mix). The requirements of skill mix in case of industries like the aeronautics, are highly weighed in favour of highly skilled labour as compared to, say, the requirements in cotton textile industry. This is so because not only the nature of the product but the technique of production as well, require the services of highly trained workers in the case of aeronautic industry. As pointed out earlier, high skill labour commands higher wage rates. Hence the industries in which the occupational structure is weighed heavily in favour of high skill work force, the average wage rates will be higher in comparison to those industries in which the average requirement of skill is lower.

Inter-industry differentials may well follow the same course as occupational differentials. Such a parallel development is to be expected because inter-industry differentials are in significant part, skill differentials. This is particularly true at the extremes. The high ranking industries historically have been industries with many skilled workers; the low ranking industries have been industries with many semi-skilled

and unskilled workers. The contribution of the skill mix to the wage levels of the several industries is also indicated by the similarity in inter-industry wage differentials among countries where other potentially influential factors, like the organization of workers or the structure of product markets are quite diverse.¹

The skill mix, while it is probably the basic underlying force in determining inter-industry differentials, is not the only important factor. Just as occupational differentials affect inter-industry differentials, so also changes in inter-industry differentials (for reasons other than changes in occupational differentials) will, in turn, affect occupational differentials. Some industries have much higher wage scales (both for unskilled and skilled labour) than do other industries. There exists what some economists have termed "unfairness" of wages as between industries - unfair in the purely relative sense that labour is paid less (or more) in one industry than labour of equivalent skill and efficiency elsewhere. To quote Professor Richard A. Lester:

"Some industries have much higher wage scales (both for unskilled and skilled labour) than do other industries. In terms of both entrance rates for common labour and of average hourly

1. Clark Kerr, "Wage Relationships - Comparative Impact of Market and Power Forces" in John T. Dunlop, (ed), The Theory of Wage Determination, Macmillan, London, 1964.

earnings for all production workers, the following are high wage industries not only in this country but also in general; petroleum refining, automobiles, railway equipment, chemicals, rubber tyres and tubes and aircraft. By the same token, wage scales are relatively low in such industries as tobacco, cotton textiles, food preparation and canning, lumber, and furniture.

Various economic factors have been singled out to explain why wage scales can be and are higher in some industries than in others. Professor Richard A. Lester offers the following array:

"Statistical comparisons indicate that an industry is likely to have relatively high average hourly earnings if (1) it has a large capital investment per worker, (2) labour costs are a low percentage of its total production costs, (3) employment in the industry has been expanding rapidly, (4) its productivity (output per worker) has been increasing more than the average for all industry, (5) the industry is highly unionized, and (6) its skill requirements are fairly high.¹

The relationship between each of these factors and high wages is not likely to be perfectly consistent. Numerous exceptions can be found, partly because competitive conditions in an industry's product markets influence its ability to pay wages. Nevertheless there is some degree

1. Richard A. Lester, op. cit., p. 57.

of association between an industry's position in the wage array and such factors as capital investment, proportion of labour costs, changes in total employment and productivity, unionization, and skill requirements.¹

For example, we are perfectly justified in arguing that the higher the percentage of costs made up by one factor of production the more cost conscious a firm is likely to be about this factor. Thus, if wages constitute a small percentage of costs, as is possibly implied by a high capital labour ratio, firms may not operate at lowest possible costs with regard to labour - "the importance of being unimportant". A firm with a high capital labour ratio will also probably require a high degree of dependability and care from the workers and this may need to be rewarded by higher wages.

Also, those firms which are increasing their labour force faster than others may have to offer higher wages to attract labour. Trade unions, too, may have an effect on wages. The basic argument is that by restricting the free supply of labour, unions may be able to raise wage levels. Any differentials which emerge from this will depend on the relative power of unions between industries.

1. Jules Bachman and M.R. Gainsbrugh, Behaviour of Wages, Studies in Business Economics No. 15, quoted in Jules Bachman, "Wage Determination", op. cit.

Competitive conditions in an industry's product markets may also influence its ability to pay wages. It is normally postulated that firms with market power are in a position to earn super normal profits and its quite possible that some of these will be shared with workers. This may be because they fear government intervention. On the other hand, it may be the case that firms earning high profits attract greater pressure from unions. On a somewhat different level, it is normally argued that where competitive pressures are weak there is a tendency for some firms to prefer the easy life and not to watch costs as closely as they would if competitive pressures were strong. Product market monopolists and oligopolists are in a much better position to pass the cost of high wages on to the consumer than the firms and industries which face strong competition in the product market.

Other things equal, firms and industries with higher outputs per man hour may be expected to be more profitable and, therefore, better able to sustain high wages. Envision two firms that are identical except that the average productivity of workers in Firm A is higher than in Firm B. A can produce the same value product with fewer workers at lower labour and total cost. The spread between total revenue and total cost is (assuming both firms are profitable)

greater in A than in B. Wages can be higher in A without reducing profits below those in B. Assuming that the two employers' resistance to wage demands is the same at every absolute profit level, employees will be able to increase their earnings in A to a level above those in B. In short, higher productivity implies greater wage paying ability.

Size of establishments may also be positively related to the wage levels. Workers employed in large numbers at plants may be paid more than their counterparts in smaller establishments. There are probably two main reasons for this. On the one hand, a higher standard of dependability and regimentation will be required from such employees and as a recompense for this and as an incentive for its maintenance, higher wages may be offered to the workers. On the other hand, the power of trade unions may be stronger in large plants. Also the smaller firms have neither the large reserves of assets to fall back upon in depressions nor the variety of products to compensate for loss of demand when consumer tastes change. Executives of such firms are reluctant to commit themselves to high, and increasingly rigid, wage levels.

In industries doing shift work, wages are likely to be higher to compensate the workers for the irregularity of the hours worked and for night work. Also, in industries where men and women are competing groups, it is possible,

since female wage levels have generally been lower than male wages, that the higher the proportion of female workers in an industry, the lower will be level of male wages. Since higher male wages may lead to substitution in favour of women, there may again be a downward bias in regression.

As stated earlier, inter-industry wage differentials are in part geographical differentials as well. It is a well established fact that wages in certain areas of the country are higher for identical jobs than they are in other areas. Thus, unless industries are evenly spread throughout the country there will be wage differentials between industries on account of the regional factor. The average earnings in an industry will tend to be higher, higher the proportion of its total labour force employed in high wage paying regions and vice-versa.

Labour economists seem to agree that the existence of inter-industry wage differentials and changes in these differentials can't be explained by any one determinant, but must rather be accounted for by the interaction of a number of variables. Various writers differ considerably, however, as to the relative importance of different factors.

1.6 DESIGN OF OUR STUDY

Having discussed, in this chapter, the nature of various types of wage differentials, specially the inter-

industry differentials, and also having got ourselves acquainted with the factors affecting these differentials, we shall now discuss in the following chapters, the problem of inter-industry wage differentials in the Indian context.

In Chapter 2, we discuss the nature and the extent of the inter-industry wage differentials that prevailed in India in the period prior to our study. For this purpose, we have taken the help of secondary data, published in various publications, and have tried to build a broad picture of inter-industry wage differentials in India. Furthermore, the period before 1960 has been divided into three parts (i) prior to Second World War, (ii) from the Second World War to 1950, and (iii) from 1950 to 1960.

Chapter 3 deals with the study of trends in inter-industry wage structure i.e., the relative position of various industries in the wage hierarchy, and the inter-industry wage differentials over the period 1960-70.

Chapter 4 starts by discussing the factors which might be expected to lead to these differentials and in Chapter 5 we examine their influence in the statistical analysis. Finally, Chapter 6 concludes the discussion of our findings.

CHAPTER 2

INTER-INDUSTRY WAGE DIFFERENTIALS IN
INDIA - A HISTORICAL PERSPECTIVE

GENERAL

Before we go over to study the extent and causes of inter-industry wage differentials during the 60s, it will be useful to go into the history of inter-industry wage differentials as they existed prior to the period covered by this study.

The question of inter-industry variations in the wage rates in manufacturing industry could arise only after modern industry developed in the country. The origin of manufacturing industry in India dates back to the middle of the nineteenth century. However, till the end of the last century and the beginning of the present one, the growth of modern industry was limited and that too very sporadic. The main impetus to the growth of modern industry came during the two World Wars, and following the grant of discriminating protection during the late twenties. This was because of the fact that the wars provided not only a great impetus to the demand for the industrial goods but also reduced international competition. As most of economic activity in Britain during these wars came to be occupied by the exigencies of war, the Indian market was left free for the indigenous

industry. These "natural tariffs" helped, though to a limited extent, in fostering industrial growth in India.

The data regarding the extent of prevailing wage differentials in manufacturing industries during the early phase of industrial development in India are quite scanty. The earliest available figures relate to the year 1900. This particular consideration has forced us to begin our analysis from 1900. The present chapter has been divided into four sections for the sake of simplification. Another consideration for sub-dividing the study was the fact that the sources of data for these periods were different and a complete over all picture of the trends and the extent of wage differentials could not be constructed. Section 2.1 deals with the trends in inter-industry wage differentials during the period 1900-1939. The source of data for this section is Aniya Kumar Bagchi's study, Private Investment in India, 1900-1939.¹ Section 2.2 covers the period 1939-50. It makes use of the data collected by Labour Bureau, Simla, under the Payment of Wages Act 1936, for all perennial industries.² Section 2.3 deals with the inter-industry wage

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1. Aniya Kumar Bagchi, Private Investment in India 1900-1939, London, Orient Longman in Association with Cambridge University Press, 1975 (Indian Edition).
 2. The Indian Labour Year Book, 1949-50, Government of India, Ministry of Labour: Labour Bureau, Simla.

differentials during the 1950's and has two sources of data. The first is the Indian Labour Statistics and second are the studies by C.K. Johri and N.C. Agarwal,¹ and by P.K. Sawhney.² Section 2.4 summarises the findings of this chapter.

There are reasons to believe that inter-industry wage differentials existed right from the beginning of the modern industry in India. The first and the foremost reason responsible for these differentials is that the supply of labour to different industrial centres and consequently to different industries may have differed due to the "rigidities" in the labour market. The differences in the growth rates of population can affect the cost of labour. Add to it the immobility of labour force due to lack of information, cost of movement, or some other institutional factors and differences in the supply curves of labour for different industrial centres can be easily visualized.

Industrialization in India began in the port towns. A peculiar feature of industrial development in India can

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1. C.K. Johri and N.C. Agarwal, "Inter-Industry Wage Structure in India 1950-61 - An Analysis" Indian Journal of Industrial Relations, Vol. 1, No. 4, April 1966.
 2. P.K. Sawhney, "Inter-Industry Wage Differentials in India", Indian Economic Journal, Vol. 17, No. 1, July-September 1969.

be seen in the fact that whereas in Calcutta and Madras, most of the industries were developed with the help of British capital, in Bombay province the major industries, most important being cotton textile, were in the hands of indigenous capitalists. Reason for this may be found in the fact that since Bengal was the first to be colonized, the main impact of the reckless economic exploitation was felt in this area. This economic exploitation sucked out almost whole of the economic surplus from this area. However, in Western India, the Indian trading and money lending classes gave a tough resistance to the British capital and were able to survive.¹ This explains the growth of indigenous industry in the Western India. The differences in the ownership of Industry may also be one of the reasons for the inter-industry variations in the wage rates. In Bengal and Madras, the British employers, since they belonged to the ruling race, could easily combine themselves to cut down the wage rates or prevent a rise therein.²

With the development of labour organizations, the strength of trade unions was also expected to become one of the factors explaining inter-industry wage variations. It

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1. Amiya Kumar Bagchi, "Reflections on Patterns of Regional Growth in India During the British Period", Occasional Paper No. 5, Centre for Studies in Social Sciences, Calcutta, January 1976.
 2. A.K. Bagchi, Private Investment in India, op. cit., Ch. 5, pp. 138-144.

can be envisaged that the greater the strength of labour unions in a particular industry, the higher will be wage rate. In case the labour unions are not very strong to affect wage increases, they can at least, prevent a cut in wage rates. Variations in the trade union strength, thus can be a factor explaining inter-industry wage variations. That unions had an impact upon inter-industry wage differentials has been brought out quite vividly by A.K. Bagchi. Thus we see that a number of varying factors were in existence which could have resulted in emergence and perpetuation of inter-industrial wage variations right from the inception of modern industry in India.

Let us now try to see the extent of these inter-industrial wage differences in India during the period 1900-1960.

2.1 TRENDS IN INDUSTRIAL WAGE DIFFERENTIALS UPTO 1939

Before the First World War, industrial investment was almost exclusively confined to the two 'nodes' Bombay and Calcutta, but Ahmedabad in the Bombay Presidency was emerging as a centre of cotton mills. During the first few years after the First World War as well, it was the investment in the cotton mills of Bombay and Ahmedabad and jute mills on the Hooghly that dominated total industrial investment. Several new industries run on modern techniques grew up in this period; of these, steel and cement could be

roughly classed as producer goods industries. The production of refined sugar in large scale units employing modern methods had started before 1900, but the total output remained insignificant until the latter half of the period. Among other notable industries employing large scale units should be mentioned, the match and paper industries.

However, due to non-availability of wage data in these industries, it was not possible to carry out a detailed analysis of wage differentials. All that could be done was to compare the wages in the cotton mills of Bombay and Ahmedabad with that of wages in the jute mills of West Bengal. Taking up the figures from K.L. Dutta and Dr K. Mukherji, Bagchi has derived a time series of real wages and money wages for the cotton mills of Western India and the jute mills of Calcutta.¹

Looking at the data compiled by A.K. Bagchi, we find that the average monthly money wages of workers in Bombay cotton mills stagnated upto 1906, rose by about a quarter between 1906-1910, fell temporarily upto 1913, rose sharply till 1933 (by about 145%), declined slightly between

1. See Amiya K. Bagchi, Private Investment in India, op. cit. The sources of data employed by him are: (i) K. Mukerjee, Artha Vijnana, Vol. 1, No. 2, Vol. 2, No. 1 and Vol. 3, No. 2; and (ii) K.L. Dutta, Report on the Enquiry into the Rise of Prices in India, Vol. III, Calcutta, 1914.

1934-1936, rising again upto 1939. In the jute textile industry (in or around Calcutta) wages more or less stayed constant uptill 1906, rose moderately upto 1923, fell rather sharply upto 1935, increasing marginally towards the tail end of the period. In the case of the jute textile industry, the upward movement when it occurred was rather feeble. For instance, workers in the jute textile industry were earning less in money terms in 1930 than in 1913. By contrast there was a strong upward trend in the series of money wages for workers in Bombay and Ahmedabad cotton mills. Whereas, the absolute difference between the average monthly money wages of workers in Bombay cotton mills and that of Calcutta jute mills was Rs. 0.29 in 1900, it rose to Rs. 1.87 in 1914 and to Rs. 12.35 in 1920. The difference stood at Rs. 20.26 in 1930 and finally fell to Rs. 15.77 in 1939. Looking at the terminal years of the series we find that the money wages of mill workers increased between 1900 and 1939 by 188% in Bombay cotton textile mills, 208% in Ahmedabad textile mills and just by 63% in Calcutta jute mills. Thus, the available data clearly points towards an increasing wage dispersion between these two industries during the period 1900-1939.

That the data are not very representative is very clearly mentioned by Bagchi. However, for the purpose of having a broad picture, these data are quite useful.

One of the relevant factors in explaining the divergent movement of money wages in these two industries runs in terms of differences in the situation regarding the supply of labour to the two major industrial centres. The "Catchment Area" for the supply of labour to Bombay and Ahmedabad was far more restricted than that for the supply of labour to the factories of eastern India. The factory population was derived to a far greater extent from the immediate locality in Bombay, Cawnpore or Ahmedabad than in Calcutta and its suburbs. Also the supply of labour to jute mills on the Hooghly was a part of the much larger stream of labour migrating from other provinces of India to the coal mines, plantation and factories of eastern India. Apart from this, the plague and the famine at the turn of the century and the influenza epidemic and famine in 1918-19 had a much severer impact on the natural rate of growth of population in Bombay than on that in Bengal; hence one would expect to find, given the same pattern of development of demand for labour, a greater upward pressure on wages in the cotton textile mills of Bombay than in the jute mills in Bengal.

The divergent movement of money wages in the cotton mills of Bombay and the jute mills of Calcutta can also be attributed to the greater power of worker's organizations

in Bombay than in Calcutta. Whereas, no more than 4% of the workers in the jute mills were organized in any trade union, by contrast, in the Bombay cotton mills 42.5% of the operatives were organized in trade unions. One can claim that on the whole, in industries dominated by European employers, trade unions were weak.

The third factor to which a reference can be made in the relative profitability in different industries. However, there is not much evidence of this profit sharing in the case of either cotton or jute textile workers.

In short, one can say that due to the operation of a number of factors, there was a tendency towards increasing inter-industry wage differentials during the first four decades of the twentieth century.

2.2 INTER-INDUSTRY WAGE DIFFERENTIALS DURING 1939-50

This section is confined to movements in money earnings in the organized sector of employment since 1939.

The statistics of earnings of factory labour are derived from the returns which employers are required to furnish under the Payment of Wages Act, 1936. This Act applies to persons employed in any factory and upon any railway in receipt of wages and salaries which average below Rs 200 per month.

The earnings figures compiled by the Labour Bureau include (i) basic wage, (ii) all allowances including

dearness allowance, production or incentive bonus, efficiency bonus and other payments such as remuneration for overtime work, holidays or leave, (iii) arrears. It does not include value of any amenity provided by the employer or any travelling allowance or employer's contributions to any pension or provident fund or any gratuity payable on discharge or any sum paid to an employer to defray special expenses entailed on him by the nature of his employment. In fact, according to official admission, "the practice regarding the exclusion of the money value of concessions and the annual or profit bonus has not been uniform". The per capita average annual earnings are obtained by dividing the total gross wage bill for an industry by the corresponding average daily employment. The per capita average annual earnings are available in absolute figures as well as in the form of indices with 1939 as the base year.¹

Another source of data for this period could be the study on "Real Wages in India" 1939-50 by Shreekant A. Palekar.² The industrial classification adopted by Palekar is slightly more detailed than the one adopted by the Labour Bureau. However, the main limitation of the study

1. The Indian Labour Year Book, 1949-50, op. cit.

2. Shreekant A. Palekar, Real Wages in India 1939-50, Bombay, International Book House, 1962.

by S.A. Palekar is that the figures of average annual earnings are given in the form of indices only, with a common base year, and not in absolute values, which makes it less useful for a study of wage differentials. It was this shortcoming of the data presented by Palekar, which had compelled us to rely on the one given by Labour Bureau. Though in doing so, we are dealing with a slightly more aggregated industrial classification, but for obvious limitations of the other source this compromise had to be made.

The figures of average annual earnings for various years and industries have been presented in Table No. 2.1. To arrive at some meaningful conclusions, simple statistical computations were made.

