THE DETERMINATION OF OCCUPATIONAL WAGE DIFFERENTIALS - A COMPARATIVE ANALYSIS

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Chapter One.

INTRODUCTION.

Public interest in occupational wage differentials has been overshadowed for a long time by the larger all-embracing debate on the equitable distribution of national income. However, both on the basis of equity and incentive, the issue of what kind of wage structure there should be, and the place of each occupation inside this wage structure is as important as the giant one of the relative shares of 'labour' and 'capital'. It is important to those that make up the work force, to their morale and their will to function effectively. It has been thought important as an incentive to entry into 'difficult' occupations where long training periods are involved, or where work is performed in hazardous or unpleasant conditions. Managements think the matter important enough to be adopting one type or another of job evaluation on a wide front. Unions have been giving the question some thought also, especially since the occurrence of a number of strikes in the U.K. and U.S. ostensibly caused by the issue of the relative wage position of unskilled compared to skilled labour.

While it can be agreed therefore that the significance of occupational wage differentials is important, in this paper little will be said on the policies which might be adopted in this regard. The bulk of the discussion is concerned with the determination of occupational wage differentials.

Economic theory, when applied to the labour market has been occupied with explaining the level of wages, both absolutely, and relative to the rewards of other factors of production; and also explaining wage differences between countries, areas, industries, occupations and sexes. As just mentioned, we are concerned in this paper with an examination and explanation of wage differences between occupations. More particularly this paper deals with the wage relationships between the unskilled, semi-skilled and skilled manual labouring groups who are usually paid on an hourly basis; salaried occupations - both clerical technical and professional - being put on one side.

However the exposition will suffer much from the present unhappy state of wage theory. There is much controversy, while the area of agreement is small. Twenty years or so ago, it was possible to regard the theory of wages as a rather special case of the theory of distribution, to be explained by the principle of equality of returns at the margin. This theory, in turn was fitted into a generalised equilibrium theory of the price system, where given certain independent variables and certain assumptions about the behavior of the system, a determinate solution was obtainable. (1)

The recognition of the prevalence of the conglomerates of the trade union and the business corporation in the labour market, led to a re-examination of the assumptions previously made, especially those concerning basic motivations. There was

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(1) See for example - G.H. Phelps-Brown; "The Framework of The Price System", London. 1938.

a realisation of the applicability of psychological and sociological findings in the industrial relations field to the theory of wage determination. This led to an attempt to accommodate new wine into old wine skins, with the inevitable scriptural consequence. The established theory fell into disrepute, but nothing so comprehensive, so logically and aesthetically satisfying has replaced it.

In such a framework it is not possible to add to, subtract from or confirm theory. It is possible to enumerate the relevant factors in any particular section chosen for study, and attempt an evaluation of these factors by statistical investigation. The comparative method is used in evaluation, the United States, Great Britain, and Canada being primarily the countries studied.

Therefore this paper aims to assemble, compare, criticize and synthesize past and present thinking and theory concerned with occupational wage differentials, and where possible to test this synthesis in labour markets of the Western capitalist type. In pursuit of a comprehensive explanation of occupational wage differentials, the study is set out in six parts. There is an introductory chapter that follows the historical development of thinking on the subject, examining in particular the drawbacks of the marginal productivity theory of wages. This section also includes a statistical survey of occupational wage differentials in the U.S., U.K., and Canada, to provide a basis for analysis.

Then follows a study of the emergence of occupational wage differentials, assuming a highly competitive situation in factor and product markets. After this the institutional factors of the trade union, business corporation and the State are taken into account. This analysis is set in a 'static' framework - where the main actors are studied in isolation, influences which long term have an appreciable effect on their actions being abstracted. Later chapters deal with these 'dynamic' elements - the business cycle and secular change. Finally there is a summation.

i) Historical Development.

R. Cantillon (2) was one of the first economists to examine the causes of occupational wage differences. He assumed workers to be mobile between different occupations, and to be attracted to or repelled from various employments according to their amenities. He theorised that crafts requiring the most training time or ingenuity would be the best paid. Dangerous trades, such as mining and seafaring, would be compensated for the risk involved. Where both skill and danger were present in a trade - for example in diving - a differential over the unskilled rate, taking into account both skill and risk would be paid. Cantillon mentions a third factor, of interest because it concerns the employer's evaluation of the job rather than the employee's.

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(2) R. Cantillon; "Essai sur la nature du commerce en général." London, 1755.

This is the trust or responsibility reposing in a trade - as with jewellers, or cashiers - which entitles the incumbent to a higher wage than trades where no such trust is required. Adam Smith, (3) although reasoning that competition tended towards one price in the market for any factor or product, mentions two sets of circumstances which could cause wage differences: the circumstances of employment; and imperfect mobility between occupations. His circumstances of employment include many of the factors in Cantillon's list, although Smith enlarges on their nature. He mentions:

> The agreeableness or disagreeableness of the employment itself.
>
> The ease or difficulty, cheapness or expense of learning.
>
> The constancy or incomstancy of employment.
>
> The great or small trust imposed.
>
> The probability or improbability of success.

In the latter case Smith feels there is a tendency to overvalue one's chances of success.

Smith, under immobilities, mentions artificial restrictions on entry into a trade - such as apprentice laws; and natural obstructions to mobility, such as geographical inaccessability. Ricardo (4) took these immobilities a little further, emphasising custom as the cause of wage differences between occupations - especially between the professions and other groups.

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(3) A. Smith; "Wealth of Nations." Book 1, Chapter 10, Part 1.

(4) D. Ricardo; "On the Principles of Political Ecohomy and Taxation." Chapter 7.

An increase in the supply of lawyers, he says, would not cause a fall in the fees charged, but rather, business would be spread more thinly between those in the group. Ricardo also mentions differences caused by scarcity of supply into a trade or profession, due to educational or other training requirements, which could only be undertaken by the relatively few with the necessary cash means. J.S. Mill, (5) elaborated on this point. He put forward an explanation of occupational wage differences based on the relative scarcity of certain classes of labour, caused either by possession of a naturally rare talent, or because of an artificial absence of competition. A great body of labour was excluded from entry into the skilled trades because of the expense of training. Mill thus emphasises anticompetitive reasons for occupational differentials while Cantillon and Smith postulate freedom of choice in the main, and concentrate on differences in the employment itself. From Mill's ideas later developed the concept of non-competing groups, propounded by Longfield (6), Cairnes (7), and Taussig (8). These economists fastened on the tacit assumption of previous writers that a person entering the labour market was able to take up or train for any occupation he wished. Longfield saw that mobility between employments widely separated in the social scale was impossible - e.g. between bricklayers and lawyers.

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(5) J.S. Mill; "Principles of Political Economy," Book 2, Chapter 14, Section 2.

(6) M. Longfield;" Lectures on Political Economics." Dublin, 1834.

(7) J.E. Cairnes;" Some Leading Principles of Political Economies Newly Expounded." Pages 67-68.

(8) F.W. Taussig; "Wages and Capital." New York, 1896.

However, he declared that competition operated by a series of steps through intermediate professions - not by the worker at any one time, but by his sons and sons' sons over a long period. J.E.Cairnes mentions four non-competing groups. The existence of the barrier of expensive training would allow little upward movement between groups - although it was envisaged that inside any one group there would be considerable fluidity. Cairnes describes his concept as "A series of layers, superimposed on one another, within each of which the various candidates for employment possess a real and effective power of selection, while those occupying the several strata, are for all purposes of effective competition practically isolated from one another." Since the supply of persons to these groups (in all but the case of the unskilled group) is limited, the price their services can command tends to be raised (compared to a situation with complete freedom of entry.) In Cairnes' four non-competing groups he distinguishes a lower and higher level of professional group, skilled craftsmen and unskilled labourers. Entry into each of these groups is largely dependent on the income level of the parents of the entrants; and the stream of job seekers into the labour market from one income level does not compete with those from another level. It is possible for the barriers to be overcome only by great effort, extraordinary energy, self denial and enterprise - rare characteristics.

Taussig (9) refined this concept still further, setting out five non-competing groups, - professional, clerical, and the manual skilled, semi-skilled and unskilled.

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(9) F. W. Taussig; Ibid.

The barriers between each group were sufficiently formidable, and increased in size going up the scale from the unskilled to the professional group, to allow only a small movement from one group to another, the least movement being into the professional group whose supply was drawn almost entirely from those whose parents were in the higher income brackets. The exclusion of most of the labour force from all save unskilled work, led to a cramming of the unskilled segment, depressing their wages, and further widened the differentials between their earnings and those of the other classes. These economists, thus emphasised two main factors as causing difference in wages between occupations, the intrinsic qualities of the job itself, and the barriers put up against entry into some occupations.

A further step in the development of wage theory was the emergence of the marginal productivity doctrine. Since recent contributions to the theory of wages have evolved from, or at least been in considerable debt to, this theory, it will be appropriate to examine it in some detail.

ii) <u>The Marginal productivity theory of wages.</u>

The marginal productivity theory of wages originally set out by J.B. Clark (10) and P. Wicksteed (11) and developed by Hicks (12) and Douglas (13) envisioned the reward of a given supply of labour in the market as equal to the value of the marginal product produced by the final unit of labour employed.

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(10) J.B. Clark;" The Distribution of Wealth;" New York, 1899.
(11) P.H. Wicksteed;" Commonsense of Political Economy;" London, 1910.
(12) J.R. Hicks;" The Theory of Wages;" London. MacMillan. 1932.
(13) P.H. Douglas;" The Theory of Wages; "New York.MacMillan Co., 1934.

Assuming all labour to be of equal efficiency and capacity there would be one wage that would clear the labour market, and the problem of allocation of labour between various companies, industries, areas, and occupations was simply and perfectly solved by the application of the marginal principle in a framework of the law of diminishing returns. Of course, the basic assumptions of this theory were very severe. They involved perfect competition in the product and factors markets, a constant state of technique and a fixed supply of factors (including a static population). A further assumption was that of economic motivation in the form of the maximizing of profits by employers, and wages by employees, as the prime mover in the system. Labour supply was seen as determined on the pain-pleasure principle - work was painful, but wages were pleasureful; more labour would be offered in the market as the wage rate increased. Other more subtle assumptions incorporated in the theory were that

(i) The cost curve of the firm was of a certain shape - reflecting the successively increasing and diminishing effectiveness of adding increasing quantities of labour to a fixed but flexible supply of capital, to obtain increased output.

(ii) Employers were able to measure labour's marginal product.

(iii) Labour knew its own marginal product.

The theory, then hedged around with these assumptions, gave a precise explanation of the level of relative and absolute wages,

and this determinability was achieved through an equilibrium situation analogous to that employed in the science of mechanics. Any movement away from the equilibrium position would automatically set in motion forces tending to restore the original equilibrium.

Occupational wage differentials under the marginal productivity theory would exist in two ways: on the supply side to the extent that extra compensation was required for the additional effort in learning, loss of earnings while training, cost of training involved, and any unpleasant aspects of the job, on the demand side, through differences in the value of the marginal product contributed by the different grades of labour. Faced with a given schedule of wages in the market, the entrepreneur equated his rate of product substitution with his rate of outlay substitution. (14).

The refinements to the theory of marginal productivity which attempted to bring it closer to reality, in fact sewed the seeds of its destruction. These refinements were of seven main kinds:

(i) Studies of inertia - lags - the relative immobility of factors of production in response to changes in their prices.

(ii) The development of the theory of monopolistic competition, with realisation that oligopoly was much more typical a condition in the product market than 'atomistic' competition.

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(14) See for example - K.E. Boulding, "Economic Analysis." Harper & Bros New York 1941, Chapter 23.

This had an important effect on the theory of the firm, as with the kinked demand curve of the oligopolist, it was no longer possible in most cases to visualize the equation of marginal revenue and marginal costs.

(iii) The growth of unionism, corporation management and government interference widened the area of indeterminacy, the wage inside that area being determined by the relative bargaining power of unions and management.

(iv) With the growth of institutionalism an examination of the assumption of economic motivation revealed that, with collectives, many other motives besides the economic one may be important in decision making.

(v) Research into the shape of firm's cost curve - indicated that it is probably not U shaped; the assumption of gradually diminishing marginal returns to labour with fixed equipment may thus not be valid.

(vi) A closer examination of the term 'wages' revealed differing concepts of wages motivating the two parties - labour being concerned with take-home pay, and management with labour costs.

(vii) The Keynesian Revolution (15) focussed attention on the interaction of forces which, because of the 'static' nature of marginal productivity theory and its divorce from the dynamics of money, had been regarded as independent. Thus in the macro-economic sphere the effect of a cut in wages on employment cannot be considered only in its impact on costs but also on effective demand and investment decisions.

What these findings amounted to was a lack of any rigid link between wages and employment, via costs, product prices and output. As the employment effect was the main arbiter of wage levels in any short term situation of fixed consumer product demand, in neoclassical theory, the marginal theory degenerated into a mere catalogue of the factors that had some influence on wages in general, and studies of particular situations where these factors' relative importance could be assessed.

From the above, it is evident that any explanation of occupational wage differentials will have to take into account, besides the competitive market supply and demand influences, 'drag' factors, institutional forces and dynamic influences - both cyclical and secular. The current state of wage theory is unsatisfactory - to put it very mildly.

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(15) J.M. Keynes; "The General Theory of Employment Interest and Money." MacMillan. London. 1936.

As we have seen above, the forces envisioned by the marginalists as tending towards an equilibrium position may be overwhelmed, damped, or reversed by numerous other factors. Therefore, what will emerge in our study will hardly be a theory, it will be an evaluation and attempt to rate or grade the factors operating on wage differentials in order of importance. One of the main questions to which an answer will be attempted is why there has been a trend towards a narrowing of occupational wage differentials, and if such a trend can be expected to continue.

iii) Statistical data.

Even a casual study of statistics of hourly wage rates paid in different occupations reveals considerable variation in the range of occupational wage differentials, (i.e., between skilled and unskilled positions) both inside different companies, between areas, over time and between countries. To clarify what wage theory is attempting to explain in connection with occupational wage differentials, it is necessary to review briefly the statistical findings of studies made in the U.S. and elsewhere. The U.S. is taken as our chief example, as it has probably the most documented, most thoroughly probed labour markets in the world. We are concerned here with establishing data for skilled and unskilled occupations and to a lesser extent for semi-skilled occupations also. These different skill classes can be very briefly defined by length of learning period - unskilled with a learning period of from a few hours to a week; semi-skilled from a week to a year; skilled - over a year.