At first stage of the analysis we shall see the trends in the inter-industry wage structure i.e., the extent to which the relative position of the various industries in the hierarchical line of wage payment has altered during the period under review. To do so, the rank correlation co-efficients of the average annual earnings in various industries between the initial year and the subsequent years were calculated. The coefficient of rank correlation between 1939 and each one of the subsequent years shows continuous decline till 1944 but improves considerably thereafter. For example, the rank correlation

TABLE NO. 2.1

**AVERAGE ANNUAL MONEY EARNINGS OF FACTORY WORKERS DRAWING LESS THAN
RS. 200 PER MONTH**

INDUSTRY	YEAR	1939	1940	1941	1943	1944	1945	1946	1947	1948	1949
1	2	3	4	5	6	7	8	9	10	11	
1. Textiles	293.5 (6)	302.9 (8)	314.0 (8)	571.5 (3)	633.6 (3)	613.7 (5)	624.5 (6)	771.7 (4)	931.9 (4)	1055.8 (5)	
2. Cotton	320.2 (5)	325.1 (7)	343.6 (6)	683.6 (1)	772.2 (1)	723.4 (1)	721.8 (2)	909.3 (2)	1094.4 (2)	1193.0 (2)	
3. Jute	230.8 (10)	265.9 (9)	256.2 (9)	355.5 (10)	363.2 (11)	390.5 (11)	425.0 (11)	497.6 (10)	637.7 (10)	795.0 (9)	
4. Engineering	263.5 (8)	345.0 (5)	371.5 (4)	529.0 (4)	589.8 (4)	653.1 (3)	696.1 (4)	698.7 (7)	879.4 (6)	938.1 (6)	
5. Minerals and Metals	457.2 (1)	491.5 (1)	476.1 (2)	502.1 (6)	573.5 (5)	601.9 (6)	599.8 (7)	886.2 (3)	1065.1 (3)	1136.5 (3)	
6. Chemicals and Dyes	244.8 (9)	229.6 (10)	238.1 (10)	398.0 (9)	484.6 (8)	445.2 (9)	492.4 (9)	592.6 (9)	663.8 (9)	721.7 (10)	

	1	2	3	4	5	6	7	8	9	10	11
7. Paper and Printing	332.7 (4)	360.3 (4)	324.8 (7)	414.0 (7)	474.1 (9)	568.8 (7)	638.4 (5)	728.5 (6)	835.3 (7)	911.5 (7)	
8. Wood, Stone and Glass	194.2 (11)	175.3 (11)	199.1 (11)	303.1 (11)	368.4 (10)	413.6 (10)	434.3 (10)	495.4 (11)	567.6 (11)	615.6 (11)	
9. Skins and Hides	285.8 (7)	327.1 (6)	357.9 (5)	411.0 (8)	532.1 (7)	536.7 (8)	558.2 (8)	603.9 (8)	826.3 (8)	889.1 (8)	
10. Ordnance Factories	361.9 (3)	408.5 (3)	429.4 (3)	527.4 (5)	546.8 (6)	642.8 (4)	721.2 (3)	755.2 (5)	918.0 (5)	1127.4 (4)	
11. Mints	367.4 (2)	462.7 (2)	491.2 (1)	574.4 (2)	695.2 (2)	667.0 (2)	858.7 (1)	1071.2 (1)	1378.2 (1)	1437.2 (1)	

Figures in brackets show the ranks.

(Basic Source: The Indian Labour Year Book).

coefficient between the years 1939 and 1940 is 0.91; it declines to 0.83 for the years 1939-41, further to 0.64 for 1939-43, the lowest being 0.57 for the years 1939-44. After this it rises consistently throughout the period, the rank correlation coefficient between the years 1939-49 being 0.86. The same trend is noticed if we take 1940 as the base year and in this case the lowest value of the coefficient is 0.45 for the period 1940-44 after which it recovers significantly.

The decline in the coefficient of rank correlation during the war years and subsequent increase during the post-war years clearly suggests that whereas the war years witnessed significant shifts in the relative position of the various industries in the hierarchical line of wage payment, the post-war years were characterized by a tendency towards their reversal to the pre-war positions, so that the overall picture that one gets is of a remarkable stability in the inter-industry wage structure for the period 1939-49 as a whole, as is evident from a rank correlation coefficient of 0.86.

This phenomenon becomes further clear if we look at changes in the relative position of some individual industries in order of their wage payments. Textiles, for example, rose from the 6th position in 1939 to the 3rd in 1944, but

subsequently declined to 5th position in 1949. Though this group of industries showed a relative decline during the initial years of the war, the rank moving from 6th in 1939 to 8th in 1941, but recovered significantly during 1941-43, though by 1949 it had lost much of the initial advantage. Cotton, a constituent of the textiles group, also followed a similar trend. From a rank of 7 in 1940, it became the highest wage paying industry towards the last years of the war, but it could not retain this distinction during the post-war years. Engineering industry moved from 8th position in 1939 to 6th in 1949, after occupying the 3rd rank in 1945.

So the industries which exhibited considerable upward shift on the wage scale during the war period, but declined thereafter, were mainly the cotton textiles and engineering. This in turn can be explained in terms of the expansion that they underwent during the Second World War. The Second World War brought a material change in the fortunes of the cloth industry. The demand for cloth went up and prices of cloth increased by about five times between 1939 and 1943. For the first time in its history, the industry was confronted with a demand for its products far in excess of the capacity. While there was a virtual cessation of imports, the requirements of the rapidly expanding defence services and of the civilian population went on increasing. Besides,

the export business which had hitherto remained a mere side line, suddenly assumed large proportions owing to the withdrawal of Britain and Japan from the world market. In terms of its capacity, production, market prices, profits and employment, this period saw an unprecedented expansion and prosperity in the industry. A natural corollary was the grant of significant wage increases to the workers.

Engineering industry also underwent considerable expansion during war years. Employment went up by about 80%. The industries which expanded most were coach building and motor repairing, mainly because both were directly concerned with war time requirements. During war time, many engineering concerns experienced various difficulties such as shortage of technical personnel, non-availability of machine tools and of iron and steel products and shortage of coal. Adequately trained technicians were few as compared to the demand for their services. As a consequence, factories were out to secure their services at all costs. Enticing away skilled workers with higher wages was a common practice. Shortage of labour was not confined to skilled workers alone. Many concerns experienced difficulties in getting unskilled labour as well.

A trend opposite to the one registered by cotton and engineering is discernible in the case of metals and minerals,

paper and printing and ordanance factories. This group of industries suffered a setback during the war years but recovered thereafter. Minerals and metals, for example, which had the highest average annual earnings in 1939, slipped to the 7th position towards the end of the war, but rose again to the 3rd place in 1949. Declining from 4th place in 1939 to 9th in 1944, paper and printing industry came to occupy the 5th position in 1946. Ordanance factories also followed a similar course.

To sum up, an analysis of the wage rank structure of industries shows that whereas the group consisting of cotton textiles and engineering industries exhibited considerable upward mobility in the wage scale during the war years, opposite was the trend experienced by the metal and minerals, paper and printing and ordanance factories, with the result that the rank structure of various industries at the close of the war was much at variance than at the beginning of the war. But after the war, the war time advantages and disadvantages were beginning to wear away and the industries showed a tendency to return to their pre-war hierarchy.

This opposite movement of the two broad groups of industries in the hierarchical line of wage payment in turn influenced the extent of inter-industry wage differentials

also. The industries which improved their relative position during the war years were the one which were low wage paying industries in the first instance, and the industries whose relative position worsened during this period were the one which appeared among the high wage paying industries initially. Thus upward mobility in the case of low wage paying industries and the downward mobility in the case of high paying ones tended to narrow the inter-industry wage differentials. The coefficient of rank correlation between the 1940 wage ranks of various industries and percentage and absolute increases therein, over the period 1940-44 gives a value of -0.72 and -0.40 respectively, suggesting that low wage paying industries registered larger percentage and absolute increases than the high wage paying one, thus leading to a compression in the wage structure. One can say, accordingly, that this period was characterized by a tendency towards the equalization of wages. Also during this period the differential between the highest annual earnings and the lowest annual earnings shows a continuous decline. The index of highest to lowest annual earnings which stood at 280.4 in 1940, fell to 247 in 1941 to 226 in 1943, lowest being 185 in 1945.

This move towards equalization came to a halt after 1944. Here we find that the absolute and percentage wage increases registered by various industries during 1944-48 were not at variance with their initial wage levels in 1940.

The coefficient of rank correlation between the wage rank of various industries in 1940 and percentage and absolute increases therein, during the period 1944-48 comes out to be 0.7 and 0.9. This invariance of the wage increases, absolute as well as percentage, to the initial wage levels, led to a dispersal in the wage structure. Also the index of the highest annual earnings to the lowest annual earnings shows a continuous increase during this period. From 185 in 1945 it rose to 216 in 1947 and further to 234 in 1949. The values of the coefficient of variation which have been given in Table No. 2.2, also exhibit the same trend.

To conclude the findings of this section, we note that despite the significant shifts that took place in the relative position of various industries in the wage hierarchy during the war years, the inter-industry wage structure shows considerable stability over the period 1939-50 as a whole. Also, the inter-industry wage differentials which narrowed during the war years, widened subsequently during the post-war years.

2.3 INTER-INDUSTRY WAGE DIFFERENTIALS DURING THE 1950's

This period has a special importance, as it was during this period that the planned development of Indian economy was initiated. This decade covers the span of two

TABIE NO. 2.2

Year	1940	1941	1943	1944	1945	1946	1947	1948	1949
Mean	335.8	345.6	479.1	548.5	568.8	615.5	728.2	890.7	983.9
S.D.	90.21	89.71	107.24	119.77	105.06	126.68	170.59	221.41	234.67
C.V.	26.86	25.96	22.38	21.84	18.47	20.58	23.43	24.86	23.85
Index of max. to min. wages	280.4	246.7	225.5	212.6	185.3	202.1	216.2	242.8	233.5

five year plans. One of the objectives of the Indian planning, right from the beginning, has been reduction in economic disparities. The broader field of economic disparities encompasses the inter-industrial wage disparities as well. It is in order to have an idea of the impact of planning process as well as other policy measures taken by the government during this period that we have undertaken to devote a separate section to the study of this particular period.

The statistics of earnings of factory labour are derived from the returns which employers are required to furnish under the Payment of Wages Act, 1936. This Act applies to persons employed in any factory and upon any railway in receipt of wages and salaries which average below Rs. 200 per month. The per capita average annual earnings in thirty-one industries are given in Table No. 2.3.

The first stage of analysis is with a view to seeing how the different industries have behaved during the period under review, i.e., whether they have moved down or upto any appreciable degree. This will show whether the inter-industry wage structure i.e., the relative position of the various industries in the hierarchical line of wage payment, has altered much in recent years.

TABLE NO. 2.3

AVERAGE ANNUAL MONEY EARNINGS OF FACTORY WORKERS DRAWING LESS THAN RS. 200
PER MONTH BY INDUSTRIES

S. No.	INDUSTRY	1951	1953	1955	1957	1959	1960
1.	Processes Allied to Agriculture (Gins and Presses)	155(31)	170(31)	157(31)	195(31)	203(31)	207(31)
2.	Food except Beverages	480(29)	534(29)	480(29)	622(29)	636(30)	662(30)
3.	Beverages	969(15)	916(20)	984(17)	936(21)	978(22)	957(23)
4.	Tobacco	392(30)	419(30)	395(30)	518(30)	686(29)	710(29)
5.	Cotton Mills	1178(5)	1228(6)	1302(6)	1364(7)	1477(7)	1561(3)
6.	Jute Mills	815(22)	914(21)	995(16)	1037(18)	1057(20)	1130(19)
7.	Silk Mills	991(11)	953(18)	1131(10)	1216(11)	1146(19)	1301(15)
8.	Woollen Mills	988(13)	1047(11)	954(19)	986(19)	1179(18)	1359(12)
9.	Footwear, other wearing apparel and Made-up textile goods	989(12)	1038(12)	1101(12)	1308(9)	1399(11)	1425(7)
10.	Wood and cork except furniture	654(27)	717(28)	670(27)	727(28)	843(26)	858(27)
11.	Furniture and fixtures	940(17)	883(22)	681(26)	959(20)	831(27)	1031(20)
12.	Paper and Paper Products	958(16)	998(16)	1063(14)	1158(25)	1276(14)	1294(16)
13.	Paper	997(10)	1032(15)	1102(11)	1213(12)	1410(10)	1376(11)
14.	Printing Publishing & Allied Industries	1052(8)	1123(9)	1152(8)	1218(10)	1316(13)	1228(17)
15.	Leather and Leather Products (except Footwear)	752(23)	879(24)	837(21)	890(23)	1045(21)	944(24)

S. NO.	INDUSTRY	1951	1953	1955	1957	1959	1960
16	Tanneries and Leather Finishing	749(24)	881(23)	716(25)	776(26)	783(28)	771(28)
17.	Rubber and Rubber Products	1325(3)	1432(2)	1368(4)	1497(3)	1274(15)	1414(9)
18.	Chemicals and Chemical Products	868(20)	1036(13)	957(18)	1147(16)	1367(12)	1334(13)
19.	Fine and Pharmaceutical Chemicals	978(14)	1049(10)	1142(9)	1186(14)	1413(9)	1384(10)
20.	Matches	842(21)	961(17)	608(28)	914(22)	1570(3)	896(26)
21.	Products of Petroleum and coal	1132(7)	1408(3)	1493(2)	1990(1)	2195(1)	2042(1)
22.	Non-metallic Mineral Products (except Products of Petroleum and coal)	699(25)	824(25)	782(23)	835(24)	920(24)	1008(21)
23.	Manuf of Glass and Glass Produc -ts(except optical Lenses)	692(26)	777(26)	823(22)	775(27)	975(23)	904(25)
24.	Manuf of Pottery China and Earthenware	654(28)	738(27)	769(24)	790(25)	903(25)	984(22)
25.	Manuf of Cement	919(18)	1156(8)	1184(7)	1363(8)	1477(6)	1462(5)
26.	Basic Metal Industries	1368(1)	1711(1)	1673(1)	1463(5)	1529(4)	1499(4)
27.	Metal Products(except Machinery and Transport E quipment)	917(19)	942(19)	1048(15)	1145(17)	1253(16)	1304(14)
28.	Machinery(except Electrical Machinery)	998(9)	1033(14)	1100(13)	1189(13)	1216(17)	1225(18)

S. No	INDUSTRY	1951	1953	1955	1957	1959	1960
29.	Electrical Machinery, Apparatus, Appliances and Supplies	1238(4)	1309(4)	1340(5)	1438(6)	1490(5)	1435(6)
30.	Transport Equipment	1171(6)	1164(7)	1430(3)	1482(4)	1473(8)	1422(8)
31.	Ship Building and Repairing	1337(2)	1258(5)	909(20)	1659(2)	1620(2)	1688(2)

Figures in Brackets show the ranks
 (Basic Source: The Indian Labour Year Book)

Among the industries which improved their wage payment position significantly during this period are the Footwear including made up textile goods (from 12th place in 1951 to 7th in 1960), Chemicals and chemical products (improved from 20th position to 13th position), Products of petroleum and coal (which came to occupy the first position in 1960, being placed at 7th position in 1951) and Cement (18th in 1951 to 5th in 1960). Metal products (except Machinery) registered an improvement from 19th place in 1951 to 14th in 1960. Among the industries which fell by more than five ranks, prominent are Beverages, Printing Publishing and allied industries, Rubber and Rubber footwear, Matches and Non-electrical machinery.

Despite the instances of upward and downward shift, as noted above, the overall wage structure exhibits considerable stability throughout the period, the coefficient of rank correlation being 0.933 for 1951-52, 0.940 for 1952-54, 0.914 for 1954-56, 0.863 for 1956-58 and 0.835 for 1958-60. Over two broader time intervals 1951-56 and 1956-60 the value of the coefficient of rank correlation comes out to be 0.89 and 0.88 being 0.852 for the whole period. All of these values happen to be highly significant. That the inter-industry wage structure during 1951-60 is characterized by remarkable rank stability is thus self evident. A similar conclusion was arrived at by the 'Study

Group on Wages Policy' when it observed, "During 1951-61 it (inter-industry wage structure) has remained more or less stable as is evident from the rank correlation coefficient of 0.78".¹

In order to be more specific about the behaviour of high wage paying industries and the low wage paying industries, we divided the 31 industry groups into four quartiles, the last quartile having seven industries. The two parts of the Table No. 2.4 show which industries occupied the first eight positions from the point of view of wage payment and which the last seven positions in each of the selected years.

Examination of the two tables shows that both the top and the bottom quartiles have remained remarkably stable. In part I, out of the eight industries mentioned under 1951, five are found in all the remaining five years, one in four out of the five years, one in three out of the five years and the remaining one is repeated just once. Similarly in part II, four out of the seven industries listed under 1951 occur in all the remaining five years, two in three years and one in one out of the remaining five years. Also there is no inter-change of industries between the lower and the upper quartiles. This shows the remarkable

1. Report of the Study Group on Wages Policy, (New Delhi: National Commission on Labour, 1968).

TABLE 2.4

Part I

Code Number of Industries which occupied the Top
Eight Positions Regarding Wages

Rank	1951 Industry Number	1953 Industry Number	1955 Industry Number	1957 Industry Number	1959 Industry Number	1960 Industry No.
1	26	26	26	21	21	21
2	31	17	21	31	31	31
3	17	21	30	17	20	5
4	29	29	17	30	26	26
5	5	31	29	26	29	25
6	30	5	5	29	25	29
7	21	30	25	5	5	9
8	14	25	14	25	30	30

Part II

Code Numbers of Industries which occupied the Bottom
Seven Positions Regarding Wages.

Rank	1951 Industry Number	1953 Industry Number	1955 Industry Number	1957 Industry Number	1959 Industry Number	1960 Industry Number
25	22	22	16	24	24	23
26	23	23	11	16	10	20
27	10	24	10	23	11	10
28	24	10	20	10	16	16
29	2	2	2	2	4	4
30	4	4	4	4	2	2
31	1	1	1	1	1	1

The Industry Code Nos given in this table correspond
to the Industry serial Nos given in table 2.3

tenacity with which his highest paying and the lowest paying industries have stuck to their positions in the wage structure.

To study the trends in the inter-industry wage differentials, the coefficient of variation was calculated for some selected years. The results are presented in Table No. 2.5.

TABLE 2.5

Year	1951	1953	1955	1957	1959	1960
Mean	910.00	985.00	979.00	1097.00	1192.00	1188.00
S.D.	268.79	293.94	326.46	356.67	369.58	350.54
C.V.	29.54	29.84	33.35	32.51	31.00	29.51
Index of max. to min. earnings	349	408	424	384	345	308

A comparison of the values of the coefficient of variation shows that the inter-industry wage differentials widened during 1951-55, the coefficient of variation increasing from 29.54 in 1951 to 33.35 in 1955 but declined subsequently, the coefficient of variation being 29.51 in 1960. Also our analysis shows that the differential between the highest paying and the lowest paying industries widened between 1951 and 1955 but declined subsequently. Our result is in direct contrast to the one arrived at by C.K. Johri

and P.K. Sawhney. Making use of CMI and ASI data both Johri and Sawhney found that inter-industry wage differentials had increased considerably over the period 1951-60. Johri, for example, observed, "the inter-industry wage differentials have widened during 1950-61, the coefficient of variation increasing from 30.1 in 1950-52 to 38.2 in 1959-61."¹ The only possible reason for the above discrepancy can be the differences in the nature and the coverage of the data used by our study and those of Johri and Sawhney.

Whereas our observation of narrowing differentials takes as its basis the average annual money earnings of factory workers drawing less than Rs. 200 per month, Johri arrived at his conclusion on the basis of average annual money earnings of all the factory workers. And there is no reason to believe that the decreasing wage differentials among the low (relatively) paid employees be incompatible with increasing wage differentials among the employees including the high paid ones. In fact the inclusion of the earnings of the high paid employees is likely to introduce an upward trend in wage differentials. This might have taken place, partly at any rate, as a result of adjudications, of which there were many in the years immediately following the enactment of the Industrial Disputes Act, 1947.

1. C.K. Johri and N.C. Aggarwal, "Inter-Industry Wage Structure in India 1950-61 - An Analysis", op. cit.

Adjudicators must have pressed into service the full "capacity to pay" of the more thriving industries. Understandably, the application of this criterion is likely to affect the wages which are higher up in the scale and the principle loses much of its significance where the objective is to provide every worker with at least a fair minimum wage. Besides this the impact of the policy prescription of the Govt., that "wage increases should be granted where the existing rates are abnormally low" and Supreme Court's ruling regarding standardization of wages that "The basic principle of standardization of wages is to bring all wages to the standardized level by raising wages which are unduly low...", on the wage structure should not be lost sight of.

To what extent did this policy of the Government have an influence on the level of overall wage disparities is arguable; but much less disputed is the fact that a greater measure of equality was certainly achieved in the lower echelons of wage structure.

2.4 SUMMARY

It can be seen from the discussion in this chapter that upto the beginning of the Second World War in 1939 i.e. for almost four decades since 1900, there had been a tendency for the industrial wage differentials to increase.

A number of factors besides the demand and supply of labour had been responsible for this particular development. The move towards equalisation of wages which was witnessed during the war years came to a halt in the post war era. Since then, till 1955 wage differential had increased. Thereafter, the differentials tended to fall up till 1960. We have, in this study, not analysed all the factors that could be responsible for such a historical trend due to lack of time and space.

CHAPTER 3

TRENDS IN THE INTER-INDUSTRY WAGE
STRUCTURE AND WAGE DIFFERENTIALS:
1960-70

Having discussed the nature of the problem in hand and also the state of affairs regarding the magnitude and trends in inter-industry wage variations prior to the period of our study, we now come to the main focus of our study. Before doing so, let us restate our objectives more rigorously.

3.1 The objectives of this study are two fold:

1. To study the trends in the inter-industry wage structure, i.e. changes in the relative positions of the industries in the wage hierarchy in order of their wage payments, and the inter-industry wage differentials over the period 1960-70.
2. To ascertain whether any influences which are themselves measureable have been associated with these wage differences between industries as existing in 1970, i.e., to make an empirical investigation into the determinants of inter-industry wage differentials.

The present chapter deals with the first objective and the second one is dealt with in the next chapter.

3.2 DATA BASE AND DEFINITIONS

Before we embark upon the task of analysing the wage structure and wage differentials, we must clarify the sources of data analysed and also define clearly the concepts used in order to avoid any confusion at the later stages.

Data for the present study have been taken from the detailed reports of the Annual Survey of Industries, 1960 and 1970.¹ These data are collected under the Collection of Statistics Act 1953, and cover all the factories except those under the Defence Ministry. The term 'factory' has been defined so as to include the "premises including the precincts thereof" which engage in any manufacturing process and employ ten or more workers with power or twenty or more workers without power. This does not, however, include mines covered under the Mines Act, 1952, and railway running sheds.² The ASI Census data, which have been used here, covers the factories employing fifty workers or more with power and hundred workers or more without power.

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1. Annual Survey of Industries, 1960 and Annual Survey of Industries, 1970. The reports are in 10 volumes each, published by Central Statistical Organization, (Industrial Statistics Wing), Deptt. of Statistics, Cabinet Secretariat, Calcutta.
 2. Annual Survey of Industries, 1960, *ibid*, Vol. 1, p. vii.

WAGE RATE - THE CONCEPT

Let us now define the concept of wage rate as used in this study. Wage rate is the money value of all the payments made to a worker by the employer in return for the services performed by him/her for a specific period of time. Definition of wage rate can, accordingly differ, firstly, on account of varying time period and, secondly, on account of including or excluding some elements contributing towards the total wage bill.

Total wage bill, generally, includes basic wages, dearness allowance, various types of bonuses, employers' contribution, housing and medical facilities etc. It is, in fact, the first three elements which truly reflect the earnings of the workers in return for the work performed by them. It is with this consideration in mind, apart from some of the data problems which will be referred to shortly, that we have excluded the employer's contribution and the money value of fringe benefits like housing, etc. from the purview of our study while calculating wage rates.

The total "wages and salaries" figures taken for the present study have been defined in the Annual Survey of Industries as all cash payments made for the work done during the year and includes "basic wages, dearness allowance, overtime payments, shift allowance, leave wages, wages for paid holidays, all bonuses such as profit sharing bonus, production bonus, good attendance bonus, incentive bonus,

etc., and other cash payments made from time to time, regular and ad-hoc, contractual or ex-gratia".¹

These figures are given separately for 'workers' and 'other than workers'. The term 'worker' is defined "as a person employed directly or through an agency whether for wages or not in any manufacturing process in or cleaning any part of the machinery or premises used for a manufacturing process in or any other kind of work incidental to or connected with manufacturing process but excludes persons holding positions of supervision or management or employed in a confidential position."²

The time period, similarly, may be a year (wages per man-year), or a month (wages per man-month), or a day (wages per man-day) or an hour (wages per man-hour). The first two concepts are very aggregative and do not seem to be very appropriate for the study of wage differentials. They might reflect not merely the level of payment but the continuity and intensity of employment as well. A man-year and, for that matter, a man-month would include all the holidays whether paid or unpaid. Wages per-man

1. Ibid., vol. 1, p. xxv.

2. Ibid., p. xxiv.

year would also be affected by the average number of working days in a year and hence will not be quite representative. Wage rates per man-day and the wage rates per man-hour are more relevant for our purpose as they give a much better view of the existing differentials. A man-day, though it excludes unpaid holidays and also takes care of the variations in the average number of working days in a year, will not be quite as representative as a man-hour as it will also tend to exclude the variations in the shift work that is undertaken in some industries.

Keeping these factors in mind, we have chosen man-hour as the unit of time for defining our concept of wage rate. The total number of man-hours worked in a factory as given in the Annual Survey of Industries has been calculated "by multiplying the number of workers (as defined above) employed (it includes persons attending and on leave with pay) in each shift by the number of hours in the shift and aggregating the products for all shifts on all the working days in the year. The number of man-hours for an industry is the total of the number of man-hours worked by all factories in that industry". Two points are worth noting here. Firstly, man-hours are being calculated on the basis of hours paid for rather than hours actually worked. Secondly, man-hours data are reported only for workers and not for other than workers.

So, in calculating the wages per man hour, the relevant figure under the head 'wages and salaries' is the wages and salaries paid to the workers only.

Thus, we define wage rate in the present study as the wages and salaries paid to the workers for one hour of work put in by them. It is an average for an industry.

As explained earlier, the money value of fringe benefits has been excluded while calculating the total 'wages and salaries' bill for the workers. Non-wage benefits have become of considerable magnitude and are growing in importance each year. These are not only accepted by the unions for compensating wage differentials, they have also come to be used by the employers for maintaining these differentials. Given their magnitude and importance it would have been better had they been included in the total wage bill. Non-availability of data explains our inability to do so. The figures given in the Annual Survey of Industries for the 'Money Value of Fringe Benefits' have not been reported separately for the 'workers' and 'other than workers'. In the absence of such a break up it was not possible to determine how much of these benefits were accounted for by the workers and how much by other categories. Any weighing scheme, howsoever evolved, would be quite arbitrary and will defeat the very purpose of their inclusion.

3.3 TRENDS IN THE INTER-INDUSTRY WAGE STRUCTURE AND WAGE DIFFERENTIALS ^a

Data for this part of the study have been taken from the detailed reports of the Annual Survey of Industries, 1960 and 1970. The data contained in the detailed volumes of the Annual Survey of Industries are given at the four digit level of industrial classification and covers 203 industries for 1960 and 215 for 1970. However, for a later exercise, investigating into the determinants of inter-industry wage differentials, data from diverse sources had to be used. To make the data comparable, it became necessary to redefine the industrial classification as used by A.S.I. So the whole data were regrouped into 95 industries. It was thought preferable to conduct the present analysis also in terms of the readjusted classification.

Table No. 3.1 gives for all-India the per capita average hourly wages in these 95 industries in the manufacturing sector for two years, namely, 1960 and 1970.

At first stage the analysis has been conducted with a view to seeing how the different industries have behaved during the period under review i.e., whether they have moved down or up to any appreciable degree in order of their wage payments. This will show whether the inter-industry wage structure i.e., the relative position of the

TABLE NO: 3.1

**INDUSTRY - WISE AVERAGE HOURLY
WAGES OF WORKERS 1960
AND 1970**

Sl.No.		Wages per man hour (Rs) 1960	Rank	Wages per man hour (Rs) 1970	Rank	Absolute increase	Rank	Percen- tage increase	Rank
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
01.	Slaughtering, preservation of meat and fish and Canning of fish.	0.283	87	0.663	76	0.380	67	134.28	24
02.	Manufacturing of milk foods.	0.434	60	1.114	45	0.680	32	156.68	14
03.	Canning and preserving of fruits and vegetables.	0.336	76	0.568	84	0.232	85	69.05	80
04.	Flour, rice and dal mills.	0.296	85	0.629	79	0.333	74	112.50	42
05.	Manufacture of bakery products.	0.558	39	1.174	38	0.616	39	110.39	46
06.	Vacuum pan sugar.	0.464	53	1.022	51	0.558	50	120.26	36
07.	Khandsari sugar and gur.	0.266	89	0.556	86	0.290	79	109.02	47
08.	Manufacture of Cocoa, Chocolate, sugar confectionary, malted foods and miscellaneous food preparations.	0.454	56	0.811	67	0.357	68	78.63	71

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
09.	Manufacture of edible oil (other than hydrogenated oil)	0.365	69	0.654	78	0.289	80	79.18	70
10.	Hydrogenated oil (Vanaspathi)	0.624	29	1.143	40	0.519	53	83.17	68
11.	Distilling, rectifying and blending of spirits, wine industries, breweries and manufacture of malt.	0.425	63	0.953	56	0.528	52	124.24	33
12.	Soft drinks and Carbonated water industries.	0.561	38	0.997	53	0.436	60	77.72	72
13.	Tea manufacturing.	0.311	81	0.530	89	0.219	87	70.42	78
14.	Coffee curing works.	0.256	90	0.367	94	0.111	94	43.36	93
15.	Biri.	0.245	92	0.550	88	0.305	77	124.49	31
16.	Cigar and tobacco manufacture - others.	0.429	62	0.557	85	0.127	93	29.60	94
17.	Cigarettes.	0.994	4	2.094	5	1.100	6	110.66	44
18.	Snuff.	0.401	66	0.725	72	0.324	75	80.80	69
19.	Zarda.	0.225	93	0.575	82	0.350	70	155.56	15
20.	Cotton textiles.	0.668	25	1.249	32	0.581	47	86.98	66
21.	Jute textiles.	0.448	57	1.117	42	0.669	33	149.33	18
22.	Woolen textiles	0.493	51	1.067	48	0.574	48	116.43	38

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
23.	Silk.	0.351	73	0.623	80	0.272	84	77.49	74
24.	Webbing, narrow fabrics, embroidery and lace manufac- turing.	0.491	52	0.922	59	0.431	61	87.78	65
25.	Textiles dyeing, bleaching, finishing and processing including mercerizing, fini- shing, proofing etc.	0.594	33	1.024	50	0.430	62	72.39	77
26.	Carpet weaving.	0.363	70	0.770	70	0.408	63	112.71	41
27.	Knitting mills.	0.362	71	0.898	61	0.536	51	148.07	20
28.	Cardage, rope and twine industries.	0.409	65	0.886	62	0.477	56	116.63	37
29.	Cotton ginning, cleaning and pressing.	0.254	91	0.442	93	0.188	90	74.02	76
30.	Wool baling and pressing.	0.305	82	0.453	92	0.148	91	48.52	91
31.	Coir manufacture.	0.334	77	0.925	58	0.591	43	117.78	8
32.	Artificial leather, oil cloth, tarpaulins, tents & other made up canvas goods.	0.463	54	1.113	46	0.650	35	140.39	23
33.	Clothing and tailoring.	0.303	83	0.753	71	0.450	58	148.51	19
34.	Umbrella manufacture.	0.570	36	0.872	63	0.302	78	52.98	89

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
35.	Saw milling.	0.292	86	0.610	81	0.318	76	108.90	48
36.	Plywood.	0.349	75	0.572	83	0.223	86	63.90	83
37.	Manufacture of furniture and fixtures - wooden.	0.206	95	0.555	87	0.349	71	169.42	10
38.	Wooden and Cane containers and Cane smallware, Joinery and general wood working.	0.499	50	0.835	64	0.336	73	67.33	81
39.	Pulp-wood pulp, mechanical, chemical including dissolving pulp, paper-writing, printing and wrapping, newsprint and manufacture of other paper and paper products, paper board and straw board.	0.513	48	1.105	47	0.592	42	115.40	39
40.	Paper for packaging (Corrugated paper).	0.588	35	0.941	57	0.353	69	60.03	87
41.	Letter press and lithographic printing, book binding and other printing including photography.	0.677	23	1.414	27	0.737	26	108.55	50
42.	Tannery and leather finishing plants.	0.456	55	0.917	60	0.461	57	101.10	55

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
43.	Manufacture of leather products except footwear and other wearing apparel.	0.670	24	0.689	75	0.019	95	2.84	95
44.	Manufacture of footwear.	0.749	15	1.145	39	0.396	64	52.87	90
45.	Tyres and tubes.	1.306	3	2.320	3	1.014	10	77.64	73
46.	Rubber footwear.	0.753	14	1.757	10	1.004	11	133.33	26
47.	Surgical and medical products including prophylactics and manufacture of other rubber products.	0.520	47	1.115	44	0.595	40	114.42	40
48.	Salt.	0.328	79	0.528	90	0.200	88	60.98	85
49.	Organic, inorganic and mixed fertilizers.	0.621	30	1.811	7	1.190	4	191.63	6
50.	Dye stuffs and manufacture of paints, varnishes and lacquers.	0.758	12	1.449	24	0.691	30	91.16	62
51.	Explosive including gun powder and safety fuses.	0.280	88	0.995	54	0.715	28	255.36	2
52.	Matches.	0.546	41	1.052	49	0.507	54	93.03	60

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
53.	Drugs and pharmaceuticals, perfumes, cosmetics and other toilet preparations.	0.757	13	1.737	11	0.980	13	129.46	28
54.	Synthetic resins and plastics, synthetic rubber, products of fermentation industries other than alchohal and basic industrial chemicals, turpentine and resin.	0.508	49	1.567	18	1.059	9	208.46	4
55.	Organic and inorganic heavy chemicals.	0.333	78	1.195	36	0.862	19	258.96	1
56.	Petroleum refineries.	1.496	1	2.915	2	1.419	2	94.85	58
57.	Manufacture of miscellaneous products of petroleum and coal.	0.541	44	1.313	30	0.772	24	142.70	21
58.	Soaps and glycerine.	0.881	7	2.247	4	1.366	3	155.05	16
59.	Fire bricks, tiles and refractories.	0.388	67	0.660	77	0.272	83	70.10	79
60.	Manufacture of cement and other cement and concrete products.	0.527	46	1.116	43	0.589	45	111.57	43

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
61.	Stone dressing and crushing.	0.314	80	0.505	91	0.191	89	60.83	86
62.	Abbestos cement.	0.690	19	1.315	29	0.625	38	90.58	63
63.	Mica factories.	0.217	94	0.360	95	0.143	92	65.90	82
64.	Chinaware and pottery.	0.359	72	0.700	74	0.341	72	94.99	57
65.	Glass hallowware, glass wool and miscellaneous glass ware, sheet and plate glass.	0.366	68	0.804	68	0.439	59	120.27	35
66.	Laboratory glassware.	0.413	64	1.002	52	0.589	44	142.62	22
67.	Iron and steel (metal).	0.872	8	1.800	8	0.928	16	106.30	52
68.	Ferroy alloys and special steel.	0.350	74	0.982	55	0.632	37	180.57	7
69.	Iron and steel structurals.	0.678	22	1.261	31	0.583	46	85.99	67
70.	Manufacture of metal furniture and fixtures.	0.883	6	1.718	12	0.835	20	94.56	59
71.	Non-ferrous basic metal industries.	0.721	17	1.659	13	0.938	15	130.10	27
72.	Enanelling, galvanising, plating, polishing and welding of metal.	0.436	59	0.819	65	0.383	66	87.84	64

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
73.	Manufacture of sundry hard- wares such as cutlery, locks, bolts, nuts, screws, vaults, blades, metal containers etc.	0.662	26	1.364	28	0.702	29	106.04	53
74.	Manufacture and assembl- ing of machinery (other than electrical) except textile machinery.	0.589	34	1.230	34	0.641	36	108.73	49
75.	Manufacture of textile machinery and accessories.	0.599	32	1.192	37	0.593	41	99.00	56
76.	Machine tools.	0.545	42	1.614	15	1.069	8	196.15	5
77.	Manufacture and assembl- ing of prime movers and boilers, such as diesel engines, road rollers, conveying equipment, trac- tors, harvesters, etc.	0.614	31	1.556	19	0.942	14	153.42	17
78.	Equipment for transmission and distribution of elec- tricity including transfor- mers and electrical motors.	0.565	37	1.464	23	0.899	18	159.12	13
79.	Electrical fans and lamps.	0.903	5	1.585	17	0.682	31	75.53	75
80.	Electrical cables and wires.	0.700	18	1.474	20	0.774	23	110.57	45

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
81.	Storage batteries and dry cells.	0.846	10	1.976	6	1.130	5	133.57	25
82.	Railway locomotives.	0.733	16	1.648	14	0.915	17	124.83	30
83.	Railway rolling stock and tramway works.	0.654	28	1.467	22	0.813	22	124.31	32
84.	Manufacture and assembling of motor vehicles of all types.	0.682	21	1.776	9	1.094	7	160.41	12
85.	Automobile ancillaries.	0.655	27	1.473	21	0.818	21	124.89	29
86.	Repair of motor vehicles.	0.544	43	1.203	35	0.659	34	121.14	34
87.	Manufacture of aircraft.	1.430	2	3.929	1	2.499	1	174.76	9
88.	Ships and other vessels drawn by power and boat building.	0.824	11	1.588	16	0.764	25	92.72	61
89.	Photographic paper and printing, manufacture of other photographic and optical goods and optical glass.	0.444	58	1.447	25	1.003	12	225.90	3
90.	Manufacture of watches and clocks.	0.854	9	1.248	33	0.394	65	46.16	92

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
91.	Jewellery.	0.528	45	0.813	66	0.285	81	53.98	88
92.	Arms and Ammunition.	0.689	20	1.423	26	0.734	27	106.53	51
93.	Fountain pen, pen and pencil making.	0.433	61	0.709	73	0.276	82	63.74	84
94.	Surgical and scientific instruments.	0.557	40	1.126	41	0.569	49	102.15	54
95.	Manufacture of ice.	0.300	84	0.790	69	0.490	55	163.33	11

various industries in the hierarchical line of wage payment, has altered much in recent years.

As of 1960, Petroleum Refineries paid the highest wages. The second place was occupied by Aircraft Manufacturing industry followed by the Tyres and Tubes, Cigarettes, Electric Fans and Lamps, Metal Furniture and Fixture, ... etc., in the descending order. The position in 1970 was only slightly different. The Aircraft Manufacturing industry emerged as the highest wage paying industry and Petroleum Refineries slipped to the second place. Tyres and Tubes maintained their third place. The fourth place which was occupied by Cigarettes in 1960, now came to be occupied by Soaps and Glycerine which had improved its position from the 7th place in 1960. More spectacular was the case of Fertilizer industry. From 30th place in 1960 it rose to capture the 7th place in 1970. Similarly, the industry manufacturing Motor Vehicles improved its position from 21st in 1960 to 9th in 1970. Other industries which rose up significantly in the wage hierarchy were the industries manufacturing Electrical and Non-Electrical Machinery, Synthetic Resin and Plastics, Synthetic Rubber, Products of Fermentation industries, Turpentine and Resin etc.

Among the low wage paying industries in 1960, prominent were Manufacturing of Wooden Furniture and Fixtures,

Mica Factories, Zarda, Biri, Cotton Ginning, Cleaning and Pressing, Coffee Curing Works etc. The position at the lower end of the scale, as it existed in 1970, was more or less the same.

The striking feature is that both in 1970 as well as in 1960, though to a lesser extent, the industries which belonged to the group of relatively high wage paying industries were Petroleum, Tyres and Tubes, Machinery, Drugs and Pharmaceuticals, Basic Chemical industries, Basic Metal industries and Transport Equipment, all of which can broadly be classified as heavy goods industries or, for that matter, basic and capital goods industries.

Among the industries which figured prominently in the group of comparatively low wage paying industries main were those manufacturing Food Products, Tobacco (excluding cigarettes), Textiles, Wood and Cork, Printing and Publishing, Pottery and Non-Metallic Mineral Products... etc., all of which can broadly be classified as traditional and consumer goods industries.