A more comprehensive definition of the three groups is found in the Appendix (16). The terms are used throughout this paper as defined in the Appendix with one exception (17). The data on occupational wage differences by these main skill classes has been well classified by H. Ober in a comprehensive study of occupational wage rates in the U.S. (18).

(i) Present differentials. Ober sets out the spread between wage rates in hourly-paid skilled and semi-skilled, and unskilled occupations in U.S. manufacturing industry (skilled and semi-skilled as a percentage of unskilled) in the following table:-

Types of occupations in manufacturing industries and indexes of their wages. 1945-1947. (19).

	Median Index.	Range
Skilled	155	145-170
Semi-skilled - experienced.	135	125-145
Semi-skilled - routine.	115	110-125
Unskilled (heavy work)	115	105-120
Unskilled (light work)	100	95-105

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(16) Appendix - p.1.

(17) See page 74 below.

(18) H. Ober; "Occupational Wage Differences in Industry" in "Employment and Wages in the U.S.". W.S. Woytinski and Assoc. Twentieth Century Fund. New York. 1953. p. 466-474.

(19) Reproduced from W.S. Woytinski and Assoc. op. cit. Table 113. p. 758.

(ii) By Industry

Industries with arduous working conditions, or with no unusually high skill content, were found to have a narrow spread, i.e., skilled wage rates were 45% higher than unskilled; while those with less arduous conditions, or with high skill requirements, had a much wider spread. (20). In industries where wages were primarily on a piecework basis, semi-skilled earnings often exceeded those of skilled workers working on a time basis.

(iii) By Region

Ober found that the wage spread between skilled and unskilled in the States varied substantially between different regions. The widest range was in the South (here the median wage index for skilled was 179). The least spread was found in the Far West (145), while the North Atlantic and Middle West approximated the national figure. An extreme regional variation was found to be characteristic of industries requiring labour of a high skill level. In the machine industries for example, tool and die makers had an index of 300 over janitors and hand truckers in Norfolk, Virginia; 160 - 170 in Middle West and much less in cities such as Minnesota and Portland, Oregon.

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(20) W.S. Woytinski and Assoc; op. cit. Table 114. p.759.

(iv) Trends

In 1907, the median earnings of skilled workers in manufacturing were double those of unskilled. By 1947 the spread had been cut in half.(21). While the narrowing differed according to the region of the country, it was significant everywhere. The trend fluctuated substantially during upswings and downswings in the economy. A narrowing took place immediately after World War 1; the gap widened during the depression years of the thirties; and has narrowed again during and since World War II. Wage rates of unskilled workers are more sensitive to cyclical fluctuations than those of skilled, says Ober (22). In support of these statistics, Ober cites a study made by the U.S. Bureau of Labor Statistics of union wage scales in the building trades (23). The diagram below shows cents per hour trends between skilled and unskilled labour in the building trades in the U.S. in the period 1907-1947. It should be noticed that while percentage differentials have decreased, cents per hour differences have actually increased, although of course at a diminishing rate.

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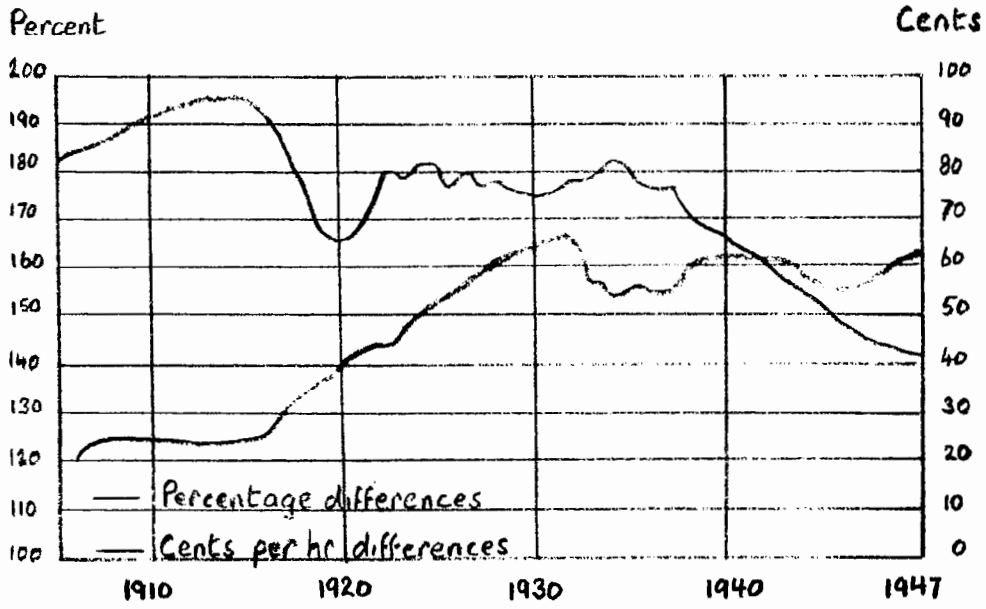
(21) W.S. Woytinski and Assoc. op. cit. Table 115. p.760. Partially reproduced in Appendix p.ii.

(22) See below however, Chap. 4 pp 63,4 for a qualification of this section of Ober's findings.

(23) W.S. Woytinski and Assoc. op.cit. p.473.

Differentials between wages of journeymen and labourers in the building trades 1907-1947. Source: Dept. of Labor.



Obers' findings were supplemented by a number of other reports in the U.S., both confirming his findings (24) and expanding them. A Bureau of Labor Statistics report in 1953 showed a further narrowing in occupational wage differentials. For example, skilled maintenance workers in manufacturing had earnings only 37% above those of male janitors, in twenty labour markets (25).

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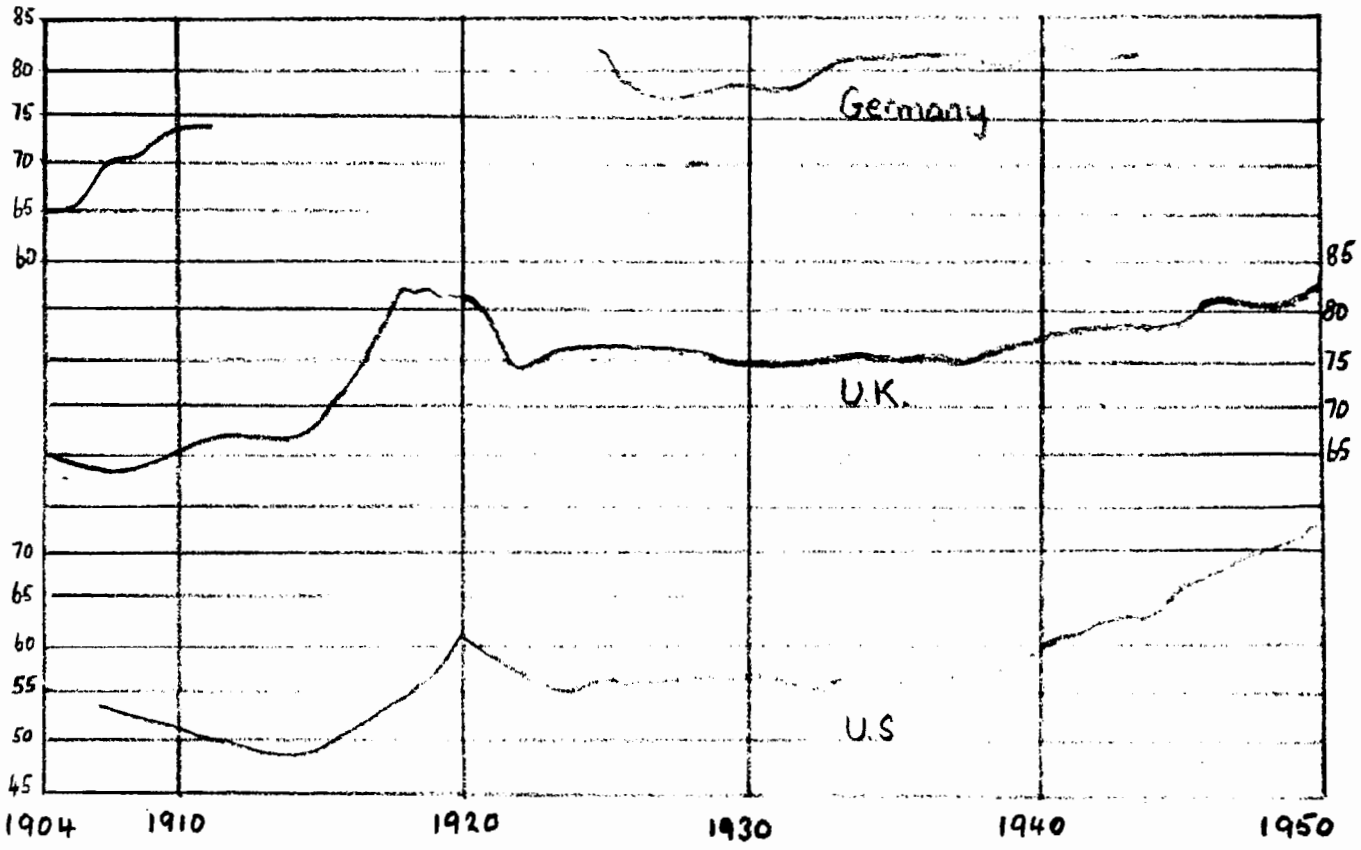
(24) For instance T.P. Kanninen;"Job pay differentials in machinery plants". Monthly Labor Review. Ap.1954.

(25) T.P. Kanninen; "Occupational Wage Relationships in Manufacturing 1952-3". Monthly Labor Review. November 1953.

(v) Comparative trends.

G. Bry (26), in a study of occupational wage differential trends between Germany and the U.K. and the U.S. (basing his U.S. statistics on Ober's and his U.K. figures on a report of J.C. Knowles and D.J. Robertson (27)) finds a narrowing in percentage differentials has taken place in all three countries over the last fifty years.

Skill differentials in the building industry (unskilled as a percent of skilled).



(26) G. Bry; "Trends and Cycles in German Wages" Industrial Relations Research Assoc. Publication 12, Dec. 1953.

(27) K.J.C. Knowles and D.J. Robertson; "Differences Between the Wages of Skilled and Unskilled Workers 1880-1950". Bulletin of the Oxford Institute of Statistics Ap. 1951.

From this diagram (see page 18) it is evident that while all three countries' differentials have appreciably narrowed in the period, the trend has gone much further in Germany and Britain, than in the U.S.

Similar statistics for Canada are a little more difficult to secure. A study of railway rates (28) over a comparatively short period, shows a significant narrowing in differentials between skilled and unskilled categories. In the period 1939 to 1947, there was a rise in hourly wage rates of unskilled as a percentage of skilled from 59% to 77%. (Or alternatively where unskilled 100, skilled were 170 in 1939, and 130 in 1947).

Another study (29) which is much more recent and comprehensive, also substantiates the narrowing percentage differentials in Canada. A comparison of the wage rates between labourers and all plant employees in manufacturing industry showed that substantial gains had been made by the labouring group - an important segment of the unskilled class - relative to the semi-skilled and skilled. In Canadian manufacturing wage rates for labourers rose by 201.7% between 1939 and 1952, compared to 178.7% for all plant workers. During the war years the rates for labourers rose by 50.2% whereas those for plant workers increased by only 46.5%. Since the war the accelerated upward movement of wage levels generally produced an increase in the rate of advance of labourers' wages compared to that of plant workers as a whole.

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(28) John L. McDougall; "Distribution of income among wage workers in railway employment 1939-47". Canadian Journal of Economics and Political Science. May 1947.

(29) "Wage rates for male labourers in manufacturing in recent years The Labour Gazette. July, 1953.

From 1945 to 1952 wage rates of labourers doubled while those of all plant workers rose by 90%.

Year	Labourers		All Plant Employees	
	(30) Index	Annual per cent Increase	(30) Index	Annual per cent Increase
1945.....	150.2	.....	146.5	.....
1946.....	165.9	10.5	161.5	10.2
1947.....	189.9	14.5	183.3	13.5
1948.....	214.0	12.7	205.9	12.3
1949.....	224.1	4.7	217.9	5.8
1950.....	244.6	9.1	230.7	5.9
1951.....	274.9	12.4	261.6	13.4
1952.....	301.7	9.7	278.7	6.5

The Canadian Department of Labour's "Annual report on wage rates and hours of labour in Canada" provides statistics of occupational average wage rates on a national basis for various industries. From these I have attempted to obtain a fairly exact indication of how the skilled/unskilled ratio is moving in Canada.

(30) The index for labourers is derived by weighting city average wage rates by 1941 census data on the number of male labourers in manufacturing in each city to produce provincial indexes; these are then combined into the over-all national index by using similar 1941 census data for each province. For the derivation of the index number for all plant employees see the introductory notes to the Annual Report of Wage Rates and Hours of Labour in Canada.

Exact details of the percentages set out below are found in the Appendix (31).

In the iron and steel industry in Canada from 1943 to 1952, taking the classifications of machinist and labourer to represent the skilled and unskilled groups respectively, the unskilled as a percentage of skilled increased from 69% in 1943 to 79% in 1952. Expressed another way, taking the unskilled index as 100, the skilled index decreased from 146 to 127 between 1943 and 1952. While as is mentioned in the Appendix, these figures fall far short of the statistical ideal, they do indicate a narrowing, which if representative of industry as a whole is substantially in excess of that of the U.S.

What then is needed, upon a perusal of these figures, is an explanation of:

i) The persistence of skill differentials.

ii) The great variation in these differentials between firms, industries, regions, and countries.

iii) The cyclical changes in skill differentials.

iv) The secular changes in skill differentials.

To expose the various factors which have an important effect on the determining of skill differentials, it is proposed to start off with a model, built on the very rigid assumptions of perfect competition operating in a "static" environment. Certain immobilities are then allowed. Next, the great anti-competitive factors are introduced - corporate management, unions, and government. Lastly the system is made "dynamic" by bringing in the business cycle and long term changes.

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(31) Appendix p.iii.

Chapter Two.

MARKET INFLUENCES.

What we study here are the competitive forces - the atomistic supply and demand influences. What are the important factors operating on the supply and demand for labour of different classes in a market where the 'large lumps' of institutional factors are absent, where a given state of technique prevails, and there is no change in consumer tastes, population or capital accumulation. This model is constructed on the extreme assumptions of perfect competition, operating in a static situation (i.e., where the economy is neither growing nor diminishing).