Apart from this, the movement of various industries in the wage hierarchy over this period had been such that whereas the basic and capital goods industries had been steadily moving up the scale, the traditional and consumer goods industries had been consistently moving down the scale. The industries which improved their relative position in

the wage hierarchy during this period were Fertilizers, Synthetic Resin and Plastics, Inorganic and Organic Heavy Chemicals, Products of Petroleum, Ferroy Alloys and Special Steel, Machine Tools, Electrical and Non-Electrical Machinery and Motor Vehicles, all of which happen to be basic and capital goods industries and the industries which suffered severe reverses were Food Preparation (mainly Vanaspathi), Textiles, Wooden and Cane Containers, Paper, Leather Products, Structural Clay Products, etc., all of which can be classified as traditional and light goods industries.

This phenomenon becomes more clear if we study, in particular, the top and the bottom quartiles of the wage distribution. The two parts of the Table No. 3.2 show which industries occupied the first twenty-five positions from the point of view of wage payment and which the last twenty-five positions in each of the two years 1960 and 1970. Both the top and the bottom quartiles of the wage distribution show remarkable stability. Of the twenty-five highest wage paying industries in 1960, as high as seventeen appear in the list of twenty-five highest wage paying industries in 1970 as well. The industries which slipped out of the top quartile during 1960-70 were those manufacturing Leather Products, Cotton Textiles, Letter Press and Lithographic Printing etc. and their place was subsequently occupied by

TABLE NO. 3.2

Part - I

INDUSTRIES WHICH OCCUPIED THE TOP 25 POSITIONS
REGARDING WAGES

1960			1970		
Rank	Code No.	Description of the Industry	Rank	Code No.	Description of the Industry
1	56	Petroleum refineries	1	87	Manufacture of aircraft
2	87	Manufacture of aircraft	2	56	Petroleum refineries
3	45	Tyres and tubes	3	45	Tyres and tubes
4	17	Cigarettes	4	58	Soaps and glycerine
5	79	Electrical fans and lamps	5	17	Cigarettes
6	70	Manuf. of furniture and fixture-metal	6	81	Storage batteries and dry cells
7	58	Soaps and glycerine	7	49	Fertilizers
8	67	Iron and steel-metal	8	67	Iron and steel-metal
9	90	Manuf. of Watches and Clocks	9	84	Manuf. and assembling of motor vehicles of all types
10	81	Storage batteries and dry cells	10	46	Rubber footwear
11	88	Ships and other vessels drawn by power, and boat building	11	53	Drugs and pharmaceuticals and perfumes, cosmetics, et
12	50	Dye stuffs and manuf. of paints, varnishes and lacquers	12	70	Manuf. of furniture and fixture-metal
13	53	Drugs and pharmaceutical and perfumes, cosmetics, etc.	13	71	Non-ferrous basic metal industries
14	46	Rubber footwear	14	82	Railway locomotives

1960			1970		
Rank	Code No.	Description of the Industry	Rank	Code No.	Description of the Industry
15	44	Manuf. of footwear	15	76	Machine tools
16	82	Railway locomotives	16	88	Ships and other vessels drawn by power and boat building
17	71	Non-ferrous basic metal Industries	17	79	Electrical fans and electrical lamps
18	80	Electrical cables and wires	18	54	Synthetic resin, plastic, synthetic rubber, turpentine etc.
19	62	Asbestos cement	19	77	Manuf. and assembling of prime movers and boilers, such as diesel engines, road rollers, conveying equipment, etc.
20	92	Arms and ammunition	20	80	Electric cables and wires
21	84	Manuf. and assembling of motor vehicles of all types	21	85	Automobile ancillaries
22	69	Iron and steel structurals	22	84	Railway rolling stock and tramway works
23	41	Letter press and lithographic printing etc.	23	78	Equip. for transmission and distribution of electricity and electric motors

1960			1970		
Rank	Code No.	Description of the Industry	Rank	Code No.	Description of the Industry
24	43	Manuf.-leather products except footwear and weaving apparel	24	50	Dye stuffs, paints, varnishes and lacquers
25	20	Cotton textiles	25	89	Photographic papers and printing, manuf. of other photographic and optical goods

Code Nos in the table refer to the serial nos. given in Table No. 3.1

INDUSTRIES WHICH OCCUPIED THE BOTTOM 25 POSITIONS REGARDING WAGES

Part II

1960			1970		
Rank	Code No.	Description of the Industry	Rank	Code No.	Description of the Industry
95	37	Manuf. of furniture and fixtures-wooden	95	63	Mica factories
94	63	Mica factories	94	14	Coffee curing works
93	19	Zarda	93	29	Cotton ginning, cleaning and pressing
92	15	Biri	92	30	Wool bailing and pressing
91	29	Cotton ginning, cleaning and pressing	91	61	Stone dressing and Crushing
90	14	Coffee Curing works	90	48	Salt

1960			1970		
Rank	Code No.	Description of the Industry	Rank	Code No.	Description of the Industry
89	7	Khandsari sugar and gur	89	13	Tea manufacturing
88	51	Explosives including gun powder and safety fuses	88	15	Biri
87	1	Slaughtering and preservation of meat, fish and other sea food	87	37	Manuf. of furniture and fixture-wooden
86	35	Saw milling	86	7	Khandsari sugar and gur
85	4	Flour, rice and dal mills	85	16	Cigar and tobacco manuf. - others
84	95	Manufacture of ice	84	3	Canning & preserving of fruits and vegetables
83	33	Clothing and tailoring	83	36	Plywood
82	30	Wool bailing and pressing	82	19	Zarda
81	13	Tea manufacturing	81	35	Saw milling
80	61	Stone dressing and crushing	80	23	Silk
79	48	Salt	79	4	Flour, rice and dal mills
78	55	Inorganic and organic heavy chemicals	78	9	Manuf. of edible oils (o.t. hydrogenated oil)
77	31	Ccjr manufacture	77	59	Fire bricks, refractories, tiles
76	3	Canning and preserving of fruit and vegetable	76	1	Slaughtering and preservation of meat, fish and other sea food

1960			1970		
Rank	Code No.	Description of the Industry	Rank	Code No.	Description of the Industry
75	36	Plywood	75	43	Manuf. of leather products except footwear
74	68	Ferroy alloys and special steel	74	64	China-ware and pottery
73	23	Silk	73	93	Pen and pencil making, fountain pen manuf.
72	64	China-ware and pottery	72	18	Snuff
71	27	Knitting mills	71	33	Clothing and tailoring

Code Nos in this table correspond to the serial Nos given in the Table No. 3.1.

Fertilizers, Machine Tools, Synthetic Resin and Plastic, Non-Electrical Machinery, Railway Rolling Stock and Equipment for Transmission and Distribution of Electricity etc. So over time, the industries which slipped out of the top quartile were those belonging to Food, Textiles, Printing and Leather group and the industries which subsequently moved in this category were those belonging to Chemicals, Machinery and Transport Equipment group. This clearly shows that over the years the consumer and light goods industries were giving place to heavy and capital goods industries at the higher end of the wage scale.

The bottom quartile was also characterised by remarkable stability. Of the twenty-five industries appearing in this quartile in 1960, twenty appeared in 1970 as well. The Inorganic and Organic Heavy Chemicals, Explosives including Gun Powder and Safety Fuses, Ferroy Alloys and Special Steel which appeared in the list of twenty-five low wage paying industries in 1960 were no more there in 1970. Similarly, industries manufacturing Tobacco, Edible Oils, Structural Clay Products, Snuff and Leather Products which were ranked pretty high in the wage scale in 1960, came to be included in the bottom quartile in 1970. In fact, the bottom quartile in 1970, almost without any exception, consisted of industries belonging to Food, Tobacco, Textiles,

Wood and Cork and Non-Metallic Mineral Products group. The picture that emerges is that in the bottom quartile the basic goods industries, particularly, Chemicals and Basic Metals gave place to those belonging to Food Manufacturing and Non-Metallic Mineral Products group.

The upshot of all this discussion is that over time the top quartile came to be absolutely dominated by industries manufacturing Chemicals and Chemical Products, Petroleum and Petroleum Products, Basic Metals, Machinery and Transport Equipment and the bottom quartile came to be dominated by the industries belonging to the group of Food, Tobacco, Textiles, Wood and Cork, Paper, Printing and Publishing and Leather Products. So the capital goods and the basic goods industries not only occupied comparatively higher ranks to start with but also improved their positions considerably in the wage scale. Opposite happened in the case of the industries belonging to the group of traditional and consumer goods industries. This shows to some extent, the fluctuating fortunes of industries - their progress and paying capacities.

Despite the instances of upward and downward shifts, as noted above, there seems to be a remarkable stability in the overall rank structure of industries by their wage rates

over the years. Most of the industries seem to have maintained their relative positions in the wage hierarchy. The rank orders of industry-wages have remained highly similar. Correlation coefficient between earning orders of industries at two point of time viz., 1960 and 1970 comes out to be 0.88 which is significant at 1% level of significance. This shows the remarkable tenacity with which the various industries have stuck to their positions in the wage structure.

Another interesting feature that emerges from the study of this wage structure is that the absolute wage changes in industry wage rates have not been occurring at variance with their original wage levels in 1960. Calculating the absolute wage increases (or decreases) registered by various industries during the period 1960-70, we notice the following trend.

The industry which gained a maximum absolute wage increase during this period was Aircraft Manufacturing followed by Petroleum Refineries, Soaps and Glycerine, Fertilizers, Storage Batteries, Cigarettes, Motor Vehicles etc... Interestingly, all these industries are also the industries which were classified as relatively high wage paying industries in 1960. In fact, as is evident from Table No. 3.3(A), if we compare the twenty-five highest wage paying industries in 1960 with those twenty-five industries which registered the highest absolute wage

TABLE NO. 3.3 (A)

INDUSTRIES REGISTERING THE MAXIMUM ABSOLUTE
WAGE INCREASES DURING 1960-1970

Rank	Code No.	Description
1	87	Manufacture of aircraft
2	56	Petroleum refineries
3	58	Soaps and glycerine
4	49	Fertilizers
5	81	Storage batteries and dry cells
6	17	Cigarettes
7	84	Manuf. and assembling of motor vehicles of all types
8	76	Machine tools
9	54	Synthetic resin, plastic, synthetic rubber, turpentine and resin
10	45	Tyres and tubes
11	46	Rubber footwear
12	89	Photographic paper and printing, manuf. of other photographic goods etc.
13	53	Drugs and pharmaceuticals, perfumes, cosmetics, etc.
14	77	Manufacture and assembling of prime movers and boilers, such as diesel engines, road rollers, conveying equipment, tractors etc.
15	71	Non-ferrous basic metal industries
16	67	Iron and steel-metal
17	82	Railway locomotives
18	78	Equipment for transmission and dist. of electricity including transformers and electrical motors
19	55	Inorganic and organic heavy chemicals
20	70	Manuf. of furniture and fixture - metal
21	85	Automobile ancillaries
22	83	Railway rolling stock and tram way work
23	80	Electrical cables and wires
24	57	Manuf. of misc. products of petroleum and coal
25	88	Ships and other vessels drawn by power and boat building

increases during the period 1960-70, we find the list to be more or less the same.

Identical was the situation at the lower end of the scale. Starting from the lowest level, we find that the industry which gained least in terms of absolute wage increase was the one manufacturing Leather Products (except footwear and other wearing apparel). The second from the bottom was Coffee Curing Works, preceded by Tobacco Manufacturing, Mica Factories, Wool Bailing and Pressing, Cotton Ginning, Cleaning and Pressing, Stone Dressing and Crushing, etc. On an average, the industries which appeared at relatively low points of the wage hierarchy in 1960, also lagged behind in terms of absolute wage increases over the period (Table 3.3(b)).

So the available evidence suggests that the industries which in the first instance were paying higher than average wages also happened to register higher than average absolute wage increases over the period and vice-versa.

In fact, the phenomenon of heavy and capital goods industries paying higher than average wages in the first instance and the subsequent invariance of the wage changes in relation to their initial levels can be viewed as a direct outcome of the planning strategy, being pursued in India.

TABLE 3.3 (B)

INDUSTRIES REGISTERING THE MINIMUM ABSOLUTE
WAGE INCREASES DURING 1960-1970

Rank	Code No.	Description
95	43	Manuf. of leather products except footwear and other wearing apparel
94	14	Coffee curing works
93	16	Cigar and tobacco manuf. - others
92	63	Mica factories
91	30	Wool bailing and pressing
90	29	Cotton ginning, cleaning and pressing
89	61	Stone dressing and crushing
88	48	Salt
87	13	Tea manufacturing
86	36	Plywood
85	3	Canning and preserving of fruits and vegetable
84	23	Silk
83	59	Fire bricks, refractories, tiles
82	93	Pen and pencil making
81	91	Jewellery
80	9	Manuf. of edible oils
79	7	Khandsari sugar and gur
78	34	Umbrella manufacture
77	15	Biri
76	35	Saw milling
75	18	Snuff
74	4	Flour, rice and dal mills
73	38	Wooden and cane containers, joinery and general wood working
72	64	Chinaware and pottery
71	37	Manuf. of furniture and fixture-wooden

The objective of economic policy that has been most fully articulated and the one which the Government has regarded as the most important is economic growth. In the planner's view the chief limiting factor in the maximization of output was the low level of capital stock of the economy and the chief imperative was to increase the capital stock through a high rate of investment. The identification of the scarcity of capital led during the second plan to the formulation of what has come to be known as the Mahalanobis Strategy. The capacity to produce output at any given point in time is embodied in a given volume of capital goods of particular composition. To increase output capacity one needs then to increase the stock of capital goods within the economy. The process of capital formation was thus seen as a process of production of capital goods and the rate of growth of output capacity could be increased by maximizing the share of resources devoted to the production of these capital goods. The basic strategy then becomes a maximization of the share of investment going to be the production of heavy and capital goods.

The plan-frames have repeatedly stressed the need of establishing and expanding the basic industries to manufacture heavy machinery with all possible speed. This would enable India to instal new plants for the production of steel,

cement, and other investment goods with the help of machinery manufactured out of the domestic resources; and to produce in increasing quantities machinery required for mineral prospecting and mining, hydroelectric projects, electrical appliances, railways and other forms of transport and for the production of consumer goods generally....

India's dependence on imports of capital goods was considered to be a fundamental structural weakness which needed to be corrected as quickly as possible. It was believed that it would be much more economical from the national point of view to produce in India as much heavy machinery as possible because this would ensure a steady supply of capital goods which would make India increasingly independent of imports and would strength India's position in the world market.¹

It would appear that the emphasis on machine making industries was based partly on broad strategic considerations, partly on some other ground which makes the rate of growth of the economy as a whole dependent on the development of these basic and capital goods industries.

1. P.C. Mahalanobis, "Some Observations on the Process of Growth of National Incomes", Sankhya, Vol. 12, Part 4, September 1953.

As a matter of development policy, the Government began to invest very heavily in these industries. In all the Industrial Policy Resolutions, the basic and capital goods industries were meted out the most favoured treatment in terms of allocating essential inputs, including foreign exchange, on a priority basis. Consequently, throughout this period, the traditional industries such as Food Processing, Tobacco, Textiles and Wood and Cork manufacturing grew less rapidly than the newer industries such as Iron and Steel, Machinery production, Petroleum, Chemical and Transport Equipment. The redeeming feature of the period of planning was that the structure of industries changed in favour of basic and capital goods sector. The basic and capital goods group accounted for 49.6 per cent of the total productive capital in the organized sector in 1960, but in 1970, its share in productive capital rose to 78.6 per cent. In total factory employment, its share rose from 24.7 per cent in 1960 to 42.5 per cent in 1970. Similarly, the contribution to value added improved from 36.8 per cent to 56.3 per cent during this period. The share of consumer goods industries, viz., Textiles, Sugar, Paper, Jute, Tobacco, etc., has declined. Basic industries which include Iron and Steel, Fertilizers, Chemicals, Cement and Ferrous and Non-Ferrous Metals have improved their position significantly under the impact of

industrialization programme. Several capital goods industries hitherto unknown have been brought into existence and developed. The index of industrial production, with 1960 as base, of basic and capital goods industries increased from 112.7 and 118.0 respectively in 1961 to 212.0 and 214.0 in 1969, whereas the index of consumer goods industries just managed to increase by 38 points from 107 in 1961 to 145 in 1969.

The carrying through of these new industries entailed, besides the financial investment requirement, a great deal of strengthening of the organizational and administrative personnel available to Government. It also necessitated the adoption of expeditious procedures in the matter of taking decisions and executing them. It was but natural to expect a higher demand for scarce labour skills on the part of these industries compared to the others, which was bound to raise wage rates for these industries more than an average. Thus, basic and capital goods industries, which have the strongest linkages with the other sectors of the economy and as such were viewed very fundamental to the process of economic growth, were not only the relatively high paying industries in the first instance but also registered higher than average wage increases subsequently.

To find out the extent to which wage changes in various industries were in consonance with their initial level of

wages, correlation coefficient was calculated between the initial rank order of industry wage rates and subsequent wage changes therein. Coefficient of correlation between industries ranked according to initial level of average wage and according to absolute increase in it was found to be 0.68 for 1960-70. On the other hand with percentage increase, the coefficient of rank correlation was found to be 0.041. These results would imply (i) industries with higher wage in the base year had higher absolute increases than the industries with lower wage; (ii) the quantum of relative change in average wage has not been related in any systematic way to the original level.

The particular way in which absolute and relative change in the average wage is related to the initial level has implications for the change in the extent of inter-industry wage differentials. The above two conclusions clearly point toward a dispersion of the wage structure. That the extent of wage variation during this period has increased becomes clear if we compare some statistics of dispersion. To find out the extent of absolute and relative wage differentials, the coefficient of standard deviation and coefficient of variation was calculated for the years 1960 and 1970. The values of these coefficients are given in Table No. 3.4.

TABLE NO. 3.4

Year	Mean	S.D.	C.V.
1960	0.542	0.241	44.50
1970	1.141	0.556	48.74

The above indices show that both the absolute and relative wage variation has increased during this period. The absolute wage dispersion has, however, increased more than the relative wage dispersion. This is so, because, to the extent higher wage paying industries draw higher wage increases and, therefore, besides making the range wider, also push up the average wage level, thus dampening the extent of relative differentials. The conclusion that this period was characterised by increasing wage differentials, howsoever measured, is inevitable.

3.4 SUMMARY

The main conclusions emerging from the analysis in this chapter can be summarized as follows:

To start with, the wages in the basic and capital goods industries viz., Chemical and Chemical Products, Petroleum Products, Basic Metals, Machinery and Transport Equipment were considerably higher than those prevailing

in the Food Processing, Tobacco, Textiles, Wood and Cork and Printing. Besides this, the movement of various industries in the wage hierarchy had been such as to strengthen the concentration of heavy industries towards the high value end of the wage distribution and that of traditional and consumer goods industries towards the low value end of wage distribution. Despite instances of upward and downward movement, the overall wage structure exhibits remarkable stability. This is supported by the significant value of the coefficient of rank correlation between the rank orders of various industries, according to their wage payments, in the initial and terminal years.

There has been an increase in the overall inter-industry wage differentials during the period under study. This is quite clear from the increase in the coefficient of variation from 44.50 to 48.74 during the period under review. The result is supported by the positive significant value of the coefficient of rank correlation between the initial wage levels and the absolute changes therein over the period of the study.

It is, therefore, clear that while inter-industry wage differentials have increased depending on various factors connected with the growth of each industry, the inter-industry wage structure, i.e., the relative positions of the industries in order of their wage payments has remained largely stable.

CHAPTER 4

DETERMINANTS OF INTER-INDUSTRY WAGE
DIFFERENTIALS: THE THEORETICAL
ANALYSIS

4.1 FACTORS IN WAGE DIFFERENTIALS

An empirical analysis of the various factors that influence the wage structure in different sectors of the economy plays a crucial role in the formulation of national wage policy. The available statistical data on wage rates in Indian economy clearly shows that the average rates of wages vary significantly among different industries,¹ different occupations,² and different regions.³ An important area of empirical investigation in the field of wage structure in India, in which several studies have already

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1. Bakul H. Dholakia: "Determinants of Inter-Industry Wage Structure in India", Indian Journal of Industrial Relations, Vol. 11, No. 4, April 1976.
 2. Pramod Verma: "Occupational Wage Structure in India", Working Paper No. 182, Indian Institute of Management, Ahmedabad, October 1979.
 3. (i) S.K. Rao: "Regional Wage Differentials", Indian Journal of Labour Economics, January 1964.
 (ii) K. Saradmoni: "Inter-State Differences in Manufacturing Workers' Earnings", Economic and Political Weekly, May 31, 1969.
 (iii) T.S. Papola: "Regional Wage Differentials in Indian Industries, 1950-64", Anvesak, Vol. 1, No. 1, June 1971.
 (iv) T.S. Papola: "Inter-regional Variations in Manufacturing Wages in India: Industrial Structure and Regional Effects", Indian Journal of Industrial Relations, 1971-72, Vol. 7, No. 3.

been made, has been the analysis of inter-industry wage differentials in the organized manufacturing sector.¹

The theoretical framework that is developed for explaining the inter-industry wage differentials consists mainly of two basic hypotheses. The first hypothesis, which may be called 'the expected ability to pay hypothesis' has been advanced by David G. Brown, who argues that "wage level differences among manufacturing industries result primarily from industry-by-industry differences in the employer's estimates of their future abilities

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1. An illustrative list of empirical studies on inter-industry wage structure in India would include: (i) G.K. Johri and N.C. Agarwal: "Inter-industry wage structure in India, 1950-61 - An Analysis", Indian Journal of Industrial Relations, Vol. 1, No. 4, April 76; (ii) P.K. Sawhney: "Inter-Industry Wage Differentials in India", Indian Economic Journal, Vol. 17, No. 1, July-September 1969; (iii) Pramod C. Verma: "Inter-Industry Wage Structure in India - Further Evidence", Indian Journal of Industrial Relations, Vol. 6, No. 3, January 1971; (iv) T.S. Papola: "Inter-Industry Wage Structure - Technology Hypothesis", Anvesak, Vol. 2, No. 1, June 1972; (v) Bakul H. Dholakia: "Determinants of Inter-Industry Wage Structure in India", Indian Journal of Industrial Relations, Vol. 11, No. 4, April 1976; (vi) Bakul H. Dholakia: "Wage Structure in Consumer Goods and Capital Goods Industries in India", The Indian Journal of Labour Economics, Vol. 21, No. 4, January 1979; (vii) K.K. Bhatia and R.N. Mukerjee: "A Study on Wage Differences in Indian Industries", in J.C. Sandesara and L.K. Deshpande (ed.), Wage Policy and Wage Determination in India, Bombay, 1970; (viii) "Wage Differentials in Indian Industry", National Council of Applied Economic Research, July 1967, New Delhi.

to pay wages".¹ The other hypothesis, which may be called the 'technology hypothesis' is based on the premise that the technological levels of different industries vary considerably at any point of time which in turn implies that the skill mix of the working force employed in different industries would vary giving rise to inter-industry differentials in the average wage rates computed for each industry as a whole.²

Labour economists seem to agree that the existence of inter-industry wage differentials and changes in these differentials can't be explained by any one determinant, but must rather be accounted for by the interaction of a number of variables. A large measure of agreement is also present concerning the factors that influence the wage structure. Various writers differ considerably, however, as to the relative importance of the different factors.

Dunlop,³ for example, tells us that

"The inter-industry pattern of changes in average hourly earnings over substantial periods is to be explained fundamentally in

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1. David G. Brown: "Expected Ability to Pay and Inter-Industry Wage Structure in Manufacturing", Industrial and Labour Relations Review, Vol. 16, No. 1, October 1962.
 2. T.S. Papola: "Inter-Industry Wage Structure - Technology Hypothesis", op. cit.
 3. John T. Dunlop: "Productivity and the Wage Structure" in Income, Employment and Public Policy, New York: W.W. Norton 1948, p. 360.

terms of the following factors: change in productivity, change in output, proportion of labour cost to total outlays, competitive conditions in the product market, and the changing skill and occupational content of the industries...."

This theoretical framework for inter-industry wage movements appears to give no distinctive place to the role of labour organisation.

Ross,¹ on the other hand, argues that

"Real hourly earnings have advanced more sharply in highly organised industries than in less unionized industries, in periods of stable or declining union membership as well as in periods of rapid organization. No reason has been found to believe that the relationship is coincidental".

Ross and Goldner,² find three major sources of inter-industry wage variations: the degree of unionization, the degree of employment expansion or contraction and the degree of competition or oligopoly in the product market. According to these authors,

"From an analytical standpoint, the difficulty is that these three influences ... have been operative in substantially the same group of industries. Statistical means are not at hand to disentangle their separate effect or to establish which, if any, is the primary cause. Our own belief is that unionization is a source of wage advantage, which operates most effectively under facilitating environmental circumstances".

Garbarino³ states that

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1. Arthur M. Ross, Trade Union Wage Policy, Berkeley, and Los Angeles: University of California Press, 1950, p. 132.
 2. Arthur M. Ross and William Goldner: "Forces Affecting the Inter-Industry Wage Structure", Quarterly Journal of Economics, Vol. 64, No. 2, May 1950, pp. 280-81.
 3. Joseph Garbarino: "A Theory of Inter-Industry Wage Structure Variation", Quarterly Journal of Economics, Vol. 64, No. 2 (May 1950), pp. 305.

"While wage behaviour is the result of the operation of a large number of factors, it is argued that the variables of productivity, concentration and unionization will be capable of explaining the major portion of differential movements".

Dunlop arrives at his conclusions by deductive reasoning and supports some of them with statistical evidence. Ross, Goldner and Garbarino attempt to substantiate all of their conclusions by empirical study of statistical data.

Nearer home, in an attempt to identify the variables which were associated with inter-industry wage differentials, Johri and Agarwal¹ focussed their attention on the demand variables such as gross profitability, labour productivity, contract labour ratio and wage cost ratio. They concluded that labour productivity was significantly associated with wages either singly or in conjunction with other explanatory variables.

Verma² followed a similar approach but added other explanatory variables such as fixed capital per worker and the ratio of wage bill to net value added. The study suggested that there was a close relationship between wages and productivity. However, the regression coefficient for capital intensity had a negative sign when included

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1. C.K. Johri and N.C. Agarwal: "Inter-Industry Wage Structure in India, 1950-61, An Analysis", op. cit.
 2. Pramod C. Verma: "Inter-Industry Wage Structure in India - Further Evidence", op. cit.

in a multiple regression model. But when capital intensity and wages were considered together, the coefficient became positive as well as significant.

Sawhney¹ in his study covering the period 1953-63 confirmed the hypothesis that productivity was the most significant factor in the explanation of the inter-industry wage structure.

In a recent study, T.S. Papola² has examined the problem of inter-industry wage structure from the viewpoint of the technology hypothesis and argued that "technological advance requires not only a larger component of skill in the work force, but it also leads to greater degree of skill-differentiation and specificity of jobs in industries". Papola took the view that the skill mix required for a specific industry would dictate the differential payment in that industry, in so far as the major source of differential payment would lie in a skill mix difference between plants and industries.

Pramod Verma³ has also argued in his recent study on occupational wage structure that "the job content-technologically determined - would be the basis for

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1. P.K. Sawhney: "Inter-Industry Wage Differentials in India", op. cit.
 2. T.S. Papola: "Inter-Industry Wage Structure - Technology Hypothesis", op. cit.
 3. Pramod Verma: "Occupational Wage Structure in India", op. cit.

occupation rates which in turn would be reflected in the average rate of a plant or industry", which implies that, while economic factors and institutional forces affect the wage structure, "the primacy of technologically determined wage differentials as the base of wage structure still remains to be reckoned with".

The basic source of data for the empirical studies on inter-industry wage structure has been the Annual Survey of Industries. Most of the studies define an industry at the two-digit level of aggregation though a few studies have also examined industries at the four digit level of aggregation.¹

A perusal of all these studies shows, that adequate care has not been taken in measuring the variables properly. The specification of the variables had been rather crude. For example, all the researchers have included the "skill composition" of the labour force as an explanatory variable in the regression model. But the indexing of this variable leaves much to be desired. Johri and Agarwal, have used the ratio of contract labour to total labour as a measure of skill composition of the labour force, under the assumption that only contract labour is employed on unspecified and unskilled jobs. This is a

1. For instance, Pramod Verma's study presents the results of a detailed analysis of 209 four digit level industries for the year 1964. Cf. Ibid.

dubious assumption indeed. The percentage of employees "other than production workers" to total employees has been used as a proxy for skill mix in a study by P.K. Sawhney. In this study all the production workers have been classified as "unskilled" and the non-production workers as "skilled." A classification lacking any sound justification.

In some other studies, notably by B.H. Dholakia, data on skill mix has been taken from a study by Pant and Vasudevan.¹ The assumption involved is that the relative skill composition of labour force in the two-digit level industries estimated for the year 1956 reflects the relative skill mix for the year 1964 also. That the skill requirements, and hence the occupational composition of the labour force of an industry, will not undergo significant changes over a short span of time is understandable, but to assume that so will be the case over a much longer period, say a decade, is rather unjustifiable. This is more so in the case of an economy following a programme of rapid industrialization and undergoing significant structural transformation. In such a case, the rigidity in the occupational structure is not to be expected.

1. Pitamber Pant and M. Vasudevan: "Occupational Pattern in Manufacturing Industries, India, 1956", Scientific and Technical Manpower and Perspective Planning Division, Planning Commission, Government of India, 1959.

Papola put forward the hypothesis that the skill mix required for a specific industry would dictate the differential payment in that industry. The hypothesis was a step toward examining the explanatory variables at work in a plant situation. However, this technological view could not be substantiated because Papola used the proxy variable of capital intensity instead of a direct measure of skill mix.

The above discussion clearly shows that instead of using a direct measure of skill mix all the studies have relied on indirect proxies of doubtful validity. The same can be said of some of the other variables which had been equally unfortunate in not finding a proper expression.

Another disquieting feature of the available literature on inter-industry wage differentials is the one sided choice of the variables through which the wage differentials have been sought to be explained. The variables repeatedly tried in all the studies had been that of productivity, skill composition, ratio of wage cost to value added and the gross profits. No attempt has been made to consider and to evaluate the possible influence of market structure and market power on the industry wage levels. The effect of seasonality and instability of employment on the wage levels has not been discovered. Whether some systematic

relationship can be established between the sex composition of the work force and the wage levels has not been investigated. These are some of the areas where further probing can considerably increase our understanding of the forces affecting wage relationships among industries. In order to overcome some of these shortcomings this paper further makes an empirical investigation into the determinants of inter-industry wage differentials. Along with the variables whose possible influence on wage levels has already been established, we intend to introduce some new variables whose statistical significance has not been ascertained so far.

4.2 HYPOTHESES:

This takes us to the problem of stating a specific relationship between the selected factors and wages. We are not in a position to state beforehand the relative importance of one factor as compared to others in a given situation, but on the basis of established facts in economic theory and history we can easily postulate the following hypotheses stating the relationship in which these determinant generally stand with wages.

1. Relative variation in wages across industries will correspond to the relative differences in labour productivity.

2. Skill mix differentiation resulting from technological progress would directly affect the wage differentials.

Thus, the industries in which the occupational structure is weighed heavily in favour of high-skill work force, the average wage rates will be higher in comparison to those industries in which the average requirement of skill is lower.

3. The degree of competition in the product markets of various industries is another important determinant of wage differentials. Product market monopolists and oligopolists will be better able to pay and sustain high wage levels, than the industries which face strong competition in the product market.
4. Seasonal and fluctuating employment will normally be associated with lower wages than more regular patterns of employment.
5. Higher the proportion of the wage bill to total value added, lower will be the wages than otherwise.
6. The industries with a low ratio of female work force to total work force will tend to have higher average wage rates as compared to the industries having higher ratio of female labour force to total labour force.

The formulation of the logical basis and empirical verification of each of these hypotheses forms the subject matter of the present and the next chapter.

4.3 MODE OF ANALYSIS

For the verification of each hypothesis (and, therefore, for evaluating the role of each factor) two types of analyses, mutually complementary and perhaps inseparable, have been used. First, we have tried to discuss the development of the principle postulating a relationship between the factor and wages as found in theoretical literature. Then we have statistically attempted to verify this relationship. The first analysis has been done in the present chapter, whereas the next chapter contains the empirical verification of each of these hypotheses. The latter type of analysis is attempted at two levels. First, we have tried to test the hypotheses independently. This has been done by correlating the series of the indicator of the factor concerned and wages. The resulting simple and partial correlation coefficients have been analysed to study the concomitancies among the variables. Second, an attempt has been made to integrate the conclusions of the analysis relating to the verification of partial hypotheses. The technique adopted therein is multiple regression analysis. The analysis may not succeed in precisely measuring the contribution of each factor in wage differentials, but it certainly points out the relative significance of each factor in relation to others. The results of this study are thus expected to provide fresh insights into the theoretical propositions

regarding wage differentials.

4.4 PERIOD OF REFERENCE

Attention in this study is focussed upon the wage structure at a given time rather than changes over a period of time. Comparisons of wage movements through time are useful and interesting, and studies of this sort have been made by Dunlop, Ross, Garbarino and Papola etc. But examination of the wage structure at a given time is also useful. At any moment the wage structure reflects the accumulated influence of various forces over a considerable period of time. The conditions affecting the movement of wages in an industry during the last decade may not be the same as those affecting the movement in the previous decade. Hence, the analysis of the wage structure at a given time may reveal some of the long run influence playing upon wages more clearly than the study of changes in the wage structure between two dates.

The reference year of this study is 1970. This is the latest year for which the data are available.

4.5 WAGES AND PRODUCTIVITY

The relationship between wages and productivity has been an important theme in economic theory. There are varying approaches ranging from postulating a positive relationship between the trends in production per worker

and wages, to the theoretical exercise in devising a principle of equality between marginal productivity and wages. These approaches proceed on the assumption of direct and automatic relation between a rise in productivity and a rise in wages. On the other hand, it is sometimes argued that there is no such automatic adjustment which makes wages rise in direct response to a rise in productivity; the relation, to the extent it exists, is indirect: through the effects of productivity on other wage-determining factors.¹ According to this line of reasoning, productivity is merely a 'permitting factor'² in raising wages.

Nevertheless, the contention that a high level of wages can ultimately result only from a rising level of productivity is indisputable. The allurements of fitting this general proposition into the micro-economic equilibrium framework, led the neo-classical economists to invent the concept of marginal net product as the sole determinant of wages. The tradition of postulating a causal relationship between marginal productivity and wage-rate is highly surprising in view of the following warning by one of its master - architects, Alfred Marshall: "This (marginal

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1. G. Soule, "The Productivity Factor in Wage Determination", American Economic Review, Papers and Proceedings, 1923, p. 130.
 2. See, J.W. Garbarino, Wage Policy and Long-Term Contracts, Brookings, Washington, 1962, p. 43.

productivity) doctrine has sometimes been put forward as a theory of wages. But there is no valid ground for any such pretension. The doctrine that the earnings of a worker tend to be equal to the net product of his work, has by itself no real meaning".¹

Later some economists thought of empirically testing the validity or otherwise of this principle in the field of wages. Lester, for example, made a study of several industrial companies and found that the principle of equality of marginal productivity and factor price has serious shortcomings for application specially in the problems related with wages and employment.² Nearer home, Gadgil found that, although the assumptions underlying the operation of the marginal productivity theory were to be found in Indian economy, in the pre Second World War period the theory did not operate. Therefore, Gadgil concluded: "It is obvious that an exact correspondence between the marginal product of labour and its remuneration is a purely theoretical concept and such a correspondence cannot be observed in practice".³ Some basic objections have been

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1. A. Marshall, Principles of Economics, Eighth Edition, London, 1961, p. 429-430.
 2. R.A. Lester, "Shortcomings of Marginal Analysis for Wage - Employment Problems", American Economic Review, Vol. XXXVI, No. 3, 1946.
 3. D.R. Gadgil, Regulation of Wages and Other Problems of Labour in India, Bombay, 1942, p. 8.

raised against the theoretical and logical structure of this theory,¹ but its validity has been much more questioned at the empirical level.

The practitioner has never bothered about the utility or futility of the academician's theories, but has always recognized in the processes of wage determination that productivity is an important factor to be considered. The workers and the employers have frequently referred to productivity as one of the criteria. This trend has been much more pronounced since the development of collective bargaining. As a result, the economists attention has also been diverted from seeking in productivity the principle of wages to examining it as one of the 'criteria' or 'bases' in wage determination.²

It has been correctly observed that an increase in productivity does not automatically lead to a rise in wages. The connection between productivity and wages is not so close and direct as to act as a stimulus: "The most that can be said is that increased productivity enlarges the possibility of higher wages"³ or "it permits an increase

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1. For example, see M.H. Dobb, "Theories of Wages" in Singh, V.B. (Ed.), Industrial Labour in India, Bombay, 1963.
 2. See for example, J. Backman, Wage Determination, D. Van Nostrand Company, Inc., New York, 1959.
 3. G. Soule, op. cit., p. 139, Emphasis added.

in the wage rate without increasing labour cost per unit"¹ or "it tends to produce liberal wage policies"². The degree to which increases in productivity lead to increases in wages is determined by factors like relative bargaining power of the parties. Here it is not a matter of automatic and objective connection, but of a deliberate gearing of wage movements in line with the productivity movements. Thus the relationship between productivity and wages may better be seen as an aspect of the prescriptive policy formulations and deliberate use of productivity criterion in regulating wages, rather as a theoretical analysis of a hypothetical situation.

The effective working of the market mechanism may, however, provide possibilities of automatic adjustments of wages to productivity through its effects on various wage determining variables. For example, any given increase in gross productivity will have a positive effect on the demand for labour, if there results an increasing average net productivity correspondingly, and if the demand curve for the product is sufficiently elastic. Similarly, productivity increases will increase the profitability of the firm or industry, thus raising its paying capacity,

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1. J.W. Garbatino, op. cit., p. 43, Emphasis added.
 2. Sumner H. Slichter, "Notes on the Structure of Wages", Review of Economics and Statistics, XXXII, February, 1950.

which is an important factor in wage increases. To the extent these variables are relevant to the determination of wages and are affected by changes in productivity, there shall be an automatic connection between productivity and wages. But all these relationships are indirect and uncertain, depending upon the validity or otherwise of the underlying assumptions regarding the working of market mechanism. For a direct and easily ascertainable relationship between productivity and wages one has to look for the instances where changing productivity is made a basis for a change in wages by the wage-fixing institutions.

Making a deliberate use of productivity criterion in the regulation of wages, does not suggest that wages in various industries or establishments should rise in proportion to rise in the productivity of that company or establishment. There are two basic objections to increasing wages in a given industry in proportion to rise in the output of that industry brought about by better management or technological progress.

One reason is that such increases would introduce unjustified inequalities into the wage structure of the community. The rate of technological progress varies greatly among industries. In some rapidly growing industries very large increases in output per man-hour are possible in

short periods of time. In other industries productivity might be rising only very slowly or might even be falling. Labour might have no particular responsibility either for the large increases in the one case or for the fall in the other. Professor Sumner Slichter has pointed out, "If wages were increased in these various industries in proportion to the rise in productivity, the wage structure would soon have little relationship to the skill and responsibility required of the workers or to the relative attractiveness or unattractiveness of working conditions. Common laborers in technologically advancing industries would be receiving far more than skilled workers in other industries".¹

The second objection to increasing wages in a given industry in proportion to the increase in output per man-hour in that industry is that such an increase would prevent the economy from producing the largest possible output and thus would limit the rise of the standard of living. The inequalities in the wage structure would prevent industry as a whole from producing the largest possible product, because the rise of wages in the industries where labour productivity was increasing

1. Quoted in Jules Backman, Wage Determination, op. cit., pp. 108.

most rapidly would tend to prevent these industries from reducing their prices to consumers, and thus from expanding output and employment. Thus the growth of employment would be impeded at the very points where labour was gaining most rapidly in productivity.