In these conditions the employer makes a decision of how much skilled, semi-skilled and unskilled labour he will hire. He will employ as much of each kind, under the reasoning of the marginal productivity theory, so that the ratio of the marginal product revenue derived from the last man in each category equals the ratio of the wage paid in each category. This assumes flexibility in the mode of production, to allow for some substitution between skilled, semi-skilled and unskilled, should their relative wages change. For simplicity's sake we will follow through the relationship between unskilled and skilled. However, the same reasoning applies to the semi-skilled group.

Due to the greater value of the contribution made by the skilled man compared to the unskilled, the employer, (faced with a given supply of each type of labour) would be prepared to pay a higher wage to the skilled than the unskilled. Even if the employer makes no such exact computation of marginal contributions, but crudely estimates the relative value of the contributions made to the productive process by the unskilled and skilled elements, a differential will emerge between their wages.

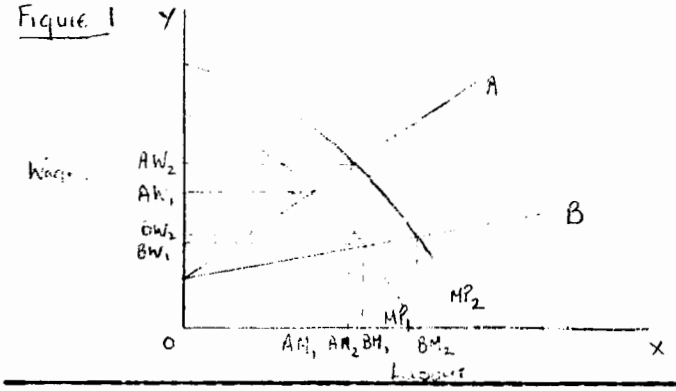
The elasticity of demand for skilled labour will of course be affected by the possibility of substitution by unskilled labour. The elasticity of a demand curve for a factor can be said to depend on three things: the elasticity of demand for the product; the proportion of the factor in total cost; and the ease of substitution of other factors. Skilled labour costs are usually a smaller proportion of total costs than are unskilled, while it is also probably true to say that the substitution of other factors is easier in the case of unskilled than skilled labour. In addition, it would seem easier to substitute skilled labour for unskilled than the other way round. Thus the demand for skilled labour in a market will be more inelastic that the demand for unskilled, in our perfectly competitive situation.

On the supply side, on our assumptions the supply curve of labour to the firm will be perfectly elastic. However, for the market as a whole in the short term, the elasticity of supply of a skilled occupation is less than that of an unskilled one. The elasticity of supply of labour for any occupation will depend on the degree of mobility of labour into that occupation. Owing to the training requirements of a skilled occupation then the response of increased supply to a given increase in wages will be less than in the case of the less skilled occupation.

Now what is the effect on the relative wage rates of these groups of a change in demand?

In figure 1, MP_1 is the initial demand curve for both skilled and unskilled occupations, while A is the supply curve for the less elastic factor (skilled occupations), B for the more elastic factor (unskilled occupations). Here it is seen that with an increase in demand from MP_1 to MP_2 factor A benefits more in wages, factor B in employment. (1)

Figure 1



(1) From B.S. Keirstead; - "Essentials of Price Theory". Univ. of Toronto Press. Toronto; 1942. p.191, Fig. 44.

Thus from this diagram (see page 24) in a period of increasing demand, the gap between unskilled and skilled wages would increase. Keirstead in his analysis, however, does not say that in a period of decreasing demand the gap between the two should narrow. On the contrary, he mentions that in a period of decreasing demand the skilled group suffer least in wage terms. This would not appear to be the case from the above mentioned diagram. In addition the statistics of H. Ober (2) would indicate that skilled labour gained least in conditions of increasing demand and suffered least in contractions of demand. These apparent contradictions will be examined further in Chapter Four, when the effect of cyclical fluctuations on skill differentials will be examined in some detail. They are anticipated here so that the reader will be able to shelve any objections he has on this score until Chapter Four.

Returning to our main argument, assuming that skill differentials widen in the short run in our model, due to an increase in demand, will this increased differential be maintained in the long run? In other words, assuming a shift in the demand curve for skilled and unskilled labour, which due to their different short-term supply curve elasticities has changed the differential between them, what ultimate differential will be established? What is the shape of the long-term supply curve of skilled labour compared to unskilled, under perfectly competitive conditions?

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(2) H. Ober from W.S. Woytinski & Assoc.; op.cit.

With a static population just enough labour will be forthcoming long term, to replace those who leave the labour force through death and retirement. Assuming a given quantity of unassigned labour to be entering the labour market at any particular moment, what will be the influences bearing on their choice of occupation? More broadly, what will affect their choice of skilled, semi-skilled or unskilled jobs?

The following factors are primary ones in affecting the entry of labour into skilled occupations:

i) The expectation mentioned by Adam Smith and Cantillon for better trained people to recover the cost of their training in higher wages. Thus the longer the training period and the more expensive the training, the higher the wages needed to compensate, subsequently.

ii) The degree of preference for the pain of training. This is also likely to vary inversely with the length of training.

iii) Preference for one occupation over another in non-monetary terms (mainly interest, chances of advancement, continuity of employment, and pleasant, safe working conditions - the Adam Smith factors.) On the whole these advantages lie with the skilled occupations, as they involve less of the sheer physical effort, dirtiness and danger of unskilled jobs. Here then is a factor which would make for a decrease in the skill differentials emerging under (i) and (ii).

iv) Social status considerations. These usually attach themselves to the skilled jobs, (e.g., in the clerical white collar jobs, with improvement in education, there has been a large influx of labour, probably due to this factor). This again is a factor which would tend to narrow the skill differentials necessary to attract labour into skilled occupations.

v) The differing motives of the provider of costs of training from those of the beneficiary.

vi) The rarity or commonness or ability required in a skilled job, and the individual's assessment of his ability.

Thus under our present assumptions, a person's decision to enter a skilled as opposed to an unskilled (or semi-skilled) occupation depends on a balance of factors which can be expressed as an equation:

Wage differential (anticipated monetary gain) between skilled and unskilled equals money cost of training, plus pain of training, minus non-monetary advantages of skilled occupations, minus status considerations, plus rarity of skill.

However, reference to the real market reveals that wage differences are in existence which are much larger than those required to compensate for cost of training: assuming a reasonable return on an investment to be 5%, and the rate of refund of capital to be 5%, and the cost of training a skilled (apprenticed) craftsman to be say $5000, then a wage differential between skilled and unskilled of $500 a year would be sufficient to compensate for the cost of training.

On a forty hour week this would mean a 24 cent differential. In the U.S. at present the differential stands at close to 63 cents (3). In addition there are other non-monetary factors - mentioned above as interest, working conditions, and social status of skilled jobs, which would probably offset the negative factor of pain of training. As for the rarity of skill required of the average skilled job, psychological studies that have tried to measure the range of intelligence, show that the range is normally in the ratio of one to three, representing the most stupid, and most intelligent worker respectively.

A curve representing the assumed distribution of human ability would take the Gaussian shape. In other words, plotting ability against numbers possessing it, the curve will be symetrical in shape with no massing at either end. There will be an equal number of people for every ability point as the distance from the mean in either direction is increased (4). The present distribution of labour into unskilled, semi-skilled and skilled jobs plotted on the same basis would show a differently shaped curve rising very quickly to its highest point and falling much less quickly thereafter.

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(3) See above p. 17.

(4) A.C.Pigou; "The Economics of Welfare" 4th Edition; MacMillan, London 1933; p. 650.

Thus it would appear that even with the narrowing trend that has occurred in skill differentials, these differentials are still too wide (in the American labour market at least) to be explained by purely competitive factors.

This conclusion is further reinforced by a recent study made of the influences affecting the occupational choice of over a thousand tool and die makers in the U.S.(5) The results indicated that 37% of those interviewed chose their occupation because of interest (mechanical inclination); 23% were influenced by family or friends either because someone else in the family was in this trade or because of a recommendation of a vacancy at a particular time; only 17% stated as their reason wanting to better themselves or earn more. What this means is that money may well be a muted motive in attracting the supply of skilled labour.

Another consideration in evaluating the effect of the cost of training in the emergence of skill differentials is the predominance in the U.S. and probably in Canada also, as opposed to the situation in Britain, of on the job training for skills - an earn while you learn situation. G.L. Palmer (6), in her researches into occupational mobility, found that in recent years apprentice training had been replaced more and more by informal training within the plant with subsequent promotion to skilled jobs.

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(5) S. Swerdloff and A. Bluestone; "Backgrounds and Career Choices of Tool and Die Makers". Monthly Labor Review. January 1953.

(6) G.L. Palmer; "Labor Mobility in Six Cities" Social Science Research Council, N.Y. 1954.

Many unskilled and semi-skilled workers were upgraded this way during 1940-50. Of 640,000 men having held skilled jobs in the forties, she found four-fifths of them had had no apprentice training.

This factor then, further reduces the burden of costs of training and should lead to lower skill differentials in the pure market.

Thus, if there were nothing barring entry into skilled occupations only a small differential - if any at all - would emerge to compensate for the effort of training. There are substantial non-monetary advantages to being a skilled craftsman, and these, combined with the non-apprentice type of training now popular in the U.S., appear to make the existing differential rather excessive. This statement is confirmed by the rather low rating given to monetary inducement as a reason for skilled personnel entering a skilled trade.

Immobilities.

At this point the more rigid assumptions of our perfectly competitive model can be relaxed, and the neo-classic immobilities introduced. The neo-classists used these elements of inertia to explain why wages in the labour market did not conform to the marginal productivity principle exactly, but only tended towards an equilibrium position in the short run.

These distortions of the perfect market were of four kinds:- geographical and occupational immobility, ignorance and custom.

Without them, any occupational wage differential could only be explained by costs of training or inherent job disadvantages such as unpleasant working conditions; anything over and above this would cause an influx of labour which would tend to eliminate the excess differential. With immobilities, differentials can exist for a long period of time.

Geographical immobility is due to certain social attachments formed by residence in a certain area and job - and the financial costs of moving; the neoclassists imagined a Euclidian type of worker who would carefully weigh the net advantages of moving against staying put, and the differential inducement had to be great enough to compensate for the costs of moving. The effect of this factor on regional occupational wage differential deviation would be evident when certain areas favoured the development of skills, and others did not. Thus in our original statistics we saw that the New England States have pockets of such skills, and consequently occupational differences are less here than in other areas - such as the South, where skilled labour is in much shorter supply.

Occupational immobility was first formalized in Cairnes concept of non-competing groups, mentioned in our introductory section. He describes certain barriers to movement into groups of occupations - caused by money considerations for the most part, which tended to herd most of the labour force into the unskilled jobs. The lesser supply went into the more highly skilled jobs and this caused a differential in earnings to appear.

Those in the poorer classes were unable to provide the education necessary for entry into the more skilled groups. In addition to this long term supply consideration there was also the short term one of movement between occupations. Thus any shortage or surplus of a skilled labour of a certain variety cannot be remedied by the transfer from one skill to another, as in very many cases the skill is so specific as to be quite unmalleable. If the skilled worker cannot obtain work in his trade,- which often, with the advance of technology, may be limited to one industry or part of an industry, then he would have to take work as a labourer.

Kerr (7), in a penetrating analysis of labour markets in the U.S., sums up the situation as follows: There are three basic types of labour market. There is the 'open' type - the pre-Cairnes kind with no significant barriers against movement, either occupationally, geographically, inter-firm or interindustry. This is a theoretical type of market that never existed in reality. 'Real' labour markets are of two kinds- (or mixtures of these)- the 'guild' type and the 'manorial' type. The former is where the craft system is predominant and there is a horizontal movement (i.e. at the same skill level) between companies and industries.

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(7) Clark Kerr: "The Balkanization of Labor Markets" in Labor Mobility and Economic Opportunity". E. Wight Baake, G. Palmer, C. Kerr and others. Technology Press and Wiley. N.Y. 1954.

The latter is found inside specific companies or plants, where mobility is vertical rather than horizontal. These two types will become clearer after our study of the operation of the corporation and the union in Chapter Three. They are mentioned here for the sake of completing the train of thought on labour market mobility.

The concept of a labour market therefore, narrows: It follows the Clark Kerr delineation of "an area defined geographically, occupationally or industrially, in which workers are free to move, and do move from one job to another (8). In each labour market there will be a pool or reserve of labour, usually employed, which could be fairly readily attracted from one firm to another. This pool would be wider in the case of a trade with high interindustrial mobility, lower in specialized skills such as those of chemical plant operators.

The second imperfection in the labour market mentioned by the neoclassists, is that of ignorance. Workers are badly informed of the number and type of jobs available. They cannot see ahead very far when they enter the job - what the working conditions are, the type of supervision and so on. They are still dominated by a shortage of jobs fear, and as Reynolds and Lester have pointed out in a number of studies they have made (9), workers on entering the market usually have not more than two jobs to choose from.

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(8) Clark Kerr: "Labor Markets: Their Character and Consequences", American Economic Review Paper & Proceedings. May 1950.

(9) See for instance: R.A. Lester "Labor & Industrial Relations" New York, MacMillan Co. 1951.
and L. Reynolds; "The Structure of Labor Markets". N.Y. Harper 1951.

They are in no way able to make a comprehensive survey of the market before they make their decision. This means that considerably better wages can be offerred in one plant than in another without there being a tendency towards equalization because of a shift in the labour force. There will be a lack of knowledge of such wage differences. Thus, even if the barriers mentioned above into the skilled labour group were not present, many workers would enter unskilled jobs through ignorance of better wages in other occupations. This applies equally to those already employed seeking a change of job, and to juveniles entering the labour market for the first time.

Lastly, custom plays a considerable part in maintaining the status quo for wage rates. Rates established to meet market conditions appropriate a long time ago, are often maintained in the face of very different market conditions in the present. We shall see later than certain customary occupational wage differentials have been maintained exactly over a long period, although the wage rates themselves have changed considerably in the period (10).

Thus while the pure market forces themselves may cause a small differential to emerge between skilled and unskilled personnel, this differential is definitely enlarged by the drags, lags or imperfections of the market, most especially by the inequality of opportunity for the mass of those entering the labour market for the first time. These drags would partially explain regional variations in occupational wage differentials as well as inter-firm and interindustry differences.

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(10) See below Chapter 3.

Chapter Three.

INSTITUTIONAL FORCES.