This does not mean that productivity is unimportant from the point of view of wage fixation. Rising productivity is the foundation on which the capacity of industry to pay is built. If the employer has not got a steadily - rising output of goods and services to sell, even high product prices relative to the general price level will be of no avail to enable him to meet wage claims. Preoccupation with productivity should, at all times, be the employer's first concern because of the two variable factors contributing to his capacity to pay, namely, rising productivity and rising product prices, it is only the former, and not the latter, that is amenable to his influence to some extent.

Productivity - whatever be its precise measure - is only one of several criteria in wage fixation. While rising productivity raises the capacity of industry to pay and is itself a justification for higher wages, it has never been the sole or controlling criterion in any wage fixation. Often it has played,

as Bernstein¹ puts it, "a subordinate role" in wage fixation.

Therefore, apart from the practical difficulties of establishing an operational relationship between wages and productivity from year to year, there is the important consideration that in all countries including India, productivity has, in practice, been considered to be only one of the several criteria employed in wage determination.

So, it must be concluded that though no precise relationship between wage and productivity is valid in respect of particular industries on a short term basis, the wage changes can't be much out of line with productivity changes - reckoned on a truly long term basis.

Now, since at any moment wage structure reflects the accumulated influence of various factors over a considerable period of time, so in an analysis of the wage structure at a given time we would expect a close association between wages and productivity i.e., we would expect high levels of wages to be associated with high productivity and vice versa. This brings us to the first hypothesis of the present study that is to what extent the inter-industry wage differentials can be explained in terms of the inter-industry productivity differentials.

1. Irving Bernstein, Arbitration of Wages, (Berkeley and Los Angeles: University of California Press, 1954), p. 96.

4.6 SKILL DIFFERENTIALS AND WAGES

The proposition developed in this section is that: Industry wage rates vary on account of skill mix differentiation resulting from technological progress.

The technological level of industries started in the pre-industrial stage of the economy has been found to be low. Most of the operations involved in such industries have been manual. If the inter-industry movement of labour is free, irrespective of location of industries, the observed inter-industry wage differentials would be negligible. But if such movements are restricted, then wage rates in different industries would show a greater extent of variation; but its origin obviously lies in regional differences rather than in industrial differences. That is, in an economy with a very small extent of industrialization, there may be large geographical differentials, while the inter-industry differentials would be relatively narrow. Once such an economy starts industrializing on a large scale and also at a rapid rate, the higher technological levels follow as a natural corollary. That is so, particularly for the newly industrializing countries of today, which aim at a rapid transformation of their economies on the basis of a programme of large scale industrialization necessitating the use of modern technology available either domestically or from abroad. Technological advance, in turn, requires not only a larger component of

skill in the workforce, but it also leads to greater degree of skill-differentiation and specificity of jobs in industries. Thus each industry has a labour market with its large component being specific to it. The whole labour market becomes a conglomeration of a number of 'non-competing' groups of workers largely, specific to individual industries and this gives rise to inter-industry wage differentials.

The increasing tendency of inter-industry differentials in skill mix and, therefore, wage rates, gets further heightened by technological dualism which is a natural phenomenon in the initial phases of industrialization. If some industries operate at different ladders of a low-level technology while others are at different points of high level technology, an expansion of inter-industry wage structure inevitably results.

While the above hypothesis is postulated for movements in inter-industry wage structure over a period of initial industrialization of a 'pre-industrial' economy, it implicitly assumes that the inter-industry variation in wage rates owes its existence largely to the differences in technological levels obtaining in various industries. This forms our next hypothesis for the analysis of inter-industry wage differentials at a point of time.

Hence, the industries in which the occupational structure is weighed heavily in favour of highly skilled labour force, the average wage rates will be higher because the skills have a high supply price as they cost money and time to acquire, in comparison to those industries in which the average requirement of skill is lower.¹

4.7 WAGES AND MARKET STRUCTURE

The notion that monopoly in product market leads to high payments for hired factors does not arise automatically from the concept of a profit maximizing firm. Indeed, simple theory might suggest low rather than high wages in concentrated industries since output restriction would carry with it a restriction of employment.² However, it is also quite possible to find plausible arguments to

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1. "The high-ranking industries historically have been industries with many skilled workers; the low ranking industries have been industries with many semi-skilled and unskilled workers. The contribution of the skill mix to the wage levels of the several industries is also indicated by the similarity in inter-industry wage differentials among countries where other potentially influential factors, like the organization of workers or the structures of product markets are quite diverse". Clark Kerr: Wage Relationships - Comparative Impact of Market and Power Forces, op. cit.
 2. "Bargaining Power" and Inter Market Relations, (pp. 91) in John T. Dunlop's, Wage Determination Under Trade Unions, (Basic Blackwell, Oxford, 1950).

support the opposite hypothesis. The relationship between concentration of production and changes in earnings might be explained in a number of ways. Oligopolistic market structure may protect cost decreases arising out of productivity increases from the inroads of competition thus making them available to wage earners. The more competitive the product markets for the output of the industry, the more difficult for wage earners to capture the gains of increased productivity. In other words, the gains of productivity are passed on to consumers in competitive industries, whereas they can be divided in some proportion among workers and employers in imperfectly competitive industries. This view requires the existence of some sort of upward pressure on wages. The obvious source of such pressure is unionism. Unionization is likely to be stronger in the case of industries operating in concentrated product markets than the competitive ones, since in the former case, the strength of the motivation of workers and their organizations to exercise control is likely to be considerably greater than in the latter case. It might also be argued that informal upward pressures on wages exist in the community.

It is normally postulated that firms with market power are in a position to earn supernormal profits and it is quite possible that some of these will be shared with

workers. This may be because they fear government intervention. On the other hand, industries with high profits might attract greater pressure from unions, since they offer large prizes to the successful organizer. High wages might then result from the unionization of profitable industries or from managerial attempts to forestall such organizations. Also product market monopolists and oligopolists are more likely to have relatively higher expectations of their future abilities to sustain high wage levels. They are in a much better position to pass the costs of high wages on to the consumer than the firms and industries which face strong competition in the product market. "Monopoly power insures against larger than ordinary pools of profits being eroded away by the entry of new firms selling products at lower prices".¹

Furthermore, if high concentration is combined with high entry barriers, workers can press for high wages with less danger of redundancies. On a somewhat different level, it is normally argued that where competitive pressures are weak there is a tendency for some firms to prefer the easy life and not to watch costs as closely as they would if competitive pressures were strong.

1. David G. Brown, "Expected Ability to Pay and Inter Industry Wage Structure in Manufacturing", Industrial and Labour Relations Review, Vol. 16, No. 1, October 1962.

A study of the effects of the structure of product markets on wages is important since a positive finding here would have resource allocation implications. If workers in uncompetitive industries are being paid wages in excess of their opportunity costs, the resource misallocation due to monopolistic imperfections would be greater than that observed by the deviation of price from marginal cost.

4.8 STABILITY AND WAGES

We discuss in this section the probable influence of instability of employment (measured by labour turnover) on wages. The relationship between labour turnover and wages, to the extent it exists, will not be direct and unique. For our purpose, labour turnover is important in so far it represents the nature of the industry and the employer's labour hiring practices. It is these two characteristics viz., nature of the industry and the employer's policy which we believe shall be systematically related to the wage level prevailing in an industry. Thus any observed relationship between labour turnover and wages will be consequent upon the influence exerted by these two factors on the demand for labour.

Industries which are close to agriculture are likely to show a very high rate of labour turnover. These industries employ labourers for a short period of time and most of the labour force is discharged at the end of the season. In

agro-based industries, in particular, the demand for work arises at a time when there is very little or no work on land. The rural population is, therefore, prepared to serve at any price, especially when it is poor, ignorant and unorganized. There follows a scramble for employment in the factories resulting in unduly low wages. The seasonality of employment which prevents workers from combining themselves in any sort of trade union further depresses the bargaining strength of the workers.

Also the industries which are subject to large seasonal fluctuations in employment and to a very high rate of labour turnover, are in general, less diversified than industries with more regular patterns of employment. The ability to pay levels in industries populated with small, undiversified firms are more volatile than in other industries, because profits are more volatile for small firms. Smaller firms have neither the large reserves of assets to fall back upon in depressions nor the variety of products to compensate the loss of demand when consumer tastes change. Executives of such firms are reluctant to commit themselves to high, and increasingly rigid, wage levels for the future - even though the present wage paying ability might permit higher levels in the short run.

High labour turnover reflects, in part, the employment of women with family responsibilities. High labour turnover,

to the extent it is caused by a high proportion of women in the labour force, will be combined with low wages, since female wages are normally lower than male wages.

Apart from the nature of the industry, employer's labour hiring practices also exert considerable influence on the rate of labour turnover. Employers might follow a conscious policy of encouraging a high rate of labour turnover by adopting the contract labour practices or by employing the workers temporarily for a short period of time and replacing them with fresh hands at the expiry of the term as against employing them permanently. At any rate, this policy can conveniently be pursued for that segment of the labour force that is unskilled. One of the most common reasons offered by firms in favour of contract and temporary labour practices is that they permit the managements to take decisions that promote the interests of the enterprises. Labour laws are, they argue, so rigid, elaborate and unrealistic that, most often, logical and correct decisions can't be taken. Consequently, enterprises suffer. A worker, once employed permanently, is going to stay on whether or not he is needed a few months later. Often it may not even be easy to shift him to another job. Technological changes, rationalization of workloads and procedures, product market conditions, import restrictions

and several other similar contingencies often require rationalisation of workforce. It is easier to adjust workloads, wage rates, employment status etc., of workers who are employed as temporary workers. The instability of the workforce makes it less remunerative for outside union leaders to keep their hold on the union. The individual worker can hardly afford to be a bargaining unit.

The employers might also follow the temporary and contract labour practices with a view either to whittle down the labour legislations which prescribe the minimum wages to be paid to the workers or to cut down the costs of fringe benefits etc., which are otherwise payable to the permanently employed workers. A study conducted by Shri Ram Centre for Industrial Relations,¹ into the working conditions of contract labour in Indian manufacturing industries, reports that the wages earned and working conditions enjoyed by unskilled workers employed either under the contract labour system or employed temporarily compare unfavourably with those of the directly employed permanent workers.

Till now, we had been discussing the influence of labour turnover on wages. Reversing the arrow of reasoning

1. Contract Labour in Manufacturing Industries,
Shri Ram Centre for Industrial Relations, October
1966.

one could argue that most important determinant of the extent of labour mobility in an industry is the prevailing levels of wages itself, in that industry. Workers will be continuously moving out of low wage paying industries in search of higher wages and better working conditions. The firms with low wages and poor working conditions will show a very high rate of labour turnover, whereas high wage paying industries will be in a position to stabilize their employment. But the mobility arising out of wage differentials is voluntary mobility as distinguished from involuntary mobility. This sort of voluntary labour mobility assumes the existence of full or near full employment in the economy. In a labour market characterized by excess supply of labour, voluntary labour mobility in response to wage differentials is likely to be insignificant.

Moreover, here we are interested in the labour turnover as an expression of the demand for labour as influenced by the nature of the industry and the employer's policy rather than as an expression for the voluntary movements arising out of wage differentials.

4.9 WAGES AND IMPORTANCE OF WAGE COSTS

The higher the percentage of costs made up by one factor of production the more cost conscious a firm is likely to be about this factor. Thus if wages constitute a

small percentage of costs, as is likely to be the case in highly capitalized industries, firms may not operate at lowest possible costs with regard to labour - "the importance of being unimportant". Resistance towards strikes, for instance, may be weaker, as the possible benefits to be gained from resistance may not outweigh the costs of expensive equipment lying idle.

On a somewhat different plane, it is normally argued that firms and industries in which labour costs are a relatively minor expense item have relatively larger ability to afford the luxury of high wage levels. High wage rates may cut severely into the profit margins of high labour cost industries, while equally high wage rates may have very little effect upon profits in other industries where labour costs are a relatively insignificant portion of total costs. Even though two firms are currently returning the same profits, "employers will be less inclined to resist union demands, and be better able to meet them, if wage and salary payments are only a small proportion of product value".¹

These are some practical reasons why wage rates may vary with the relative share of labour costs. Thus

1. A.M. Ross and W. Goldner, "Forces Affecting the Interindustry Wage Structure", Quarterly Journal of Economics, Vol. 64, May 1950, p. 277.

employers in industries where the primary costs of manufacture are labour costs will be less able to pay high wages, the wage level in these industries will, therefore, be expected to be lower.

4.10 SEX COMPOSITION OF THE WORK-FORCE AND WAGES

The average earnings in an industry will generally be lower, higher the proportion of females in the labour force. This might be the consequence of two factors. Firstly, because women's wage rates are normally lower than those of men. Secondly, where men and women are competing groups, it is possible that higher male wages may lead to substitution in favour of women. Moreover, the possibility of such substitution may have a depressing influence on male wage level itself.

If men and women could never be substituted for one another on the same job, male and female labour would constitute a pure case of "non-competing groups", in the sense that transfer from one group to the other would not be possible. One would then expect the price of labour in the two groups to differ if conditions of supply and demand in one group were different from those in the other. On the side of demand there is the fact that there may be fewer remunerative jobs for which women are as fully suited as are men. In some cases women may be definitely superior,

as in the case of cotton spinning and assembling operations; while for heavy muscular operations women will clearly be unsuited. It is sometimes said that, because women are more liable to illness and often apply themselves for employment only temporarily, they may be less useful to an employer for this reason alone. Added to this is the probable effect of custom in excluding women from some occupations. However, apart from the differences operating on the demand side, the conditions of supply of female labour also play an important role. If the supply-price of women's labour is generally lower than that of men, this by itself would suffice to explain the lower rates paid in women's trades. This in fact seems to be the case. It is true that an unmarried woman who goes out to work does so as a rule either to earn "pocket money" or to add something to the family earnings at home, and the smaller urgency of her need might seem likely to raise the supply price of her labour - to make her unwilling to go out to work unless the inducement was fairly high. In some cases this is probably so; for example, it clearly applies to middle-class women; and it might be the case that if employers sought to extend their employment of unmarried women at all considerably, the price they would have to offer would have to be increased a good deal. At

the same time, it seems probable that the influence of custom, and the desire for independence among young unmarried women, operates in the other direction and may well counteract the effect of the lesser urgency to secure employment. Precisely because young women are unaccustomed to earning and value independence, they may place high value on the acquisition of a few rupees than other people do. Of decisive influence, however, on the supply of women in the labour market is probably the number of women who seek employment because their family is in straitened circumstances through the low earnings, unemployment, illness or death of the male bread winner. These women since they are driven to work only by the pressure of circumstances will be ready to work for almost anything they can get, and they will value low immediate earnings, even though irregular and temporary. And for this very reason that the supply of female labour of this kind tends to vary inversely with the earnings of male labour, there will be a cumulative tendency for anything which depresses men's wages to cheapen the supply of female labour, and so (in so far as women can be substituted for men) to lower by their competition the wages of male labour still further.

CHAPTER 5

DETERMINANTS OF INTER-INDUSTRY WAGE DIFFERENTIALS -
EMPIRICAL EVIDENCE

After having discussed the factors which might be expected to lead to inter-industry wage differentials, we now examine their influence in statistical analysis. However, before we proceed with the empirical verification of our hypotheses, let us first of all define our concepts. We describe below the techniques of measurement and the data base of the variables used in this exercise.

5.1 MEASUREMENT AND DATA BASE OF THE VARIABLES

WAGES:

The concept of 'wages per manhour' being used in this exercise is the same as explained in Chapter 3. Since for this exercise data from diverse sources had to be used, so it became necessary to make the various industrial classifications comparable. Thus, instead of making use of the exact ASI industrial classification, we have used a readjusted version of it, which is the same as already used in Chapter 3.

LABOUR PRODUCTIVITY:

In general productivity is defined as a ratio of output to input. The statement of this relation in

different forms and units gives different concepts of productivity, each of which is useful in a certain context and for a certain purpose. The overall productivity may be expressed in terms of the ratio of total output to all inputs - output - input ratio. It may also be expressed in terms of one input factor, e.g., labour, capital etc., and may be termed as labour productivity, capital productivity, etc. Further, productivity of a factor may be said to be the contribution of that factor to production, and may be termed as specific factor productivity, as against overall productivity. Finally, productivity may be expressed in terms of the physical units of production and may be termed as physical productivity; or it may be expressed in terms of the monetary value of the physical units of production; and may be termed as value productivity.

The studies which have tried to make a comparison of wages with productivity or to assess the role of productivity as a criterion in wage changes, have generally adopted the concept of average labour productivity. This concept has found a wide currency in use because of its superiority over other concepts on the one hand, and because of its greater usefulness for the purposes of comparison with the wages of labour, on the other. Specific factor productivity may be a useful indicator for the net contribution of a factor input to production;

but it is very difficult to measure. Further the statistics relating to output per worker (manhour) are more easily accessible than those relating to any other concept.

The operational content of 'productivity ratios' depends on the meaning attached to the terms 'outputs' and 'inputs'. The output of an industry may be taken either as an aggregate of final products and by-products or as the value added to materials and fuels utilized in the manufacturing process. If our primary interest is in measuring labour productivity, the value added concept would be more useful, since the labour coefficient of the former may vary with degrees of integration. Labour productivity (measured as gross output - labour ratio) in two plants of equal efficiency but with unequal integration of production processes may be different. Also since the ultimate object of our productivity analysis is to determine its influence on factor incomes the value added measure is more meaningful since it yields a magnitude which is distributable among the factors, labour and capital, operating within the industry, while the value of raw materials included in gross output accrues to persons outside the industry concerned.

Keeping these factors in mind, 'Labour Productivity' in the present study has been defined as 'Value Added

per Manhour'. The data on 'Value Added by Manufacture' and on 'Total Manhours' has been taken from the detailed reports of the 'Annual Survey of Industries, 1970'.

Value added by manufacture, in these reports, has been defined as "that part of the value of the products which is created in the factory and is computed by deducing from the gross ex-factory value of output, the gross value of inputs".

SKILL COMPOSITION:

The data on skill-composition of the labour force has been taken from the Occupational Pattern Division of the Directorate General of Employment and Training. The occupational pattern of employees in private sector and public sector establishments is available separately for alternate years. The occupational pattern of employees in the private sector is based on data statutorily collected from non-agricultural establishments employing 25 or more persons in the entire country (except Jammu and Kashmir) under the provisions of the Employment Exchange Act, 1959. Similar data regarding employees in smaller establishments (employing 10-24 persons) is also collected on a voluntary basis. The occupational pattern of employees in the public sector is based on data collected statutorily from all the establishments in the public sector under the provisions of the Employment Exchanges Act, 1959.

The analysis of occupational pattern follows the "National Classification of Occupations, 1958", prepared by the Directorate General of Employment and Training which in turn is based on the "International Standard Classification of Occupations" adopted by I.L.O. It consists of 11 occupational divisions (1 digit level), 75 occupational groups (2 digit level) and 331 occupational families (3 digit level). The last of these i.e., families have been further sub-classified into more than 3600 occupations.

The analysis of different industries and services follows the 'Standard Industrial Classification' prepared by D.G.E. and T., which is closely related to the international usage recommended by the United Nations. It consists of 9 industrial divisions (1 digit level), 45 major groups (2 digit level) and 343 minor groups (3 digit level). The manufacturing sector consists of 2 industrial divisions (1 digit level), 20 major groups (2 digit level) and 162 minor groups (3 digit level).

The reports published by the Occupational Pattern Division of D.G.E. and T. analyse the occupational pattern at 2 digit level of industrial classification and at 2 digit level of occupational classification. Since we are conducting our exercise at the three digit level of industrial classification, so the data contained in the

published reports could not be made use of. The occupational pattern data was rather collected at the 3 digit level of industrial and occupational classification from the original schedules submitted by the establishments to the office of the Occupational Pattern Division of D.G.E. and T., Ministry of Labour, New Delhi.