Our model must, in this chapter, face the facts of life and accommodate the institutional factors which, to a large extent, dominate or seriously modify the 'free' supply and demand forces in the labour market. These factors are three: corporate management; the trade union; and government. It is only by taking into account the first two of these factors, in conjunction with the 'frictions' mentioned in our previous chapter, that the diversity of wage rates in the market, so characteristic of the real world can really be explained. R.A. Lester (1) for instance, mentions that a review of forty-eight labour markets in the U.S. by Bureau of Labor Statistics 1943-4, showed that the straight time hourly earnings for males in certain selected jobs were on the average 50% higher in the top paying plants than in the low paying plants. Such diversity cannot be adequately analysed in the competitive terms of Chapter Two.

Management.

The emergence of the corporate company, very different from the small owner-manager enterprise, envisioned by the classical economist, often employing thousands or hundreds of thousands of workers, violates the concept of the perfectly competitive market by its mere size, in several ways.

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(1) R.A. Lester: "Wage Diversity and Its Theoretical Implications." Review of Economics and Statistics. August 1946.

Firstly in an atmosphere of oligopoly and imperfect competition there will be a less rigid relationship between costs and revenue, some 'excess' profits, and more room for manoeuvre. There is more discretion in terms of cost policies in general, and wage policies in particular, than in the stern environment of perfect competition, where paying a lower wage then the competitive one leads to a loss of labour supply, while a higher than competitive wage leads to bankruptcy.

Secondly, under oligopoly the shape of the firm's product demand curve makes the estimation of marginal revenue in a significant range of output impracticable; this in turn makes an approximation between the marginal revenue product of an enterprise and the going wage, to determine employment, impossible. Thirdly, the wage contract and other conditions of employment are not arrived at through an equality of bargaining strength between the employer and the employee. The conditions are set, in the absence of a union, by management. The latter is restrained to a certain extent by the wants of the other employers, who may attract labour away. However, in conditions of oligopoly in the product market, competition in the factor market is likely to be imperfect also, and not take the form of wage competition when it does occur. Even when oligopoly is not prevalent, it is not the fashion to compete openly for labour. There is much collusion on the employer's side, ranging from the trading of information on employment conditions to anti-pirating agreements; in a labour shortage, employers may well intensify advertising expenditures rather than raise wages.

Add to this a relaxation of the assumption that the business enterprise is concerned with maximizing its profits to the exclusion of all other ends. Managements have many other motives besides those of profit maximization - such as maintaining the company market position, public reputation, or financial control. Lester (2) points out that in modern corporations executives are practically irremovable by shareholders, and develope their own standards in deciding between the interests of shareholders, consumers, employees and suppliers.

Because of the above factors it is difficult to conceive a demand curve for labour for the firm, drawn up along the classical lines, involving an increase in labour demand with a decrease in wages. A decrease in the market wage is not likely to lead to an increase in employment in the firm; and an increase in wages may well not lead to a decrease in employment - the Company may increase its administrative efficiency, increase its selling outlay in an effort to increase its sales, or take a cut in profits; there are many alternatives.

The deterministic connection between wages and employment, acting in a strict relationship to one another, is therefore, on the demand side at least (and we shall show it to be on the supply side also) a tenuous one.

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(2) R. Lester: "Labour and Industrial Relations". MacMillan. New York. 1951. Chapter 1.

It would be more realistic to look to output, in turn geared to effective demand in the community, as the arbiter of the level of employment, than to regard the latter as dependent on the level of wages in the micro-economy. On the demand side wages can be left more or less hanging on the discretion of management.

Company wage policies evidently have a considerable latitude. They may aim, for instance at:

i) Maintaining wage leadership in the area or industry - with the attendant advantages of good employee morale and keeping out unions.

ii) Conforming to the industry pattern.

iii) Following ethical notions of fairness - for example, wage increases based on the cost of living.

iv) Having a Company wide wage pattern, useful for moving personnel between company centres.

L. Reynolds (3) conceives the firm, on entering the labour market, as being faced with a wage range or band, the top of the band being set not necessarily by ability to pay but, in the absence of a union, by what would be considered unethical by other employers. The lower limit would be partly a function of the higher limit, although also affected by minimum wage legislation and unemployment insurance benefits.

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(3) L. Reynolds: "The Structure of Labour Markets". Harper & Bros. New York, 1951. Chapter 9.

Once a firm is placed in the band it is difficult to change its position downwards, and thus there is a tendency towards stability.

What impact does all this have on the determination of occupational wage differentials? Evidently market pressures will not have the mechanistic influence maintained in the last chapter. A shortage of skilled labour may not, in the short run, increase the wage of the skilled labour relative to unskilled. There may be a job evaluation plan in existence which would be upset by taking into account market influences; or wages may be established on a company-wide, or industry-wide basis, ignoring local labour market pressures. The reaction to a scarcity of skilled labour may be an intensified advertising campaign to attract such labour; or an economising in the use of such labour by dilution, additional training, or technological adjustments. Many large companies have comprehensive training schemes, which insulate them from market pressures. They need only to turn to the market in times of rapid and unforeseen expansion, for skilled labour. The contact that remains with the mart is mainly for unskilled labour.

Similarly a surplus of skilled labour will not have an immediate effect downwards on skilled rates, as companies do not make a practice of substituting for present labour those prepared to work for less.

Reynolds (4) sees the upper limit to such occupational differentials as being largely a matter of custom or regulation.

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(4) L.G. Reynolds: in "Economics of Labour" from "A Survey of Contemporary Economics". Editor H.S. Ellis. American Economic Assoc. Blakeston, Philadelphia, 1948. Vol. 1.

Such a limit, he says, will be equally stable whether the differential in favour of skilled is 200%, 100% or 50% of the unskilled rate; it is not determined by competitive forces. The lower limit is in part probably determined competitively, and a reduction of the differentials to say, ten percent might make recruitment of skilled personnel more difficult, at least until such a situation was regarded as normal.

This reasoning is, of course, short-term.Long-term, as Ober's study of the U.S. showed, lack of a supply of skilled workers, compared to a surplus of unskilled, probably has considerable influence on the relative wage rates - we noted the difference between Norfolk Virginia, and Portland, Oregon. Short term, however, in this atmosphere of insulation, management's attitudes are likely to be very important in arriving at a structure of wages. What is management's attitude towards skill differentials? Is there any one approach that can be confidently attributed to the large polygot force that constitutes management? I think it is possible to ascribe to this group, a conservative people, the traditional attitude: that increased effort and skill should be rewarded, and that if such incentive were removed, the supply of skill would dry up; that the reward for the acquisition of skill is a microcosm of the reward for efficient management (5).

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(5) In the U.S. and Canada it may also be a business 'folk memory' carried over from the days of mass migration, when the skilled were in short supply, compared to the abundance of unskilled.

This would lead to a policy of passive resistance to the narrowing trend in skill differentials.

This attitude is reinforced by a device presently enjoying much popularity in the States and Canada - job evaluation. The National Industrial Conference Board in the U.S. found that 57% of the companies surveyed in 1947 had a job evaluation scheme in force - compared to 13% in 1939 (6). In Canada, a Montreal study (7) showed that 37% of the firms surveyed had job evaluation.

What is the impact of job evaluation on occupational wage differentials? Job evaluation has been defined as "a formal procedure for determining wage differentials". But this may be misleading: job evaluation is primarily concerned with establishing an "equitable" wage structure inside a firm. This means that whatever the type of job evaluation system used, the first aim is to rank the jobs according to their scoring power in relation to such factors as skill, responsibilities, effort and working conditions. The second step is to assign money values. This usually involves the selection of key jobs which have the same money ranking relationship as their points (or other internal) ranking.

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(6) W.S. Woytinski & Assoc. op.cit. p.361.

(7) See L. Nicolopolous "Formal Job Evaluation and Some of its Economic Consequences. McGill Univ. Industrial Rel. Research Report No.1.

If the tendency of the company has been to lead the average market rates, it is likely to continue to lead under job evaluation; similarly if it has lagged. However, a difference in the slope of its wage curve (derived from plotting points values along the abscissa against cents per hour along the ordinate) compared to a similar one constructed for market rates, might lead to a decision to ignore the market valuation. It is impossible to say whether it would lead consistently towards an aligning with the market ratio or away from it. There are two factors that could have some effect on wage differentials through job evaluation. Firstly, the establishment of values based on points scores can be adopted as standards of the 'right' relative worth of jobs, (if only the 'distorting' pressures of the market could be dispensed with): Secondly, once the market has been propitiated by the setting of money values on jobs after their emergence from the job evaluation process, there could be a tendency to regard these money values as a fair approximation to the 'right' values; so that any pressures causing a squeeze in money differences between those high and low in the scale will be resisted.

In this connection, a study made of the operation of job evaluation in the Southern Californian aircraft industry during the last war (8) is of interest.

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(8) Clark Kerr & Lloyd H. Fisher; "Effect of Environment and Administration on Job Evaluation."Harvard Business Review, May 1950.

The significance of the study is the effect of the fierce market pressures caused by a scarcity of firstly skilled personnel, and later semi-skilled and unskilled workers, on the wage structure as set up under job evaluation. During the period from the time the plan was introduced to the end of the war, general wage movements were frozen. Market pressures were translated into the wage structure by such devices as re-evaluation and reclassification of critical jobs; upgrading of personnel, and where merit ranges existed, raising the incumbent to the maximum of the range. For the higher skills, plant training attempted to increase the internal labour supply to such jobs, and there was also pressure to break down skills into simpler operations. The effect of this then, was a decrease in 'real' occupational differentials, for both re-evaluation, upgrading and the skill breakdown were forms of skill dilution, compressing the extremes of the wage scale. This is, however, a study of the labour market at its tightest; even here, initially the companies concerned made considerable efforts to keep the plan intact - as in the contracting out of work to companies possessing a relatively high number of skilled personnel due to the payment of higher rates. Quite possibly in the absence of trade union manipulation of the plan (which was very marked), the disruption of the established wage structure would have been much less. The writers note in conclusion that such a plan is very difficult to maintain in a tight labour market.

However, tightness of such a degree has not been characteristic of the post war years and in a milder climate, it is probable that job evaluation definitely impedes competitive forces. With job evaluation, management may initially accept the market valuation, but to keep up with market changes, frequent re-evaluation is necessary, which is expensive and time consuming, and consequently neglected. The old framework, therefore, tends to be preserved. The system may therefore act as a buffer to competitive forces.

A method of wage payment in wide use, and one which has been primarily promoted by management (and resisted by trade unions) is that of payment by the piece, rather than by the hour. This system can upset traditional wage differentials because of:

i) Differences in the potential earnings of different groups.

ii) Differences in the quality of workers on the same job.

iii) Differences in pressures that various groups may apply in loosening standards of output.

We are really only concerned with the first point. As piecework is more prevalent in unskilled and semi-skilled jobs than skilled ones, and as the introduction of piecework usually leads to an increase in earnings, quite often a substantial increase, then it follows that this particular management tool will lead to a reduction in skill differentials.

In summary then, we have seen that with the emergence of oligopoly and imperfect competition in the product market, competition in the labour factor market is also weak; that there is no clearcut connection between the demand for labour and the level of wages; that there is some latitude open to management in its wage policies; its motives may be other than economi

Management employs two prevalent practices which can affect occupational wage differentials - job evaluation, and piecework payments. The one tends towards a status quo in the spread between skilled and unskilled rates, the other to narrow them.

The Union.

The supply curve for labour for a firm changes its character considerably when the presence of a union is taken into account. Until comparatively recently, economic theory attempted to accommodate the process of collective bargaining in its explanation of wage determination, by regarding the union, as the employer, as primarily motivated by economic ends. It was seen as a force removing exploitation, or raising wages above their 'free market' level. Later analysis examined situations where the union was assumed to maximize different wage - membership alternatives (9), or members' welfare (income-leisure preferences)(10). The emphasis was, however, still upon maximizing economic quantities - earnings versus employment. An important departure from these views was pioneered by Ross (11) who emphasises the political pressures motivating union action in the bargaining situation, and the transformation of economic forces according to the political needs of the union at any one time. Ross sees the prime aim of the union to be its organizational survival and growth.

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(9) J.T. Dunlop:" Wage Determination under Trade Unions". Kelley, New York, 1944.

(10)L. Ulman: "Union Wage Policy and the Supply of Labour". Quarterly Journal of Economics, May 1951.

(11)A.M. Ross: "Trade Union Wage Policy." Berkeley. Univ. of California Press 1948.

There is a group of political forces to be considered by the executive - rank and file, government, employers, and other unions. The union should be concerned with the effect of wages on employment, but this effect is unpredictable ex ante, and undecipherable ex post. It is not, of course, our object to examine thoroughly the impact of trade unionism on the general wage determination process; for our purpose it is sufficient to note that trade unionism increases the indeterminacy of wages which we have already attributed in part to management practices working in an oligopolistic environment.

However, even assuming the trade union to be able to neglect the economic consequences of its actions, at least in the short term, it will have certain policies which affect the distribution of the wage 'spoils'. These policies will depend on the type of union concerned - whether autocratic or democratic; whether organized on a craft or industrial basis; whether bargaining on a national, industry-wide, regional or local level; in addition the use made by the union of labour market conditions in support of its demands will be an important factor.

The importance of the influence of rank and file in determining wage distribution lies in the well observed phenomenon of myopia, which appears to characterize rank and file thinking. It may seem judicious to the union executive that percentage wage increases be granted rather than 'flat' increases, owing to the danger of breakaway by the skilled section of the union, due to discontent because of the narrowing of the wage structure.

An autocratic union may be able to maintain such a policy, while a democratic type of union most probably would be swayed by what appeared to be the best for the majority in the short run - in this case 'flat' increases.

The type of union structure - whether mainly craft or industrial in character, will also influence the type of wage bargain made. It is to be thought that industrial unions would favour flat increases for their members, who are mainly unskilled and semi-skilled workers, while craft unions would press for percentage increases. This has not necessarily been the case however: the building trades workers in the U.S. and Britain experienced a narrowing in skill differentials between 1938 and 1952, the average difference in U.S. union rates for journeymen over labourers and helpers declining from 70% in 1938 to 38% in 1952 (12). In the 1947-52 period absolute wage increases were smaller, but relative wage increases were larger for unskilled compared to skilled workers in this trade. It is therefore, possible that even where skilled workers are in a strong position in a union, they may be content with the maintenance of absolute differences in wage between their wages and those of the unskilled members of the union, while relative differences decrease.

The scope of the bargaining unit, whether on a local or regional or national basis is also an important factor in the decision as to whether a percentage or absolute wage increase shall be demanded.

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(12) H.M. Douty: "Union Impact on Wage Structures" Industrial Relations Research Assoc. Pub. 12.