The minor groups (3 digit level) classification followed by Annual Survey of Industries, which was our basic source of wage data, and that followed by D.G.E. and T., being different, the first problem was that of making the two classifications comparable. A careful matching of the two industrial classifications, left us with 95 identical minor industry groups.

The occupational pattern of employees in private sector establishments was available for 1969 and 1971, whereas for the public sector establishments it was available for 1970. Reference year of this study being 1970, the next problem was to get the occupational pattern of employees in private sector establishments for 1970. The total number of employees and the occupational distribution of employees in private sector establishments was averaged (arithmetically) for the years 1969 and 1971, to get the required distribution for 1970. Now we were left with the occupational pattern of employees in private and public sector establishments separately for the year 1970.

The next problem was to make the coverage of the Annual Survey of Industries and that of the Occupational Pattern Division's equivalent. Whereas the census reports of the Annual Survey of Industries cover the factories employing 50 or more workers with the aid of power and 100 or more workers without the aid of power, the occupational pattern of employees in the private sector was based on data collected statutorily from establishments employing 25 or more persons and on a voluntary basis from the establishments employing 10-24 workers and was available separately for factories employing 10-24 workers, 25-99 workers, 100-499 workers, 500 workers and above. Now to make this coverage comparable to A.S.I. coverage two alternatives were open to us i.e., either to exclude the factories employing 10-24 workers only or to exclude the factories employing 25-99 workers as well from the occupational pattern data. Both the choices, of course, would have involved some degree of approximation. Two separate series, however, were prepared for the occupational pattern of employees in the private sector, one covering the factories employing 25 or more workers and the second covering factories employing 100 or more workers. The two series showed remarkable similarity. Also the response being particularly poor in the case of smaller establishments, the ultimate result was not likely to be affected considerably by choosing any one of them. The latter series was however preferred over the former one.

The series giving the occupational pattern of employees in public sector establishments in 1970 was added to the series giving the occupational pattern of employees in private sector establishments (employing 100 or more workers) to get the occupational pattern of the employees in different industries of the overall manufacturing sector.

To classify the total employees into the skilled and unskilled categories, the following occupations were taken as unskilled.

<u>Occupation Code No.</u>	<u>Description</u>
290	Unskilled Office Workers (Peons, Daftries, etc.)
414	Agriculture Labourers
415	Plantation Labourers
890	Loaders and Unloaders
899	Labourers, n.e.c. (unskilled workers).
903	Watchmen and Chowkidars
931	Cleaners, Sweepers and Watermen

These are the occupations which have been classified as unskilled by the Directorate General of Employment and Training. The same classification was also adopted by Pitamber Pant and M. Vasudevan, in a survey on Occupational

Pattern in Manufacturing Industries, India, 1956.¹

The ratio of the number of workers employed in the seven above mentioned occupations to the total number of workers employed was taken as a measure of the proportion of unskilled labour force to the total labour force employed in different manufacturing industries.

DEGREE OF CONCENTRATION:

To measure market power, we have used concentration indices to reflect actual competition. The basic source of data that we have used for the construction of these indices is the 'Report of the Monopolies Inquiry Commission, 1965'.² In this report, the extent of production concentration as regards principal commodities in the important industries has been ascertained for the year 1964. The reason given by the commission for the calculation of product wise concentration as against industry wise concentration was that since most of the industries as ordinarily classified, covered a wide range of different commodities, so it would not had been of much use to try to ascertain

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1. Pitamber Pant and M. Vasudevan, Occupational Pattern in Manufacturing Industries, India 1956, Scientific and Technical Manpower and Perspective Planning Division, Planning Commission, Government of India.
 2. Report of the Monopolies Inquiry Commission, 1965, Vol. I & II.

the concentration of economic power in an industry as a whole. Rather it was thought desirable both from the point of view of practicability and usefulness to ascertain the extent of concentration as regards principal commodities in the more important industries in our country.

Before, the data contained in this report could be made use of, certain assumptions and modifications were deemed to be necessary. First of all, our reference year being 1970, it would have been better to use more recent information. But in the absence of such data, there was no alternative than to rely on the figures, contained in this report, for the year 1964. It seems reasonable to assume, however, that no doubt since 1964 the numerical magnitudes might have changed, but that the overall position regarding the concentration of economic power has not undergone any significant transformation.

In this report, the concentration ratios for the enterprises engaged in the production of particular commodities and all close substitutes of the same have been worked out. For our present purpose also, concentration ratios of enterprises in terms of production appear to be more suitable, as these more than anything else are likely to give a correct idea of market power exercised by the top enterprises. The second choice of the commission

i.e., the calculation of product-wise concentration instead of the industry-wise posed some problems.

While for some of the single product firms, it was possible to take the concentration ratios directly from the report, the real problem was faced in the case of multiproduct industries. Whereas we wanted to calculate some sort of concentration index for the industry as a whole, the report contained the production concentration ratios for different commodities separately. The first step was to find out which particular commodities should be included in an industry of a given description. After identifying such commodities with the help of the output vector of different industries given by Annual Survey of Industries, the next step was to combine together the production concentration ratios for these various commodities to get the overall industry concentration ratio. The calculation of the production concentration ratio for the industry as a whole, however, involved finding out the share of the largest producer (2nd largest, 3rd largest etc.) in the industry's total production. But no such largest producer for the industry as a whole could be identified, because some times it happened that whereas a particular enterprise was the largest producer of a particular commodity, it was nowhere to be seen among the five largest producers (the report gives the percentage share in production of top five enterprises)

of some other commodity produced by the same industry. So it was just not possible to find out the percentage share of a particular enterprise in all the lines of production. Our failure to identify the largest producer in an industry led us to identify, instead, 'the group of largest producers'. It consisted of all those enterprises who were the leading producers of one or more commodities produced in a given industry. Adding up the output produced by this group and taking it as a percentage of the total production of all the commodities taken together, gave us the proportionate share of the 'group of the largest producers' in the total industry's production. The same exercise was repeated to find out the percentage production share of the 'group of the 2nd largest producers' and the 'group of the 3rd largest producers' in an industry. Ultimately, the part of the market captured by the 'group of the three largest producers' of various commodities was taken as an index of the degree of production concentration in a particular industry.

While much can be said against this method of aggregation, given the nature of the data, this seemed to be the only alternative.

LABOUR TURNOVER:

Data on labour turnover at the three digit level of industrial classification has been taken from the Chandigarh office of the Labour Bureau.

Statistics on labour turnover are being collected statutorily under the Collection of Statistics Act, 1953 on a uniform basis in various industries. For purposes of the survey, the term 'Accession' has been defined as the total number of workers added to employment during the period, whether new or re-employed or transferred from other establishments or units under the same management. Inter-departmental transfers within the same establishment are, however, ignored. The term 'Separation' implies severance of employment at the instance of workers or employers. It includes termination of service due to death or retirement. Retirement as a result of rationalization or modernization or any other cause is also treated as separation.

We were mainly interested in measuring the extent of involuntary quits. This could not be done because the separation rate figures were not available for different components separately. To the extent the total separations include termination of service due to death or retirement or at the instance of the workers, it is an inadequate and overestimated proxy for the extent of involuntary quits. The percentage of the labour force that is separated due to death or retirement, however, is not likely to show much inter-industry variation. And also, though the figures for the separations on account of the severance of employment at the instance of the workers were not

compiled separately by the Labour Bureau, it was pointed out by Labour Bureau officials that the extent of such separations was negligible. Under such circumstances, using total separations as a proxy for involuntary quits seemed to be broadly justified.

IMPORTANCE OF WAGE COST

The importance of labour cost to the entrepreneur can be measured either by the ratio of labour cost to total cost or by the ratio of labour cost to value added. While the latter measure is used in this study, the two measures are logically very closely related. The first one gives us the idea of relative importance of labour in producing a given output in conjunction with all other factors of production, the latter would tell us the relative importance of labour in relation to capital alone (i.e., the share of labour in "net distributable output"). Both measures have, at times, been used by previous researchers.

Data for computing the ratio of labour cost to value added has been taken from the detailed reports of the Annual Survey of Industries, 1970. The figures of wages and salaries paid to workers were divided by the value added figures to arrive at the required ratio.

SEX COMPOSITION OF THE WORKFORCE:

Sex composition of the workforce has been measured by the ratio of manhours worked by females to total directly employed manhours worked. The sex composition of the manhours employed through contractors not being available separately, the former ratio was taken to represent the sex composition of the total manhours worked. Data for both the numerator and the denominator has been taken from the detailed reports of the Annual Survey of Industries, 1970.

5.2 ANALYSIS AND FINDINGS

The decision was made to use linear multiple regression analysis to test the relationships between variables. Linear regression analysis technique were to be used if, and only if, two assumptions required by these techniques were generally valid.

Firstly, strong curvilinear relationships, between wages and each independent variable, do not exist. The validity of this assumption was examined by the following test. Wages were plotted against each variable on separate scatter diagrams, and these diagrams were visually examined for non-linear relationships. This test did not uncover significant curvilinear relationships.¹ Secondly,

1. One curvilinear relationship was found, wage-productivity. In this case, however, significant linear relationship was also evidenced over a large part. Therefore, our major conclusions would not be altered by concentrating upon solely linear relationships.

the different explanatory variables are not linearly related to each other (i.e., absence of multicollinearity). A rough test of the validity of this assumption was made by computing simple correlation coefficients between sets of independent variables. The highest value of the correlation coefficient among the sets of independent variables is between the variables measuring the importance of wage costs and labour productivity. The industries in which labour costs constitute a relatively small portion of value added are the same in which labour productivity is relatively high. (The simple correlation coefficient between the two variables is $r = -0.615$). However, the value not being very high, this inter-dependency is not likely to pose any special problems and the effects upon wage structure of differences in productivity can still be easily isolated from the effects of differences in the importance of labour costs. Under these circumstances the assumption of linear independence is valid,

Since both the required assumptions were justified, product moment correlation techniques were used. The various independent variables were regressed upon the wage series, both individually and in combination. The resulting simple, partial and multiple correlation coefficients offer an interesting picture of the concomitancies among the variables.

RESULTS:

Product moment correlation analysis produced the following result: Wages are, as a rule, higher in the industries, that are highly productive, highly concentrated, predominantly hirers of male employees, having a larger component of skilled workforce and where wage payments as a cost are significant.

PRODUCTIVITY:

Consider, first, the relationship between wages and productivity.

Using value added per manhour as an index of labour productivity, our evidence summarized in Table No. 5.1 indicates that wages are higher than average in high productivity industries. Ranking the industries according to productivity, nine of the top ten were paying wages above the median of all industries; none of the bottom ten was paying wages above the median. That this "high wage - high productivity" pairing is not restricted to the extremes is indicated by the significant simple correlation coefficient ($r = +0.656$).

Moreover, the existence of a strong relationship between wages and productivity is exclusive, for when the other factors like the skill and sex composition of the workforce, and nature of the product markets etc.,

TABLE 5.1

Correlation ¹ between average hourly earnings and	Simple	Partial ²
1. Value added per manhour	0.656*	0.621*
2. Proportion of unskilled workers to total workers	-0.511*	-0.359*
3. Degree of concentration	0.677*	0.444*
4. Labour Turnover	-0.469*	0.005
5. Proportion of wage bill to value added	-0.201***	0.344*
6. Proportion of female manhours to total manhours	-0.481*	-0.247**

1. Correlations are based on 82 observations.
 2. These are Fifth Order Partial Correlation Coefficients. Lower Order Partial Correlation Coefficients are given in the appendix.
- * This coefficient is significantly different from zero at 99 per cent confidence level.
- ** This coefficient is significantly different from zero at 98 per cent confidence level.
- *** This coefficient is significantly different from zero at 95 per cent confidence level.

are only 'average', wages and productivity are still significantly concomitant. The partial correlation coefficient is $\bar{r} = +0.621$. This finding establishes the existence of a strong productivity - wage link and suggests that the effects of productivity differences upon wage levels stand primarily on their own.

A high average value added is likely to produce liberal wage policies, because it is from value added that wages are to be paid but it does not imply that high productivity should or does inevitably lead to high wages. Wage determination is a process in which at least two parties employers and workers - are involved and, therefore, the bases on which wages are set are required to be acceptable to them. Relative bargaining strength of the parties and intervention by the state may indeed act as strong constraints on a party's decision to accept a basis. But within the given institutional and market conditions, factors like productivity, are merely 'permitting' factors. A rise in production per worker does not by itself get transformed into a rise in wage rates, it enables the employer to raise them. The actual rise would require that both parties agree to the principle that wage rises should be based on productivity. Our finding suggests that wage setters have been interested in adjusting wages to productivities. The conclusion: A large part of the inter-industry differential in wage levels

can be explained by variations in productivity; productivity and wage differences are exclusively related.

SKILL COMPOSITION:

In accordance with our hypothesis, that industry wage rates vary on account of inter-industry differences in skill mix requirements, we sought the explanation of inter-industry wage variations in terms of differences in skill mix. The proportion of unskilled workers to total workers was taken as an index of the skill composition of the workforce. Our analysis shows that the industry having a larger component of unskilled occupations in its workforce pays a lower average wage rate than the one having a larger component of the skilled occupations in its workforce. (The simple coefficient of correlation between this index and wages is $r = -0.511$). That the influence of the skill composition on wages is exclusive is evident from the significant value of the partial correlation coefficient ($r^* = -0.359$).

In defence of interpreting differences in skill composition as exclusively related to wage differentials one can argue that a competitive labour market would allow inter-industry wage differentials only to the extent they are on account of the differences in the skill composition of the workforce. It is only when the competition in the market is not effective, differentials may arise on account of the other factors.

This conclusion, however, must be a guarded one. In a labour shortage economy the demand price, in the sense of the maximum price the employer can afford and will be willing to pay would be a crucial factor in determining the wage rates. In an economy with large scale unemployment this does not hold. But then one may ask: why does an employer pay a higher wage rate to certain people simply because they have higher skills, if there is an excess supply of labour? Here it may be pointed out that in an over populated and newly industrialising economy there is some type of dualism prevailing in the employment market. The mass of unskilled labour is in excess supply while there is a shortage of persons in skilled occupations which are in great demand on account of the introduction of higher technology.¹

Therefore, in spite of general unemployment, the wage differentials based on skill not only continue but also widen with the use of higher technology. The industry having a larger component of skilled occupations in its work force pays a higher average wage rate because the skills have a high supply price as they cost money and time to acquire and also because they are in short supply.

1. This observation is based on the Indian situation. A large number of vacancies in skilled industrial occupations like, fitters, turners, electricians, etc., remain unfilled because of the lack of availability of suitable persons. These are reported in Quarterly Report of Shortage Occupations and Manpower Shortages 1961-66, issued by the Directorate General of Employment and Training (Government of India) and parallel publications of State Governments.

Thus our analysis establishes the plausibility of developing a partial explanation of inter-industry wage variation centering round average skill requirements of the industries.

DEGREE OF CONCENTRATION

Measuring differences in degree of concentration by the method already explained, the simple correlation coefficient between wages and this index is $r = +0.677$, indicating that less competitive industries offer higher wages. Among the fifteen most concentrated industries, fourteen pay wages above the median wage; the comparable number for the fifteen least concentrated industries is only two. The obvious conclusion from these data is that differences in the degree of concentration are also a determinant of inter-industry wage differences.

Like productivity and skill-mix, only part of the influence of concentration differences upon wage levels is related to other factors. Even if by all indexes other than concentration, highly concentrated industries evidence only "average" wages, wages are typically higher in less competitive industries. (The partial correlation coefficient between wages and degree of concentration is $r^* = 0.444$). One reason for the exclusive relationship could be that oligopolists - either through employer's associations, common unions, or informal agreements -

follow similar wage setting, as well as similar pricing policies. Wages are generally standardized throughout the industry. If one firm pays high wages, all firms must pay high wages; wage advantage is not allowed. An oligopolist need not fear that a wage increase will result in a cost (and subsequent price) increase which will place him at a competitive disadvantage with other firms in the same industry. On the contrary, in a product market where there is strong competitive pressure on prices, price reduction by one firm (consequent upon cost reduction achieved either through technological innovations or through a restructuring of existing wage scales or job designations) might force other firms also to follow strict wage policies. A firm in a competitive industry must be alert to all cost advantages. Managers of such firms are reluctant to commit themselves to higher and increasingly rigid wage levels. The oligopolists resistance to wage increases is, therefore, less than the resistance of managers in competitive industries.

Another explanation of the strong wage-concentration relationship could be that, in those industries which follow common wage policies, unions are able to play one firm against another, resulting in wage levels higher than otherwise. Realizing that the wage level in one firm will set the industry wage pattern, unions first bargain

with the most vulnerable company. Since the lowest level of resistance among a group of firms will always be lower than the average resistance level of these same firms, wages will tend to be higher in industries where playing one firm against another is feasible, to wit, the highly concentrated industries. Also, the gains of productivity are passed on to consumers in competitive industries, whereas they can be divided in some proportion among workers and employers in imperfectly competitive industries.

Each of these forces strengthens the causal link between concentration and wages. Differences in the degree of concentration are thus important determinants of inter-industry wage differentials.

STABILITY:

Using labour turnover (rate of separations) as a proxy for the stability of employment, our analysis shows that low wages are frequently combined with fluctuating and unstable employment (simple $r = -0.469$) than with more regular patterns of employment.

The relationship between labour turnover and wages is, however, not direct and exclusive. When all other determinants of wage differentials are only "average", wages and turnover are not significantly related. (The partial correlation coefficient is $+0.005$). Labour

turnover, in fact, in itself is being determined by certain characteristics of the industry mainly the average size of the firms in the industry and the skill and sex composition of the workforce.

If we reason that the degree of concentration in the product market and average size of the firms are positively related,¹ labour turnover would be expected to be high in industries consisting of large number of firms (i.e. competitive industries) because small and less diversified firms are more subject to large fluctuations in employment.² Our data supports this assertion. The correlation coefficient between degree of concentration and labour turnover is -0.535 . One might argue that low labour turnover witnessed in the case of product market oligopolies is because of the fact, that these industries by paying higher wages are in a position to stabilize their employment. This does not seem to be wholly true.

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1. See the empirical evidence cited by:
David G. Brown, "Expected Ability to Pay and Inter-Industry Wage Structure in Manufacturing", Industrial Labour Relations Review, Vol. 16, No. 1, October 1962 and W. Hood and R.D. Rees: "Inter Industry Wage Levels in United Kingdom Manufacturing", The Manchester School (pp. 180), November 1973.
 2. A study of these figures (available in the Indian Labour Statistics) shows that both the accession and separation rates are much higher in the smaller establishments than in the bigger ones.

Even after maintaining wages at an 'average' level, degree of concentration and labour turnover are significantly related . (The partial correlation coefficient is -0.335). One plausible explanation for this part of the relationship which is exclusive may be in terms of the relationship between the average size of the establishment (as determined by the degree of concentration) and labour turnover.

Also, as stated earlier, high labour turnover shows in part the employment of women with family responsibility and who are likely to apply themselves to employment only temporarily. So higher the proportion of females in the workforce, higher is expected to be the labour turn over. (Simple r between these two variables is 0.421).

In so far as the employer's policy of encouraging a high rate of labour turnover is concerned, either to circumvent the labour legislations, which lay down the minimum wages to be paid to the workers, or to avoid the cost of fringe benefits and certain other costs associated with permanent labour, this can be pursued most effectively only in relation to that segment of the workforce that is unskilled. So the obvious conclusion is that skill composition, like sex composition, is an important determinant of the labour turnover. (The correlation coefficient between the proportion of unskilled labour force and labour turnover is 0.452).

Under these circumstances, where labour turnover in itself is being determined by certain other determinants of wages, the absence of an exclusive relationship between labour turnover and wages is the natural corollary.

IMPORTANCE OF WAGE COST:

In order to judge relative importance of labour, total amount paid to all workers has been expressed as a percentage of value added.

It is striking to note that in general, there is a positive relationship between wages and wage cost across the industries (simple $r = -0.201$, partial $\bar{r} = +0.344$).¹

One possible explanation for the observed positive association between wages and proportion of wage cost may be that in a growing economy, such as of ours, where the demand for output and labour is expanding, the industries, where the importance of labour (as judged by proportion of payment made to it in total income) is greater in production, would be requiring a comparatively larger slice of labour force for expanding their output and consequently higher wages for such industries are inevitable, at least, in the

1. The negative simple correlation coefficient between relative wage cost and wages is because of a very strong negative correlation between wage cost and productivity ($r = -0.615$). The result is in conformity with the one arrived at by P.K. Sawhney. Measuring importance of labour by expressing the wage bill as a percentage of gross output, he found the partial correlation coefficients of +0.61 and +0.71 for 1953 and 1963 respectively, between proportion of wage cost and average daily earnings.

short-run. However, over a sufficient period of time, with the advancement in technology, there are possibilities of substitution of capital for labour and these industries may not pay comparatively higher wages, because with the substitution of capital for labour, they would be requiring relatively less amount of scarce labour skills for expanding their output.

THE SEX RATIO:

The ratio of manhours worked by females to total manhours worked was chosen as an index of the sex composition of the workforce.

Out of the 93 industries for which average hourly earnings for men and women have been calculated separately, in all but 10 industries, women's average hourly earnings were considerably lower than those of men's hourly earnings. In 11 industries, women's average hourly earnings were less than 40 per cent of men's hourly earnings, in 35 industries they ranged between 40 per cent to 60 per cent of men's earnings, in 29 between 60 per cent to 80 per cent and in the remaining 8 they were more than 80 percent of men's hourly earnings.¹ In most of the cases where men's wages

1. Reference may be made to an Occupational Wage Survey Report issued by Ministry of Labour and Employment. The earnings of men and women in the same occupation have been given for 63 occupations spread over 23 industries, including mines and plantations. In the case of 39 occupations the average earnings of men were higher than those of women. In one they were equal and in 23 lower. The Labour Bureau remarked:

were higher, the percentage difference was quite high. In the cases in which women earned more than men the excess was small in most cases. The correlation analysis indicates that wages are decidedly lower in the industries that are predominantly hirers of female employees (The simple correlation coefficient is $r = -0.481$).

Only part of the influence of sex composition differences upon wage levels is related to other factors. Even when all other factors are only 'average'; female hourly earnings are still lower than male hourly earnings. (The partial correlation coefficient between wages and this index is $r = -0.247$).

The rationalization for the portion of the sex ratio - wage relationship which is exclusive might be ascribed to the differences in the supply characteristics of the labour force, as well as differentials in labour demand. On the side of demand there is the fact that there may be fewer remunerative jobs for which women are as fully suited as

Cont....

"In many cases where men's wages were higher, the percentage difference was quite high". In 10 cases the difference was more than 50 per cent of the earnings of women. In the cases in which women earned more than men the excess was small or even marginal in most cases. Only in one case was the difference more than 50 per cent of women's earnings.
Occupational Wage Survey General Report (Government of India, Ministry of Labour and Employment, 1963), pp. 42-44.

are men. In some cases women will be definitely superior, as in certain operations of cotton spinning; while for heavy muscular operations like coal-hewing and iron-moulding women will clearly be unsuited. It is sometimes said that, because women are more prone to illness or only to apply themselves temporarily to an employment, they may be less useful to an employer for this reason alone. Added to this is the probable effect of custom in excluding women from some occupations. Women accounted for only 5.47 per cent of the total manhours worked in organized manufacturing sector in 1970.

In explaining the differences in earnings, the conditions of supply of female labour also play an important part. If the supply price of women's labour is generally lower than that of men, this by itself would suffice to explain the lower rates paid to women. Of decisive influence, on the supply of women in the labour market is probably the number of women who seek employment because their family is in straitened circumstances through the low earnings, unemployment, illness or death of the male breadwinner.¹

1. In a study made by the Government of India, it was found that the number of unmarried women in Indian industry is insignificant, that married women constituted 50 to 80 percent of the women workers and widowed women the remaining 20 to 50 per cent. Refer to Economic and Social Status of Women Workers in India (Government of India: Ministry of Labour, 1953) pp. 54-55. Another survey conducted under the auspices of the National Council of Women's Education in Delhi and Bombay in

These women, since they are driven to work only by the pressure of poverty will be ready to work for almost anything they can get, and they will value immediate earnings even though low, spasmodic and temporary.

The lower female earnings might partly have resulted from some of the Wage Board's decisions of awarding lower wages to women workers, on the pretext that a women worker is not bound to maintain a family of three consumption units.

The employment of women tends to lower the average earnings in an industry in more indirect ways also. In industries where male and female labour constitutes competing groups, there male wages will be lower as well, since higher male wages may lead to substitution in favour of cheap female labour. Assuming that the actual participation rate of the women in the labour force of an industry measures the extent to which they can be substituted, or the employer is willing to substitute them, for male labour, our analysis

Cont....

1962 showed that women work, if they are required to do so, because of economic compulsions of the family. About 70 per cent of the women who responded to the enquiry considered it necessary to work in order to supplement family earnings. Quoted in the Report of the National Commission on Labour, op. cit., para 27.21, pp. 383.

shows a strong negative correlation between the proportion of females in the labour force and male wages ($r = -0.38$).

Each of these factors strengthens the exclusive sex ratio-wage relationship.

MULTIPLE REGRESSION ANALYSIS:

In order to further investigate the relative contribution of each of the factors to the wage differentials we have applied multiple regression analysis to the series of different factors and wages.

The functional relationship between the variables may be expressed as

$$Y = f (X_1, X_2, X_3, X_4, X_5, X_6, U)$$

Where

Y = Average hourly earnings of Workers

X_1 = Value Added per Manhour

X_2 = Skill Composition of the Workforce (ratio of unskilled workers to total workers)

X_3 = Degree of Concentration

X_4 = Rate of Labour Turnover (separation rate)

X_5 = Proportion of Wage Cost to Value Added

X_6 = Sex Composition of the Workforce (proportion of womenhours to total manhours worked)

U = Error term

The theoretical regression model, then, takes the following form:

$$Y = X + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + B_5 X_5 + B_6 X_6 + U$$

Parameters B_1, B_2, \dots etc., can be interpreted as the partial derivatives of Y with respect to X_1, X_2, \dots , respectively: $\frac{dY}{dX_1} = B_1; \frac{dY}{dX_2} = B_2, \dots$. Thus B_1 tells us by what amount Y will change in response to a unite change in X_1 , when X_2, X_3, \dots are maintained at the given level, with no other information; B_2, B_3, \dots can be interpreted similarly.

The Constant Term: In a mathematical model the interpretation of the constant term is obvious: it is the intercept, the value that Y takes on when all independent variables are set to zero. But such is not always the case in an econometric model. An econometric model (regression equation) is used to explain the behaviour of a subpopulation that contains at least one nonzero independent variable. When all the independent variables are zero then the observation does not belong to the subpopulation under investigation (i.e., it ceases to be an observation belonging to a manufacturing unit), and the regression equation has no valid interpretation. In this context the constant term should not be interpreted as the equation's intercept in the mathematical sense. Rather it is to be interpreted as the mean effect on Y of all the excluded variables for the relevant subpopulation. When the mean value of the omitted variable (Z) changes for some reason, then the constant term will change.

The ordinary least squares estimation procedure was used to estimate the parameters of the model.

The correlation matrix and some other statistics relating to the individual variables are shown in Table No. 5.2

TABLE NO. 5.2
CORRELATION MATRIX

Y	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	
Y	1.000						
X ₁	0.656	1.000					
X ₂	-0.511	-0.191	1.000				
X ₃	0.677	0.440	-0.407	1.000			
X ₄	-0.469	-0.252	0.452	-0.535	1.000		
X ₅	-0.201	-0.615	0.021	-0.216	0.064	1.000	
X ₆	-0.481	-0.301	0.298	-0.360	0.421	0.113	1.000
MEANS OF VARIABLES							
	1.156	4.132	32.813	58.163	47.094	38.197	11.121
STD. DEVIATIONS OF VARIABLES							
	0.562	3.873	14.374	26.623	59.338	17.966	16.653
COEFF. OF VARIATION							
	48.62	93.73	43.81	45.77	125.99	47.04	149.74

All the variables are significantly correlated with the wages variable when taken on their own. A number of the independent variables are also correlated with each other. However, the values of correlation coefficients between the sets of independent variables are not too high to cause any problem of multicollinearity.

All the series show adequate range of variation. Table 5.3 reproduces the regression results.

The first regression equation includes skill-mix (X_2) and labour turnover (X_4) variables. Both have significant negative coefficients. When relative labour cost (X_5) and female percentage (X_6) are added to the regression equation (Eq.2) female percentage has a significant negative coefficient, while the coefficient of relative labour cost, though it is negative, is insignificant. The coefficients of labour turnover and skill mix remain significant.

The inclusion of the concentration variable (X_3) improves the overall fit of the equation considerably, but it reduces the labour turnover variable to the level of insignificance (Eq.3). Labour turnover is thus dropped from the subsequent regressions. Relative labour cost has a negative insignificant coefficient in all the regressions which do not include productivity. However, the inclusion of productivity variable (X_1) not only makes the coefficient of relative labour cost positive but also highly significant (Eq.4). It does indicate that labour productivity and relative labour cost should not be considered in isolation. It is only after keeping the level of labour productivity constant that we can judge the true nature of the relative labour cost variable. Both the variables supplement each other and when taken together explain a much larger variance of the dependent variable

RESULTS OF THE REGRESSION ANALYSIS OF INTER-INDUSTRY WAGE DIFFERENTIALS: 1970

TABLE 5.3

$$1. Y = 1.78667 - 0.015 X_2^* - 0.002 X_4^*$$

(-3.954) (3.152)

$$R^2 = 0.332 \quad F = 23.144$$

$$2. Y = 1.9694 - 0.013 X_2^* - 0.001 X_4^{***} - 0.005 X_5 - 0.010 X_6^*$$

(-3.771) (-1.988) (-1.874) (-3.213)

$$R^2 = 0.428 \quad F = 16.992$$

$$3. Y = 1.0477 - 0.010 X_2^* + 0.010 X_3^* - 0.00001 X_4 - 0.002 X_5 - 0.008 X_6^*$$

(-3.083) (5.553) (-0.023) (-0.938) (-2.918)

$$R^2 = 0.573 \quad F = 24.216$$

$$4. Y = 0.25201 + 0.124 X_1^* + 0.010 X_5^*$$

(9.192) (3.500)

$$R^2 = 0.497 \quad F = 45.984$$

$$5. Y = 0.45865 + 0.083 X_1^* - 0.009 X_2^* + 0.007 X_3^* + 0.00002 X_4 + 0.008 X_5^* - 0.005 X_6^{**}$$

(7.510) (-3.635) (4.702) (0.054) (3.522) (-2.425)

$$R^2 = 0.740 \quad F = 42.002$$

$$6. Y = 0.460967 + 0.083 X_1^* - 0.009 X_2^* + 0.007 X_3^* + 0.008 X_5^* - 0.005 X_6^{**}$$

(7.552) (-3.773) (5.044) (3.544) (-2.504)

$$R^2 = 0.740 \quad F = 50.966$$

Figures in parentheses indicate the computed t - ratios.

- * Statistically significant at 1% level of significance.
- ** Statistically significant at 2% level of significance.
- *** Statistically significant at 5% level of significance.

than when taken separately. Relative labour cost has a positive significant coefficient when all other variables are reintroduced, (Eq.5). This leads us to the preferred equation (Eq.6), where labour turnover has been dropped and all the remaining variables viz., productivity, skill-mix, concentration, relative labour cost and sex composition have significant coefficients.

5.3 SUMMARY:

We have been able to capture nearly three-fourth of the variance of the inter-industry wage levels (Eq.6). The concentration variable is significant in all regressions irrespective of inclusion or exclusion of other variables. This is a clear evidence of the extreme and paramount importance of concentration levels in the matter of inter-industry wage differentials. Because of the ambiguity surrounding the construction of the index of 'degree of concentration', we can't be conclusive about the relationship between market structure and wages. We feel our results are nevertheless at least suggestive of a positive relationship existing between market structure and wages and that there may be some important resultant resource misallocation implications.

As regards labour productivity we are more positive. In the final analysis, it emerges as the most important

factor explaining inter-industry wage variation. It does indicate that wage setters had been interested in adjusting wages to productivities. The positive association between average hourly earnings in different industries and the proportion of wage cost observed in our case is, however, contrary to the proposed hypothesis which states the relationship to be inverse. Our analysis also show that true nature and extent of the influence of relative labour cost on wages can be had only in conjunction with labour productivity, than when considered singly.

We can't completely discount the labour turnover variable, but it is probable that it has had little or no independent effect on wages.

Of our other variables, it is clearly not surprising that the coefficients on the skill mix and sex composition are highly significant.

CHAPTER 6

SUMMARY AND CONCLUSIONS

To sum up the discussion of this study, we would like to present the major conclusions of our study as follows:

Right from the beginning of the industrial development in India, there has been a tendency for the wage differentials in Indian manufacturing industries to rise. The absence of available data for the period prior to 1900 did not allow us to analyze the extent and trends in inter-industry wage differentials during the last phase of the 19th century. However, starting from 1900 till the beginning of the Second World War, the data though inadequate and available for cotton and jute industries only, indicate a rising trend in the inter-industrial wage differentials.

The rise in the inter-industry wage differentials till the beginning of the Second World War can be attributed to a number of factors. The most important of these seems to be the differences in the situation regarding the supply of labour to different industries. The differences in the ownership pattern of industries coupled with the differing strength of trade unions in various industries also contributed significantly to the wage differentials.

The war years witnessed significant shifts in the inter-industry wage structure i.e. in the relative position of the various industries in the wage hierarchy. Also the

war had a levelling influence on the wage differentials. The main reason for this was that the industries which expanded most because of the "natural tariffs" imposed by the war and consequently registered maximum wage increases happened to be those which were relatively low wage paying industries in the first instance. This led to a reduction in the extent of wage variation. However, soon after the war the industries started reverting to their pre-war ranks in the wage structure and the move towards equalization came to a halt.

Since then till 1955, inspite of the wage structure showing remarkable stability wage differentials had a tendency to rise. The period 1955-1960 was marked by a marginal decline in the extent of wage differentials. This might have occurred, partly at any rate, because of the Government's repeated policy pronouncements of accelerating the process of standardization of wage rates, by granting wage increases where they were abnormally low and its insistence on providing every worker with at least a fair minimum wage. The conclusion that during this period, the government policies directed towards reduction in wage differentials made an impact, and that a greater measure of equality was achieved, particularly in the lower echelons of the wage structure, seems inevitable.

The period 1960-70 was characterized by increasing wage differentials. During this period, the movement of various industries in the wage hierarchy had been such as to strengthen, the concentration of heavy and capital goods industries towards the upper end of the wage distribution and that of traditional and consumer goods industries towards the lower end of the wage distribution. The available evidence suggests that it were mainly the basic and capital goods industries which were paying higher than average wage rates to begin with, and also happened to register higher than average wage increases subsequently. This naturally led to a dispersion in the wage structure. Given the planning strategy being pursued in India since the beginning of Second Five Year Plan, this was to be expected./

One of the objectives of economic policy that has been most fully articulated and the one which the Government has regarded as the most important, has been economic growth with its concomitant emphasis on the development of heavy and capital goods industries. As a matter of development policy, the government began to invest very heavily in these industries. The carrying through of these new industries entailed, besides the financial investment requirement, a great deal of strengthening of the organization and administrative personnel

available to the government. It also necessitated the adoption of expeditious procedures in the matter of taking decisions and executing them. It was but natural to expect a higher demand for scarce labour skills on the part of these industries compared to others, which was bound to raise wage rates for these industries more than average. The consequence of all this was that both in absolute as well as in relative terms the wage structure exhibited much greater dispersion in 1970, as compared with 1960. Thus during this period, while inter-industry wage differentials increased, depending on various factors connected with the growth of each industry, the inter-industry wage structure remained largely stable.

In an attempt to identify the factors associated with these differentials, as existing in 1970, we started by discussing the factors which were expected to lead to these differentials and then studied their influence in the statistical analysis. These factors were too numerous to be analytically handled. Therefore, the choice left was to select only a limited number of important and relevant criteria. The bases for this selection had been both theoretical and empirical. On the basis of established facts in economic theory and empirical analysis we have chosen the following factors: (i) degree of concentration in the product market, (ii) labour productivity

(iii) stability of employment, (iv) skill and sex composition of the work force and the (v) relative importance of the wage cost.

Our analysis produced the following results: wages are, as a rule, higher in the industries that are highly concentrated, highly productive, predominantly hirers of male employees, having an occupational structure weighed heavily in favour of a high skilled work force and where wages as a cost are significant.

Because of certain data problems, we can't be conclusive about the relationship between market structure and wage levels. We feel our results are nevertheless at least suggestive of a positive relationship existing between market structure and wages and that there may be some important resultant resource misallocation implications. As regards labour productivity we can be more positive. The existence of a unique wage-productivity link does suggest that wage setters had been interested in adjusting wages to productivities. Owing to interdependencies, we can't completely discount the labour turnover variable (measuring the stability of employment), but it is probable that it has had little or no independent effect on wages. Our analysis establishes the plausibility of developing a partial explanation of inter-industry wage differentials

centring round average skill requirements of the industry. The finding of a positive association between average hourly earnings in different industries and the proportion of wage cost observed in the Indian case, is however, contrary to the proposed hypothesis which states the relationship to be inverse. Though in recent times the principle of equal pay for equal work has been recognized by wage fixing authorities but in actual practice there seems to be a substantial evasion of principle. Other things being equal, female average hourly earnings continue to be lower than the male earnings.

A P P E N D I X

TABLE SHOWING THE LOWER ORDER PARTIAL CORRELATION COEFFICIENTS
BETWEEN AVERAGE HOURLY EARNINGS AND EACH ONE OF THE DEPENDENT
VARIABLE

r_{12}	=	0.656	r_{13}	=	-0.511	r_{14}	=	0.677
$r_{12.3}$	=	0.661	$r_{13.2}$	=	-0.521	$r_{14.2}$	=	0.573
$r_{12.34}$	=	0.574	$r_{13.24}$	=	-0.407	$r_{14.23}$	=	0.481
$r_{12.345}$	=	0.575	$r_{13.245}$	=	-0.375	$r_{14.235}$	=	0.428
$r_{12.3456}$	=	0.638	$r_{13.2456}$	=	-0.371	$r_{14.2356}$	=	0.448
$r_{12.34567}$	=	0.621	$r_{13.24567}$	=	-0.359	$r_{14.23567}$	=	0.444
r_{15}	=	-0.469	r_{16}	=	-0.201	r_{17}	=	-0.481
$r_{15.2}$	=	-0.416	$r_{16.2}$	=	+0.340	$r_{17.2}$	=	-0.394
$r_{15.23}$	=	-0.254	$r_{16.23}$	=	+0.325	$r_{17.23}$	=	-0.316
$r_{15.234}$	=	-0.078	$r_{16.234}$	=	+0.356	$r_{17.234}$	=	-0.259
$r_{15.2346}$	=	-0.058	$r_{16.2345}$	=	+0.354	$r_{17.2345}$	=	-0.248
$r_{15.23467}$	=	+0.0048	$r_{16.23457}$	=	+0.354	$r_{17.23456}$	=	-0.247

Where

1. Average Hourly Earnings
2. Value Added Per Manhour
3. Proportion of Unskilled workers to total workers
4. Degree of Concentration

5. Labour Turnover (Separation Rate)
6. Proportion of Wage Bill to Value Added
7. Proportion of Female Manhours to Total Manhours.

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