The national, and perhaps the regional bargain has wide repercussions, which may bring it to the attention of the public, or government bodies. In these circumstances, appeal may be made to 'equity' by declaring a cost of living (flat) increase is justified due to the pressure of rising prices on workers' household expenses. The local bargain does not have to take into account these considerations. In addition the wider the coverage for bargaining purposes the more diverse the elements which must be kept in line, and the more likely that a demand would be settled on which would appeal to all - with the least friction.

Finally, the state of the labour market may condition the type of wage demand. If there is a chronic shortage of skilled labour in a particular area at a particular time, then this may increase the bargaining power of the union, but only in making differential gains. It may decide to take what it can get despite the fact that maybe the majority of its constituents gain little from the bargain.

Turner (13), in his study of occupational differentials in relation to the English trade union structure finds that the development of national agreements has led to a freezing of occupational differentials. The pursuit of the ideal of the standard rate in the nineteenth century to prevent the undercutting of union rates in some areas, was sometimes achieved at the expense of the more highly paid groups.

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(13) H.A. Turner: "Trade Unions, Differentials, and the Levelling of Wages". Man. School of Economics and Social Studies. September 1952.

Secondly, the national agreements, where unskilled and skilled organized in separate unions which negotiated with employers jointly, led to wage demands which would be acceptable to all groups. As the unskilled and the semi-skilled were in the majority, wage demands were a compromise, involving absolute increase, with a little extra for the more highly skilled; this in actuality led to a decrease in percentage differences. Turner found that flat increases have become the rule-although there are some notable exceptions such as the steel and cotton spinning industries.

As an example of the significance of maintaining absolute wage differentials between skilled and unskilled, Turner cites engineering district rates for fitters and labourers, the difference between which have been maintained at 16 shillings over the period 1926-48, although the rates themselves have been nearly doubled in the period. There are even some cases of minor differentials - such as between fitters and woodworkers which have been maintained absolutely constant over a similar period. However, the emergence of the flat increase is not merely attributable to the growth of national or industry-wide negotiation structures. If there were no other factors, the skilled unions are strongly organized and could break away from the national amalgamations to negotiate on their own. But there are one or two other considerations which make them tread warily.

Firstly, there is a fear of being undercut by the unskilled worker, either by using unskilled men for skilled work (e.g., building) or with the existence of cheap unskilled labour, the substituting of machinery for skilled labour.

Secondly, at the present stage of organization, the expansionist ambitions of many great unions can only work in a downward direction; the craft unions compete with industrial and general unions for the remaining unionized unskilled group. Both these tendencies reinforce the tendency for flat increase requests.

Lastly, Turner notes certain exceptions to these generalizations in the steel, cotton and coal industries. He rejects the possibility of domination by the skilled element in these cases, as other unions have a skilled aristocracy (e.g. The Amalgamated Engineering Union), yet the industries in which they operate have still experienced a narrowing of skill differentials. He notes the prevalence of piecework in these three industries, and as the skilled group are in this case the group working on piece work, their earnings have maintained a constant percentage differential over unskilled earnings. Turner also advances subsidiary explanations - such as lack of rival unions, the structure of the unions - based on the particular industry only, with no national associations; and the system of recruitment for skilled labour, whereby the higher grades are drawn from the grades below.

The men in the lower positions have a vested interest in the higher positions, and there is no threat of undercutting such as is found in trades based on the apprentice system, where the unskilled worker is barred from advancement to higher skill levels.

Turner concludes his analysis by listing three factors causing a decrease in wage differentials in the U.K. -

a) The extension of trade unions from the small labour aristocracy to the mass of unskilled workers.

b) The development of great unions and alliances bringing workers of many different grades and industries into a single unit for bargaining purposes.

c) A parallel widening of the coverage of agreements to include industries or regions.

Besides these 'political' factors affecting the choice of absolute rather than percentage increases, there are some policies employed by the union to achieve economic ends - such as policies affecting the supply of skilled labour into the market.

The policy of restricting the supply of skilled labour may take the form of high initiation fees into the union, or the limitation on the number of apprentices entering the union. In the U.S. only a small number of unions have such restrictions, and the provisions of the Taft-Hartley Act further decrease the effectiveness of these restrictions anyway.

A survey (14) of the admission policies of 185 international unions found that very few trade unions have high initiation fees (such as the Motion Picture Operators of Cleveland who charge $1000 entrance fee.) Ninety-eight of the unions fixed a maximum charge that their locals could levy. Apprenticeship regulations were in effect in only twenty one of the unions. The ostensible aim of such regulations is the limiting of the number of apprentices taken by the employer to prevent dilution in the craft due to the employer taking on a large number of low paid apprentices. Although open to abuse by unions as a means of causing scarcity of skilled labour, investigations showed that employers hardly ever indentured the maximum possible number of apprentices anyway. In Canada, at the first National Conference on Apprenticeship in Trade and Industry (15), a similar state of affairs was revealed - employers in general did not take advantage of their quotas.

Closed shop provisions, outlawed under the Taft-Hartley Act, affected relatively few unions in the States - e.g. building trades, diamond cutting, and movie operators.

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(14) W. Summers: "Admission policies of labour unions"- Quarterly Journal of Economics, 1946.(November)

(15) The Labour Gazette. May 1950.

In Britain where closed shop provisions and the apprentice system of training are much more prevalent, a study (16) by the Ministry of Labour (unfortunately as long ago as 1926), indicated that 13% of all gainfully employed male persons under 21 years of age were apprentices; another 7% were 'learners'. In industries such as shipbuilding, building engineering and printing, the proportion rose as high as 80%. These apprentices were covered for the most part by rules embodied in collective agreements. These rules were mainly concerned with -

i) The number of apprentices (as a ratio of journeymen).

ii) Demarcation of work to be done by journeymen and apprentices.

iii) Wages to be paid while training.

In Britain then the union is in a strong position, where these regulations prevail, to control the supply of skilled labour into a craft, either by lengthening the training period, or decreasing the ratio of apprentices to skilled craftsmen; it is held back by fear of technological substitution (which may be minimized by control over the introduction of new processes). Whether such restriction actually occurred is difficult to establish statistically, as the period between input and output averages about five years, and in this time the demand for skilled labour may well have changed. However, there is a prima facie probability that such regulations were used in an attempt to increase skilled wages through restrictions on the supply of skill.

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(16) "Findings of a Committee of Inquiry in Apprentiship in Great Britain." H.M. Stationery Office, London 1926.

The union then, to sum up, has various devices whereby it can influence the occupational wage differential. It can negotiate 'flat' wage increases, equal percentage increases, or percentage increases of smaller size for the skilled than unskilled elements; it can accept or reject job evaluation; it can, on occasions, control the supply of labour into an occupation by apprentice regulations or closed shop rules; or it can resist technological change. In controlling labour supply, however, there may be little relationship, as we have seen, between the supply of labour in the market and the wage rates fixed by collective bargaining, short term, except in a period of very tight labour supply conditions. The emergence of the 'flat' wage increase, has of course an important effect on the range of occupational wage differentials; while the growth of national amalgamations, and the need to recruit the unskilled ununionized residue, probably have been important factors in the unions' preference for this type of settlement.

Government.

Finally there is the impact of government regulations and of institutions set up under the aegis of government, upon occupational wage differentials.

Governmental action has affected these differentials in three main ways: firstly, by minimum wage regulations, secondly, by the establishment of arbitration machinery, thirdly, through emergency machinery set up to regulate wage determination in wartime or national crisis.

In the first case there are three main types of minimum wage machinery. There may be different minima fixed for different industries by boards appointed to deal with each industry alone - such as in Britain with the Trade Board - later Wage Council - system. Secondly, a national or state commission may fix the minimum for various industries; it can use its discretion in varying the minimum in different cases. This system is found in certain areas of the States and Canada. Thirdly, an actual minimum figure may be established by law to apply over the whole country - as with the Federal minimum of 75 cents in force in the States. Besides varying in their coverage, such regulations can also cover minimum unskilled rates only, or minimum rates for all occupations in the area or industry. These various types of minimum wage regulations are prevalent in the U.K., U.S., and Canada, and their main impact has been in placing a floor on unskilled wage rates. Even where the wages for each level of skill in an industry have been fixed, the industry concerned has primarily employed unskilled and semi-skilled labour. In Britain, these regulations were fairly widespread by 1913 (when they covered half a million workers), but they came later in the U.S. due to the uncertainty of their constitutional status, and even more so in Canada. In the latter case such legislation has only been widely applied since 1934. As it is most frequently the unskilled group which come under the aegis of such laws, their effect on the occupational wage differential could be considerable.

Traditional economic analysis treated the establishment of minimum wage laws in the framework of the marginal productivity theory. Under the assumptions set out in Chapter One it was argued that the employer would adjust the numbers of his labour force employed so that the value of their marginal product equalled the wage required to be paid. The introduction of a minimum wage law would therefore lead, unless exploitation was present, or workers' productivity increased, to dismissal of a certain segment of his workforce. These would be forced into even lower paid occupations and therefore drive the wages in these occupations down. The introduction of minimum wage laws, then, would lead to little or no decrease in occupational wage differentials. However, as we have seen, the employer has many alternatives to dismissing part of his workforce, or going bankrupt when faced with a rise in wages - such as increasing his production or marketing efficiency. Even allowing that minimum wage laws would hasten technological substitution (which is very debatable), it is still probable that these laws have been instrumental in raising the level of unskilled wages permanently, relative to skilled. Technological unemployment in itself would not be likely to lead to a further depression in wages in sweated trades (outside minimum wage regulations); because of the stickiness of wages when nudged in a downward direction, it is just as likely that a pool of unemployed would form on a semi-permanent basis. Thus, minimum laws can be regarded as reducing wage differentials.

There are certain long term forces which could nullify the benefits brought to labour by these laws, but the direction of the operation of these forces is by no means clear, and the benefit to the unskilled segment of labour remaining employed appears permanent. This reasoning is confirmed by a study made in the U.S. recently (17). The Federal minimum wage established under the Fair Labour Standards Act was increased from 40 to 75 cents an hour in 1950. Investigations of the effects of this increase were conducted in five industries estimated to be sensitive to such an increase. It was found that short term, employment remained stable, there was no immediate movement towards mechanization, and hours of work remained unchanged; in some instances, overtime was reduced. A definite narrowing of occupational wage differentials occurred in these industries. Some price increases occurred in the period under review, so that the adjustments were made more easily than in conditions of price stability.

Similar conclusions were reached in an old study in the U.K. (Ministry of Labour) in 1923 (18), which found that the results of establishing minimum wages were increased management efficiency, and a marked improvement in output, with little unemployment.

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(17) Summarised in the Monthly Labour Review. March 1955.

(18) Referred to in a comparative study - "The Minimum Wage"-I.L.O. Geneva 1939.

Secondly, emergency wartime controls, the boards set up to administer collective bargaining problems in the U.S. (National War Labour Board, and Wage Stabilization Board), England (arbitration boards) and Canada (under P.C. 7440) were given terms of reference that encouraged the granting of absolute rather than percentage wage increases - based upon reasons of cost of living, equity to the lower paid worker, etc. This policy was spelt out in the Canadian Order in Council. In the States an important precedent was set in the 'Little Steel' formula, whereby wage increases were allowed up to 15% because the cost of living had increased by that amount between January 1941 and the time of the decision (July 1942); this was taken as a standard for later decisions. Another criterion for awarding increases, was that of substandard wages. In addition the level of women's wages was raised in order to attract them into industry. In all these cases, wage increases meant that the relative position of unskilled to skilled wage rates changed - the gap narrowed (19). Post war government policy in the U.S. under the National Wage Stabilization Board (1946-47) permitted adjustments consistent with the general pattern of wage and salary adjustments. This meant again mainly across the board awards.

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(19) J.T. Dunlop: "An Appraisal of Wage Stabilization Policies" in "Problems and Policies of Dispute Settlement and Wage Stabilization during World War Two." Bureau of Labor Statistics Bulletin 1009.

Lastly, in the case of peacetime arbitration boards, there is no clearcut evidence that their recommendations in the U.S., Britain and Canada have tended towards the 'flat' form of wage increase than the percentage, nor favoured unskilled at the expense of skilled workers, or vice versa. However, in Australia, as a matter of interest, there is some evidence that arbitration has tended to narrow differentials.

Summing up, it is possible to say that minimum wage regulations and emergency government wage controls, have played a definite part in decreasing the gap between unskilled and skilled wages.

In this chapter, then, we have studied the institutional forces that have some bearing on the determination of wages, and more especially have affected skilled, semi- and unskilled wage rate relationships. 'Free' market forces have been seriously modified by corporation management and trade union policies and by minimum wage and wartime wage legislation.

It now remains for us to examine the 'dynamic' long term influences on wage differentials - the forces present in different periods of the trade cycle; the changes in techniques with their impact on job content; and the changing social environment - such as the growth of educational opportunity.

Chapter Four.

DYNAMIC INFLUENCES.

(i) The business cycle.

Although some reference has been made to trends and cyclical movements in previous chapters, in the main the analysis has been confined to an examination of the nature of the pressures acting on wage differentials, and their importance in a given situation. In this chapter and the next the effects of changes in the strength of the pressures themselves over time are examined, firstly over the period of the business cycle, and secondly in the really long-term or secular sense.

Our first task is to establish exactly what has happened to occupational differentials during the various stages of business cycles in the past. With these statistics at our disposal, we can attempt to evaluate the impact of the various institutional and non-institutional factors examined in the previous two chapters at each stage of the cycle. The period we deal with covers the years from 1907 to 1948 in the U.S., and additional statistics are cited for selected periods from the U.K.

The stages of the cycle we examine are the four basic ones of upswing, downturn, depression trough, and boom peak. However, the classification is complicated by a further necessary distinction between periods of a high level and periods of a low level of activity.

In rough terms the decades 1910-1919, 1920-1929, 1940-1949 were high level periods of strong booms and weak recessions; while the decade of 1930-1939 was a period of weak boom and deep depression.

Various studies reveal that the relative wage positions of the skilled and unskilled groups change according to the period of the cycle. However, there is some debate as to the exact interpretation of the findings. J.T. Dunlop made a study (1), prewar, of the behaviour of occupational wage differentials in the business cycle. He concluded that there was a widening of these differentials between 1929 and 1932, and a narrowing in the upturn to 1938. H. Ober (2), in a study already mentioned, made a thorough examination of cyclical movements for occupational wage differentials, over the period 1907 to 1947. The specific years chosen were 1907, 1918-1919, 1931-1932, 1937-1940 and 1945-1947. He found a substantial narrowing in the differential between unskilled and skilled occurred in the first world war, that the differential widened slightly in 1931-2, compared to 1918-1919, and narrowed in 1937-1940 and 1945-1947. From this Ober concluded that there was a tendency for occupational differentials to narrow in boom periods of high economic activity, and widen in periods of depression.

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(1) J.T. Dunlop; "Cyclical Variations in The Wage Structure". Review of Economics and Statistics. February 1939.

(2) H. Ober; See Chapter Two, Page 16 Also Appendix Pii.

A more recent examination of the same movements by P.W. Bell (3) cast some doubt on these findings. Bell points out several flaws either in the data itself, or on these economists' interpretations of their findings. While Dunlop maintains that the differential widened between 1929-32 in the U.S., Bell claims that there was a widening in the dispersion of rates found in each occupation during the period, and that the apparent increase in differentials could be explained by this factor. Bell criticises Ober's study because it excludes important cyclical periods, and in addition uses different occupations and industries for its comparisons over time. The widening of the wage structure between 1919 and 1932 which Ober says occurred in 1929-1932 actually took place in 1920-1922, according to Bell's findings.

What are these findings? Bell examines percentage changes in average hourly earnings in various occupations, over the period of 1914-1948. He uses Bureau of Labor Statistics and National Industrial Conference Board annual surveys of average earnings in industry. His findings fall into three major categories:

a) During both World Wars and the inflationary period following them, there was a tendency for occupational wage differences to decrease on a percentage basis. Arranging occupations on a scale according to remuneration, the percentage wage increases were greater for the workers in the lower half of the scale than the higher.

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(3) P.W. Bell; "Cyclical Variations and Trends in Occupational Wage Differentials in American Industry Since 1914." Review of Economics & Statistics. November 1951.

b) In periods of gradual expansion in the twenties and thirties 1925-1929, 1933-1937, there was no clearcut change, although the tendency for occupational differentials to decrease was greater in the thirties than the twenties.

c) In periods of depression - 1921-1922, 1929-1933, there were two results. In the former period, there was some widening, but in the latter case there was no definite widening at all, in occupational differentials. Bell claims that the thesis of a widening of occupational differentials in a depression and a narrowing in periods of peak activity is at best a rough approximation, and the period 1929-1933 was definitely an exception.

What are we to make of this rather confused picture? Bell's figures cover the period under study more comprehensively than the other two studies, and his criticisms appear plausible in view of his more complete statistics. There seems to be no question that occupational wage differentials narrowed in the two peak activity periods of the two World Wars. There is no controversy about the short depression of the early twenties, when differentials narrowed. Nor is there disagreement about the slight narrowing that occurred 1937-1940 and the static position of differentials in the period 1925-1929, 1933-1937. There is controversy over the depression of the thirties. However, in this case, Bell's statistics appear more reliable than the others and he uses an additional argument that appears conclusive.

For Dunlop's and Ober's findings to be correct there would have to have been absolute or flat decreases or unequal percentage decreases in wages in the period. This would have caused a widening of the wage structure. However, if fact equal percentage decreases were the rule. Bell quotes a survey of over a thousand companies', wage policies during this period, made by the National Industrial Conference Board on which these findings were established.
Our next task is to explain these cyclical changes in terms of the factors we examined in Chapters Two and Three. Let us be clear that the issue here is primarily in terms of high and low levels of activity, rather than upswings and downswings. The significance of the distinction is in terms of the percentage of the labour force employed in any one stage of the cycle. Thus an upswing in the twenties would start at a much higher percentage of employment than one in the thirties. It is in the relationship - whether tenuous or close - between employment and wages that we are interested.

We will examine the case of the depression first, as this is the controversial one. Later the boom period and the intermediate state between high and low level activity are examined.

What has been the traditional (4) theoretical approach to the behaviour of skilled and unskilled wage rates relative to one another in a depression? In this period it has been maintained that while money wages fall (real wages are not relevant here as we are talking of relative wages), those of unskilled and to a lesser extent semi-skilled, tend to fall more rapidly than those of skilled personnel.

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(4) That is, one where the institutional factors of Chapter Three are not taken into account. See e.g. B.S. Keirstead treatment op.cit. p.192.

The theoretical argument in its crudest form would run as follows:

In a depression, a greater proportion of unskilled are unemployed than skilled, assuming initially that the relative wages of the two groups remain unchanged. This greater umemployment is due to two factors; firstly the skilled group are substitutable for unskilled while the latter are not for the former; secondly there is a floating fringe of unskilled who only come into the market during periods of low family income. An extension of this aspect is the effect of the depression on the long term supply of skilled workers (5). Expectation of future yield is dampened in the depression. This not only discourages the entry of workers into the skilled trades, but also increases the supply of less skilled workers. Similarly the longer period of learning a skill required in depressed conditions due to interruptions in production, reduce the number wishing to train for skilled jobs. In all the greater proportion of unskilled than skilled looking for work forces unskilled wages down more than those of skilled.

Colin Clark (6) has statistics that support the statement that unemployment is proportionately worse among unskilled than skilled. In Great Britain he found that, in 1931, one out of every four unskilled persons was unemployed, while only one in seven semi-skilled and skilled was unemployed.

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(5) L.R. Salkever; "Towards a Theory of the Wage Structure". Industrial and Labour Relations Review. April 1953.

(6) Colin Clark; "National Income and Outlay" London, MacMillan Co. 1932.

Hansen (7) claims that W.P.A. statistics show approximately the same thing in the U.S.

We thus have to explain Bell's findings in the light of the greater incidence of unemployment among the unskilled. We know from Chapter Three that the correspondence between employment and the level of wages is a tenuous one, and certainly there is no simple adjustment as visualized in our elementary model in Chapter Two. In Keynesian theory the effect of wage cutson employment depends to a great extent on how the propensity to consume and inducement to invest are altered. Admittedly in a down turn, the bargaining power of workers and unions is much less, but in such a situation the discretionary policies of the large groups are still the important factors; they are not driven inexorably to one course of action only. Employers even in the absence of trade unions do not cut wages to the minimum subsistence level. There may be an ethical standard; and it is unlikely that this would be affected by there being 20% unemployment among unskilled compared with only ten percent among skilled. Therefore to take the next step in the theoretical argument and maintain that because of the greater incidence of unemployment in the unskilled than the skilled sector, that it follows that unskilled wages will fall more than skilled, is unjustified.

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(7) A. Hansen; "Full Recovery or Stagnation?" Norton 1938.

This reasoning is buttressed by the findings of Knowles and Robertson (8). Attempting to find some correlation between unemployment and widening of differentials, they examined four industries - shipbuilding, engineering, building and railways. In the depression of the thirties, unemployment was very high in shipbuilding and engineering, and low in the railways. Yet of these only the railways showed a definite widening of differentials; in the other industries the differentials remained unchanged. The widening differential in the railways was due to the flat rate changes in railwaymen's wages in accord with the cost of living index. What then will be the course taken by managements and unions in a depression? As we have seen companies adhere to job evaluation programmes and time and motion study methods. However, in the depressions of the twenties and thirties, the former type of policy was not available. Nevertheless companies tended to be conservative, and adhere to the established wage structure. This attitude then had a lot in common with job evaluation. (9). Thus, in a depression employer conservatism could lead to an inflexible wage structure. Piece work - assuming that unskilled and semi-skilled benefit more from piece work schemes than skilled - would lead to a widening of occupational differentials as output was cut back - until the point of guaranteed base rates was reached.

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(8) L.K.J.C. Knowles and D.J. Robertson op.cit.

(9) See Chapter Three.

Ideas of 'fairness' also play their part, and these may result in percentage decreases that are less for unskilled than skilled (minimum standard of living concepts).

The reason that differentials widened in the twenties but not in the thirties in the U.S. may have been the differing approach by employers who in the twenties were more concerned with seeing the re-establishment of 'satisfactory' differentials between skilled and unskilled - which had been disturbed by the war - than in the thirties, when their prime concern was to preserve some wage floor as a minimum living standard.. In the States the union was not strong enough in the twenties or thirties depression to affect the overall occupational differential.

Now what of the periods of high activity with full or near full employment? It will be remembered that Bell's findings showed that during both wars and the inflationary periods following them, occupational differentials decreased.

Conventional theoretical analysis (10) puts forward a widening of differentials in the period of high activity, based on the belief of a more inelastic supply curve for skilled labour than for unskilled. Keirstead cites examples from the Canadian scene to support this thesis. Average wage increase among skilled workers from June 1939 to June 1940 in the metal industries was 4.4%; for unskilled 2.8%. Similarly in the building trades the figures were 3% and 2% respectively.

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(10) Keirstead; op.cit. p.191.

However, in view of Bell's findings, certainly supported by Ober (11), and the Canadian statistics I quote (12), it is only possible to accommodate Keirstead's views by considering them a special case which applies when the upswing is under way and a full employment level has not yet been reached. The first bottleneck that occurs may well be in the demand for skilled labour - and this is supported by Kerr and Fisher in their study of the Californian aircraft industry in wartime (13). Later in a period of full employment the shortage of all labour is severe and differential supply pressures are no longer a factor in determining relative occupational wages.

Rothbaum and Ross (14) maintain that the demand for labour in a boom is initially disproportionately in favour of the unskilled and semi-skilled workers. At the beginning of the expansion many skilled workers may be on semi-skilled jobs (due to the employers' desire to retain skilled men in depression days), and by their transfer to skilled positions, as the boom begins, the demand for semi-skilled and unskilled is accentuated.

There appear to be three stages leading up to full employment. The initial increase in demand, if we are to accept what Rothbaum and Ross say, will be for unskilled and semi-skilled labour.

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(11) H. Ober op.cit.

(12) See above page 21.

(13) Clark Kerr and Lloyd H. Fisher op.cit.

(14) M. Rothbaum and H.G. Ross; "Inter Occupational Wage Diversity", Industrial & Labour Relations Review. April 1954.

At this stage the supply curve for this type of labour must be quite elastic. Thus there is no immediate market pressure to raise their wages relative to skilled (ignoring the union influence). Secondly, there is a demand for all types of labour, and as the skilled have a more inelastic supply curve than the rest, market pressures could cause an increase in differentials. Lastly, the supply curve for semi-skilled and unskilled labour becomes inelastic and supply pressures work equally for the three groups. At this point the supply pressures for skilled workers are eased by dilution and the attraction of trainees into skilled trades as the training period is reduced.

The question of relative mobility is also of interest here when we are talking about supply pressures. Several investigations in the U.S. have shown that the unskilled are readier to move into higher paid jobs and industries in this period of high activity than skilled. This is apparently due to the greater impact of rising living costs on their family budget than is the case with the skilled. In addition, while skilled workers have been regarded as the most mobile group, they show much less cross-industry mobility than was previously thought (15).

The pressure exerted on the unskilled worker (as the class nearest subsistence level in the industrial group), in an inflationary situation, by increases in the cost of living, has important effects.

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(15) G.L. Palmer op.cit.

His wage demands become more insistent than his more fortunate skilled and semi-skilled comrades. He pushes the union into the habit of asking for increases to cover his rising costs. Thus the flat increase became popular with the union in the U.S. after 1941.

The union attitude towards wage differentials has certainly been important during the boom period since 1941 in the U.S. The inflationary situation has led to pressure for cost of living increases which later were incorporated in base rates. Later still, in the U.S. the bulk of escalator clauses of the Korean emergency were incorporated later into base rates. The swelling of the union ranks in good times - mainly with unskilled and semi-skilled workers - has made it politically easier for the union executive to go for flat increases. While industrial unions have attempted to decrease occupational wage craft unions usually have tried to adhere to the status quo. The status quo may, however, be merely the maintenance of absolute differential, as we saw in Chapter Three.

The effect of the attitudes of both types of union is much stronger in expansion than depression, due to greater memberships and lower employer resistance to wage demands in good times. The union attitudes, especially the fairly clearcut policy of asking for flat increases which close occupational wage differentials, is dominant in the boom period; the employers' approach to the subject, which may well be in the opposite direction, but is certainly not clearcut,will be dominant in the downswing.

We have concentrated rather exclusively in our discussion of the effect of our various forces on occupational wage differentials in boom periods, on the World War Two years. What of World War One and the boom immediately following it? Ober finds a substantial narrowing took place in that period.(16) How is this to be explained, when we have played down supply pressures, and played up union influences, in the latter war period? The union was certainly not a significant force in the alteration of wage differentials in the First War in the U.S. Its influence on wages as a whole was limited and it was confined to a craft system of organization. There were two important factors in the narrowing of wage differentials in this period: the cessation of immigration; and the rise in the cost of living. The first must have had a considerable impact, for prior to 1914 immigration had been running at a very high level, and the additional labour was being absorbed. It was mainly unskilled immigration, thus the flow of unskilled labour was cut off just as the demand for such labour took on new dimensions with the war effort and the introduction of mass production in the factories. The rise in the cost of living was met by the award of increases of an absolute amount - as in the second World War, but probably not so widely as in the latter period.

In this review we have examined the behaviour of occupational wage differentials in the U.S. in two distinct circumstances -- the quick upturn with sustained full employment-- as in the two world wars; and the depression as in the early twenties and thirties.

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(16) H. Ober; Appendix pii.

There remain the periods of gradual upturn -- in the mid twenties (1924-9) and thirties (1934-7). Bell (17) mentions in his study that there was no clearcut change in these periods although in the thirties there was a slight tendency towards a decrease in differentials. In both periods the supply pressures mentioned above were not pronounced; employers attitudes would be passive -- the upturn was preceded by a slump when their views on wage structure had presumably been put into effect. This meant only the union had to be taken into account. In the twenties the union movement was in a stagnant state; in the thirties it had begun to flex its muscles (on behalf of the unskilled). This might account for the slight narrowing of the differential in the thirties.

In the U.K. as can be seen from our chart of occupational differentials of various countries in the period 1907-50, (18) the pattern was very similar to the U.S. one, although the differential was consistently narrower. Knowles and Robertson (19) in their study find a close correlation between cost of living changes (over the period 1880-1950) and the size of the gap between unskilled and skilled earnings. Narrowing took the form typically, of equal monetary increments to both skilled and unskilled. Inflationary periods -- notably in the two world wars -- were recognized by temporary cost of living bonuses by employers; the union, bent on securing permanent gains, pressed for the incorporation of these bonuses into the basic rate. It was this that caused the narrowing of differentials.

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(17) P. Bell; op.cit.

(18) See Chapter One p.18.

(19) K.L.J.C. Knowles and D.J. Robertson op.cit.

Thus it appears that in a depression employers' attitudes whether concerned with subsistence level considerations or an equitable wage structure, are the important factor in occupational wage differentials; while in the period of high activity it is supply pressures and union attitudes that play the more important part. We have also found that neither the belief that skilled workers gain in the boom relatively to unskilled and conversely lose in depression; nor the opposite view that the unskilled gain in booms but lose out in the times of heavy unemployment, are true. Evidence is strong that unskilled gain substantially on skilled in inflationary periods, but during periods when prices are stable or falling the wage structure remains unchanged.

Chapter Five.

DYNAMIC INFLUENCES.

(ii) Secular Trends in Occupational Wage Differentials.

This section studies the long term forces working the economy which it is considered could have a definite effect on occupational wage differentials. Our statistics stretch back in the case of the U.S. to 1907, while in the U.K. they go back to 1880. The forces we will examine in this section are four: technological change, immigration policies coupled with the ratio of industrialization to agriculture in the country, union growth, and the breaking down of non-competitive groups by narrowing educational facilities and rising standards of living.

First we will make a brief review of the statistics of trend that were set out in Chapter Two. In the U.S. the differential has narrowed from 49% in 1907 to 65% in 1947; in the U.K. from approximately 60% to 80% in the same period. In Canada there has been a narrowing from 59% to 74% in the period 1939-47.

Section 1: Technological change.

Before we can answer the question of what effect technological change has on occupational wage differentials, we have to examine its impact on the level of skill required in the established process. Specialization - the division of labour - was the forerunner of the present trend of technological development.

Adam Smith's famous example of the manufacture of pins is illustrative of how an overall competence can become broken down into a series of simple machine like operations. The next step is the introduction of the machine itself - as the easiest machines to invent are those able to undertake single repetitive operations. Another type of invention might embody whole skills in one machine but create new ones (such as the power loom of Cartwright). Another might wipe out a skill or create one that never before existed by changing a process completely. For our purposes it is idle to speculate which class of skill was hit the worst or benefited the most from technological advance at any one period. We are concerned with the long run, and what the overall effect on skill requirements has been. It has been generally agreed, (and is demonstrated by a specific example shortly) that the level of skill for manual workers has been gradually on the decline over the last fifty to a hundred years in advanced capitalist countries. It would be interesting to examine the growth of the semi-skilled clerical class, the technicians and supervisors and study how technological change has affected their job content and wage structure; it can well be argued that our division between salaried and hourly paid personnel is an artificial one. But nevertheless it would lead too far afield to undertake this in this paper. With a decline in skill requirements, under the reasoning of marginal productivity theory, on the assumption that the relative share of capital accruing to each skill class is constant, the wages of skilled personnel should decline in comparison with the unskilled group .

This would also follow from the application of job evaluation principles.

It is also debatable as to which class has benefited more from the accumulation of capital in industry, but a good case can be made out for the unskilled; for instance, the cement mixers, bulldozers and elevator arrangements which cut down on the physical aspects of labouring. If the unskilled have benefited more, then again theory would support a narrowing of occupational differentials due to technological advance. It should be noted that the figures we quote of declining differentials over time, tacitly assumed that the job content of the jobs used as a basis for comparison did not change in this period. However, it is likely that they followed the trend of reduced skill for conventional craft jobs. In Knowles and Robertson's case (1) no claim for similar job contents was made. They merely took the highest and lowest paid groups of jobs at different periods.

To illustrate the effects of technological change on job content, two examples are taken below. The one deals with radical change in one sector of the economy - the engineering industry in the U.K. The other is a study at the individual plant level in the U.S., and follows the effect of changes in skill content on the distribution of the wage bill in a unionized environment at one point of time.

The engineering industry in Britain before the advent of the first World War was strongly unionized by craft unions, and the gap between the performance of the skilled and unskilled man was too large to permit any substitution; union restrictions on apprenticeship allowed a barely adequate supply of skilled workers.

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(1) K.L.J.C. Knowles and D.J. Robertson: op.cit.

When the demands of war production required extra skilled men in a hurry, there was none immediately available. Therefore, the breaking down of the overall craft skill to allow the introduction of machinery and the training of unskilled for semi-skilled machine tending was forced through. Thus the war accelerated a process that was already in its early stages. When complete this process had five main stages:

i) The job of the allround craftsman - the millwright's generalized competence divides into more specialized skills - such as the fitter, patternmaker. There emerges a number of new crafts of lesser range, but still highly skilled.

ii) A development in engineering machinery takes place. General purpose machines - such as the central lathe - are replaced by specialized machines, built for one or two operations. This in turn leads to the birth of new crafts- the millers, planers, borers, slotters, etc. The relation of status and wage rates between these classifications and the craftsmen of stage one, presented the union with a very difficult problem. Should those personnel be recognized as skilled craftsmen, getting the full craftsman's rate? 'No' it was said, because their skills are not so complex as the fitters and turners. 'Yes' it was said, otherwise we will have no control over them, they will undercut the fitters and turners, and replace them.

iii) The controversy was intensified by a further stage (technological) - the introduction of the single purpose machine.

The advent of this machine, embodying skills previously exercised by craftsmen, reduced the operator to a mere machine tender. Thus came about the birth of a large brood of semi-skilled machinists - recruited from the ranks of the unskilled. The craft unions were unable to accept these subskills, and thus their practitioners joined the general labour unions - with a tendency to compete with the skilled unions.

iv) Fourthly, came the extreme limit of the third stage development - the fully automatic foolproof machine, operated by boys and women. In the previous stage, some modicum of skill was left to the machine operator. In this case it is not. The skilled man, however keeps his job, he becomes the setter-up of machines. The toolroom emerges as an important auxilary of the factory operation.

v) Lastly there evolves, in a reversal of the above process, a semi-skilled trade, the machine repairer and builder, the tool and die maker.

These five stages are significant in that they represent a microcosm of what occurred in other crafts: the breakdown of the old skills and the raising up of the unskilled to positions varying in the degree of semi-skill required.

In this particular case, in the British engineering trades during the first world war, the process went as outlined above, with emphasis on the fourth stage, fully utilizing women in factories. Most of the unskilled men were conscripted. At the war end, the women returned home and this combined with union insistence on the restoration of prewar practices, caused the system to collapse, and stage three of the semi-skilled was re-established.

Thus technological advance, pushed on by the war forced a change in the skill content of the extreme levels of engineering jobs and created a large 'underprivileged' class of semi-skilled. The latter put substantial pressure on in their turn to obtain rates equal with the full craftsman's wages.

The union's attitude was threefold: there were the delaying tactics of the craft unions, attempting to exclude completely or at least hinder the job simplifications of an advancing technology. In the addition there was the enrolling of the semi-skilled in the general unions, one of whose objectives now became the levelling of rates between skilled and semi-skilled workers. Thirdly, there was the creation of industrial unions, with skilled, semi-skilled and unskilled members, who as we have seen from Turner's study (2) due to the predominance of unskilled, tended to have narrower differentials than those existing in jobs of the same relative skill content in the older craft unions.

Thus the net effect of technological advances in the broad sense has been to diminish wage differences. This has been due to a decrease in skill content of craft positions, and a tendency for the maintenance of established differentials to lead to substitution by unskilled personnel. Secondly, a refusal of craft unions to accept the large group of semi-skilled trades hastened the growth of industrial and (in Britain) general unions, exerting strong pressure to reduce skill differentials.

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(2) H.A. Turner; op.cit.

We will now move from studying the effects of broad advances on the technological front to an examination of a small skirmish on one sector of the front. We will be concerned with day-to-day technological adjustments which occurred at the plant level and their effect on wage differentials. M. Segal's study (3) covered twelve unionized plants. He was concerned with two problems - whether earnings were maintained in the affected jobs, and the sharing of the benefits of increased productivity in the plant as a whole. Segal put the various attitudes of the involved parties as follows:

Management's attitude towards technological change reflected job evaluation principles (4). Any elimination of skill elements should be reflected in a reduction of the basic rate for the job. The union's reaction was traditional - resistance to wage cuts in any shape or form. It therefore insisted on the maintenance of the wage rates of the affected jobs. This was of course a reflection of the feeling of the workers involved, for they saw themselves harnessed with more responsibility and often increased effort. In the case of workers paid on an incentive basis, management naturally wanted to revise the quotas in accord with time and motion study theory, but the workers equally naturally wished to share some of the gain of faster output. They were suspicious of quota adjustments.

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(3) M. Segal; "Factors in Wage Adjustments to Technological Changes"; Industrial and Labour Rel. Review. January,1955.

(4) See above Chapter 3.

Productivity gains, can of course be allotted in three ways; they can be passed on to the consumer in the form of reduced prices; they can be used to finance further expansion or be distributed in dividends; or they can be used to increase wages. In the latter case they can be used for general wage increases, or to benefit particular parties - such as those whose jobs directly embrace the increased productivity.

Segal found that the maintenance of time and base rates was generally observed, and where job evaluation was present, it did not result in any downgrading (at least, not in wage terms). In some cases the time rates were actually increased, either immediately, or after prolonged bargaining with the union; this despite the fact that neither skill nor effort were increased by the innovations. Sometimes there was a significant decrease in skill. In addition rates cannonaded: so that the rates adjacent to those affected were also adjusted. In the case of incentive schemes, many were found to have 'loose' rates - e.g. average incentive earnings in one plant increased from 128% of basic rates in 1946 to 152% in 1952.

The conclusion is that in these plants management subordinated considerations of a balanced wage structure to the pressures of union and worker demands. Segal notes carefully that these changes took place in a framework of general wage increases which did not diminish the workers' interest in the constitution of the wage structure itself.

Generalizing from this study, Segal sees technological change in unionized plants works via three factors: economic influences affecting management willingness to grant wage increases; conditions affecting the relative economic strength of the employee on the changed job; and the policies of the union leaders. In the first place, technological changes were introduced in order to increase output during favorable conditions in the product market. Maintaining or increasing traditional share of the product market outweighed cost considerations, and the bargaining position of the union was therefore strengthened. If the market conditions had been tight, then it is probable that management would have been stricter in the application of job evaluation and time and study theory.

Secondly, the technical characteristics of the jobs are important. Where certain operations are of strategic importance or well suited to 'go-slow' operations (as with group assembly lines), or where it is not possible to be exact in time and motion study (as for instance with jobs having a high manual content), then it will be easier for the workers in these jobs to capture the gains of technical progress.

The union attitude will be affected firstly by the strength in the union of the particular group involved in the changes. This will depend to a great extent on the above factors, on the increase in productive capacity of the plant, and the degree of displacement of labour.

The union will want to avoid disturbing the general wage structure of the plant - as extensive concessions to one group would do. It wishes to spread the gains.

Thus the union approach would be to maintain earnings in jobs when skill requirements were reduced, and wherever possible to use the occasion of increased productivity to obtain benefits for all employees. Its attitude towards the introduction of such changes would, of course, depend on the number of employees likely to be laid off; while its attempt to obtain general gains would depend on the Company's competitive position.

Segal's findings are apparently paradoxical in the light of the previous analysis of the engineering industry in the U.K. and the conclusions drawn therefrom. However, in the latter case it must be remembered that the changes were sweeping ones occurring at a time when union organization was in a flux, and in any case the union had waived its objections to technological change for the period of the war, to assist in the increased production so urgently needed. However it had a proviso that the status quo would be restored after the war, which we have seen it was not possible to achieve. Segal's study occurred in a static union situation, expanding demand and relatively minor technical changes.

It therefore might be generalized that in favorable economic conditions minor technological changes involving decreases in skill content can be accomplished without disturbing traditional wage differentials.

However, in general, the tendency has been towards a reduction in the number of unskilled jobs (relatively) and a reduction in the skill content of skilled jobs. The following sets out the change in the U.S.

Percentage of working population in U.S. aged 14 years and over (5) by occupational group 1910-40.

	1910	1940
Skilled workers and foremen.	11.7	11.7
Semi-skilled.	14.7	21.0
Unskilled.	36.0	25.9
Unskilled composed of:-		
Farm labourers	14.7	7.1
Other "	14.7	10.1
Servants	6.8	8.0

The semi-skilled class has grown and the unskilled have developed a smattering of skill. The balance of power inside the union - through the reality of substitution - has swung in favour of the lower levels. Technological change therefore, appears to have altered the bargaining power factor in favour of the semi and unskilled groups, although it also can create strategic positions - such as chemical plant and boiler house operators where the bargaining power of the individual group is high. However, unless the strategic skills are associated with a skilled union they will not have a strong impact on management, for an industrial union would need to bargain for the whole plant group. Secondly, with the development of job evaluation and time and motion study, technological progress which involves skill reduction will have strong pressure from management to lead to a reduction in skilled wage rates, save in the most favourable economic circumstances.

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(5) W.S. Woytinski; op.cit.; Table 118; p.763. Professional workers and self employed make up the balance of 100%.

Section 2. Immigration and Migration.

Theoretically, an immigration policy which favoured a greater influx of unskilled compared to skilled, than the ratio presently existing between the two groups in the receiving country would cause a widening in that country's occupational differentials. This reasoning would apply with more force in economy where collectives were absent or at least not predominant. The difficulty of analyzing the situation lies in estimating not only the existing constituency of the labour force, but also whether any change in the degree of demand for one skill over the other has occurred. All that can be done is to study the facts of immigration in various countries, and compare them closely with the movement of occupational wage differentials to see whether any close correlation can be established.

In the U.S., the great immigration stream commenced about 1820 and continued for a hundred years, until it was reduced to a trickle (6). In that hundred years some thirty seven million immigrants came into the U.S., reaching a peak of about a million a year just before World War One. This immigrant flow had two distinct phases. Firstly until 1880, the immigrants were mainly of farming stock or craftsmen and predominantly West European. After this time, the immigrants became mainly unskilled, drawn predominantly from East Europe and Italy.

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(6) Of 150,000 a year, based on a quota system.

From this one might suppose that differentials would have a tendency to widen in the latter period, 1880-1920, and narrow subsequently with the virtual cessation of immigration. In fact differentials in the U.S. did widen in the period prior to 1914, and narrowed during the war period. However they did not narrow again (and then only slightly) until the middle thirties. With such a drastic reduction in the number of immigrants, and in the period of good times in the twenties, one would expect a narrowing in differentials, if other strong forces were not working in the economy to counterbalance the effects of reduced immigration. However there were other effects, such as the development of personnel policies by large companies, which in this case resulted in the maintenance of skill differentials to reward those undertaking the long training involved.

In Canada immigration has not followed the American pattern. From 1908-1914 the number of immigrants rose from 143,000 to approximately 400,000 a year.(7) After the war, the flow continued at a reduced rate, varying between a low of 127,000 and a high of 164,000 in the following decade. During the depression years of the thirties the figures were reduced to an average of approximately ten thousand a year, and it wasn't until after World War Two that immigration was resumed in any quantity. In 1952 it reached a peak of 194,000, the highest figure for twenty seven years.

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(7) This figure and those following it for Canada are of net immigration.

Here again, although we can only evaluate these figures in terms of occupational wage differentials from 1943 onwards, it does not appear that the narrowing of Canadian differentials can be explained by immigration. The proportion of recent immigrants to total population has been in no way similar to that of the U.S. in the nineteenth century. In addition the fact that labouring wage rates gained on those of plant workers in general during the war years (8), shows that other forces were at work when the immigration factor was not present.

Thus it appears that in the U.S. immigration has played a minor part in the determination of occupational differentials in our period, although it may well have been instrumental in establishing the width of the differentials in the eighties. In Canada in the short period for which statistics are available immigration similarly does not seem to have been a major factor in the narrowing differential.

Another interesting factor in trends is the proportion of those engaged in agriculture and fishing compared to the labour force in other industries. This comparison is significant because agriculture has been traditionally the handmaid of industry and there has been a constant stream of migrants from country to town life and factory work. These migrants from country to town life and factory work are essentially unskilled, and the existence of a large reserve of potential of unskilled labour in a country could act as a depressant of unskilled wages relative to skilled.

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(8) See Chapter One p. 20.

In Britain the proportion is very low - about 5% in 1950. In 1931 it was not much higher - 6% (9). In the U.S. (10) the proportion was:-

1860 - 53%
1918 - 27%
1940 - 18.5%
1945 - 14%.

In Canada, (11) the figure was 31.2% in 1931 while in 1940 it had been reduced slightly to 29%. This difference in proportions between Britain and the U.S. could, it appears, well be one of the underlying reasons for the differences in the size of occupational differentials between the two countries. However in Canada, occupational differentials are, according to our figures, less than the U.S. although the proportion of the labour force in agriculture is substantially higher. Here again then is a factor that has not a clearcut influence in all the countries studied.

Section 3. Trade unions growth and the development of large scale business.

In view of trade union attitudes outlined in Chapter Three, it is evident that trade union growth has had a considerable influence on occupational wage differentials. There is an interesting contrast here between union development in the U.S. and U.K., in relation to the behaviour of occupational wage differentials in those countries. In both countries the labour movement has had two great stages - the organization of the crafts groups and the formation of unions enrolling unskilled and semi-skilled personnel. Both stages are most significant for an explanation of trends in occupational wage differentials.

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(9) W.S. and E.S. Woytinski; "World Population and Production"; 20th Century Fund N.Y. 1953; Chapter 11; p.356-7.

(10) W.S. Woytinski and Assoc.; op.cit. Chapter 24; p.352.

(11) W.S. and E.S. Woytinski; op.cit. p.352.

It is to be expected that in the organization of craftsmen differentials would widen, while later, when the organization of unskilled took place differentials would narrow.

In the U.S. the significant periods were:

a) The organization of the craft group from 1897-1904, when union membership grew from half a million to two million.

b) Consolidation of craft unions 1905-15, when membership increased to three million.

c) From 1924-1933 - which was the period of union stagnation. Membership was static at about three million.

d) Mass organization - 1934-40-of unskilled and semi-skilled by both C.I.O. and A.F. of L. The emergence of the industrial type of union. Increase of union membership from three to eight million.

e) In World War Two, the advance of the previous eight years was sustained. In 1945 there were some fifteen million members or 29% of the gainfully employed population (12).

Thus unions of the unskilled and semi-skilled became powerful only from the middle thirties.

In Britain a roughly similar process occurred, only thirty to forty years earlier. By 1850 craft unions were well established in the U.K. The general workers unions (13) - organizing unskilled and semi-skilled got under way in the 1890's, and were followed by the industrial unions.

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(12) W.S. Woytinski and Assoc.; op.cit. Chapter 18.

(13) Notably the Transport and General Workers Union, and the General and Municipal Workers Union.

In the big industrial conflicts from 1911-1924 the policy of striving for the fixation of wages on a national scale was developed and has become increasingly common. In numbers, the percentage increase in membership has been from a peak of 40% of gainfully employed population, via a low in the thirties of 20%, to a stable 43% in 1952 (14). So that in Britain, trade unions have been a powerful influence for all levels of skill from the beginning of this century, but especially since 1920 when substantial numbers of unskilled were unionized, and nation-wide bargaining became predominant.

In Canada too, there were distinct growth stages. Union membership grew from 4.8% to 9.9% of the gainfully employed population from 1911 to 1921. This was the high-water mark until the early forties when the stimulant of war and the formation of the C.C.L. increased membership to 11.1% of gainfully employed population in 1941 and 19.6% in 1949. The mass production of unskilled and semi-skilled industries were organized for the first time in the last period (15).

In the U.S. and Britain, figures of union growth match up well with those of wage differential trends (16):

Country	Period of significant narrowing of wage differential.		Period of significant union growth.	
U.S.	i)	1917-1921	i)	1897-1904
	ii)	1934-1940	ii)	1934-1940
	iii)	1940-1950	iii)	1940-1950
U.K.	i)	1914-1920	i)	1850-1870
	ii)	1938-1950	ii)	1910-1920
			iii)	1938-1950

(14) "British Trade Unions," published by Political & Economic Planning London; March 1955.

(15) Canada Year Book; Ottawa, 1950.

(16) Derived from individual sources quoted above.

Both trade union movements showed rapid growth in the world wars while differentials closed. Unfortunately the cost of living also rose for a large part of the periods when the wage differentials narrowed and narrowing might well have occurred despite the growth of union membership. However, from a careful study of the statistics (17), it is evident that the narrowing of differentials occurred more slowly in the U.S. than in the U.K. in World War One, while in World War Two the opposite happened. At the same time union growth was faster in the U.K. in the first period than in the U.S., while in World War Two, the opposite was the case. Thus although statistical evidence is not conclusive, it is put forward that the union influence is the strongest one in closing occupational wage differentials. The organization of the craft groups is easiest, and therefore comes first in trade union history. Later, the more difficult unskilled and semi-skilled are organized. Therefore, theoretically, assuming a passive management group for the moment and cet. par., differentials widen and then narrow. In Britain the skilled unions were a little aristocracy in the middle nineteenth century, secure in their gains and a completely non-competing group. The rise of the unskilled unions, and their growing power, coupled with technological advances which were for the most part favorable to the unskilled group, led to a narrowing in the relative wage rates of unskilled and skilled. This was accentuated by an inflationary situation making cost of living increases a predominant form of wage gain.

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(17) Especially those of G. Bry - see Chapter Two p. 18.

Lastly the growth of national, regional and industry-wide bargaining - much advanced in Britain presently, but only beginning to assume importance in the U.S. and Canada (18), made absolute increases a very satisfactory form of wage gain.

Section 4. The breaking down of non-competing groups.

Our last factor to be studied is the improvement in the level of education and the widening job horizon facing the juvenile on his entry into the labour market. The rise in the school-leaving age, governmental schooling assistance and the improvement in living standards, have changed the customary socially acceptable level of education. Gradually, parents have felt the necessity (mainly social compulsion derived from the establishment of legal minima) of keeping their children at school longer. The increased facilities of trade schooling have enabled a breach to be made in the barriers between skilled and unskilled.(19).

In the U.S., statistics (19) show an appreciable decline in the number of boys and girls in the labour force aged 14-19. 45% of this group were gainful workers in the labour force in 1900. By 1932 this percentage was reduced to 32%. Even more significant are figures for boys and girls in the 14-15 age group (20):

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(18) Industry-wide bargaining really important only in pottery, glass, wallpaper, elevator manufacturing and men's clothing industries in U.S. Nation-wide bargaining practically non-existent. See Woytinski and Assoc.; Chapter 19; p.250.

(19) W.S. Woytinski and Assoc.; op.cit. Chapter 23.

(20) W.S. and E.S. Woytinski; op.cit. Chapter 11 p.352.

Year	Boys	Girls
1900	43.4	18.2
1910	41.4	19.8
1920	23.3	11.6
1930	12.6	5.8
1940	8.0	2.2

For Canada the figures for this group as a percentage of population in the work force are as follows: (21)

Year	
1921	19.0
1931	15.0
1941	10.3
1951	9.7

For Britain, statistics show a similar diminishing trend, especially since the raising of the school-leaving age to 15 in 1947. These statistics show that juveniles have been entering the labour market later and later over the last fifty years. This means that the conditions of blind entry into the labour market, with the aimless drifting which subsequently followed, which was a characteristic to juvenile labour markets in Britain and the U.S. prewar, have been much reduced. Juveniles are coming into the labour market with a greater degree of general or technical education than before.

Lack of education was one of the large barriers to the entry into skilled trades previously. Another barrier was the expense of training involved, both in the loss or reduction of income while training and the actual cost of training itself.

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(21) Canada Year Book. Ottawa, 1954. Chapter 17; p.694-5.

Thus the old concept of rigid barriers between the unskilled and skilled classes is obsolete.

Thus we have studied four growth factors in this chapter. It is evident that each of these factors could play an important part in changing occupational wage differentials. However, it is my contention that the strongest - those with the greatest effect on the wage structure are technological change and union growth. The union is probably the more important as it can, as we have seen, resist technological change - at least for short periods. Of course technological change can also affect the pattern of union growth.

Chapter Six.

SUMMARY AND CONCLUSION.

In this study we have surveyed what past and present theory has to say on the matter of occupational wage differentials. We have examined a number of factors which could have affected these differentials. We have tried to evaluate these various factors (in the light of available statistics for the U.S., U.K. and to a lesser extent for Canada).

In this last section we will summarize our findings, attempt an overall evaluation, and discuss the significance of occupational wage differentials for policy purposes.

At the beginning of our study we set ourselves the task of answering four definite questions about occupational wage differentials: why they had persisted; why they varied between country, region and industry; how and why they changed during the business cycle; and similarly how and why they changed secularly. What have we got to say in answer to these questions?

From the chapter on market forces, it is evident that in a frictionless economy there would be no occupational wage differentials, save as rent for naturally rare abilities. The latter, it was agreed, were not present to any degree in the case of craft skills. With the breakdown of the barriers between skills and the increased job horizons for juveniles, there is no real reason from the market point of view for the persistence of skill differentials.

Will the supply of skill then dry up if differentials are eliminated? There has been a significant diminishing in differentials in the past fifty years and there is a definite difference in the extent of this narrowing between say the U.K. and the U.S. However there is no evidence that the supply of skilled personnel is scarce in the U.K. compared to the U.S. The relation between the supply of skilled workers and the size of the differential, it seems to me, is similar to that of the rate of interest and the supply of savings - tenuous. The differential will persist, however, even in the U.K. because of custom and management attitudes.

The variation in occupational wage differentials between countries, areas, industries and firms can be explained as follows: The clearcut differences between the U.K. where unskilled wages are about 80-85% of skilled, compared to the U.S. where they are 65-70%, can be accounted for by supply factors which occurred early on, and by union growth. From G. Bry's chart ofcomparative trends in occupational wage differentials (1), it will be seen that the pattern of widening and narrowing followed by the differential between skilled and unskilled wages in the two countries is almost identical. The difference lies in the British gap being about 15-20% less than the American. The initial difference was probably caused by the inflow of immigrants in to the U.S. before 1914, the predominance of agriculture to industry in the U.S. compared to Britain at that time, and the difference in the strength of the labour movements in the two countries.

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(1) See Chapter 1; p.18.

It was maintained by the emergence of national and regional agreements in Britain which encouraged uniform wage increases for all groups. In the U.S. as we have seen, the existence of such agreements is rare. In Canada our explanation is hampered by the absence of statistics for the early period. Owing to the balanced nature of immigration it is probable that the gap in differentials was never as wide in Canada at the beginning of our period as it was in the U.S. This would account for the Canadian differential lying between that of the U.S. and the U.K.. Certainly her labour movement is no more developed than that of the U.S., and the agricultural reserve is much larger.

Variation in differentials between regions in a country have been explained by supply factors. Skill differentials in New England are narrower than in the Deep South in the U.S. because of the more plentiful supply of craftsmen. However, the union influence and its desire for uniformity of wage increase is also noticeable here. There is a greater degree of unionization of course in the North than the South. In the U.K. regional differences have been practically eliminated by national agreements over the last twenty years. The question of diversity between industries and between firms in one industry has been studied by a number of people (2), and the point of whether there is a market for unskilled and skilled as opposed to semi-skilled - with consequent greater diversity for the latter group has been debated; however this was not resolved.

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(2) See R.L. Raimon; "The Indeterminateness of semi-skilled Workers" Industrial & Labour Rel. Review. January 1953.
Also M. Rothbaum and H.G. Ross; "Two Views on Interoccupational Wage Diversity"; Indus. & Lab. Rel. Rev. Apr. 1954.

The considerable diversity inter and intra-industry is indicative of the ineffectiveness of competitive forces in achieving a single rate in the market.

The third question we were to answer concerned the behaviour of occupational wage differentials in the trade cycle. We found that union growth which made its greatest advances in boom periods and although management may be wedded to job evaluation their attitude towards the distribution of wage gains had to be a passive one in boom periods and they assent to union demands for wage increases on a cost of living basis. The union in boom periods expands into the unorganized, unskilled groups, and therefore appeals to them by wage increases which do not discriminate between unskilled and skilled. Similarly the scope of union agreements - and the number of varied groups these agreements embrace, increases with union growth. In turn the union executives will choose the settlement which keeps the largest number of members happy - the flat increase.

Lastly we have the question of trends. This is the most difficult one on which to give a clearcut answer, because so many factors are at work - especially the four we have listed above. However it seems here that the most important influence in the last thirty years has been the union. If in each boom the union obtains flat increases, while in the downswing the relative positions are maintained, then it follows that the trend will be a narrowing differential.

The convincing analysis made by Turner (3) points to three factors in union development which have reduced occupational wage differentials:

i) The extension of unionization from the small aristocracy to the mass.

ii) The development of great unions and alliances of unions covering different grades of workers.

iii) The widening of coverage of agreements - national and regional.

It is worth while repeating these factors, for I see them as applying in part to the U.S. and Canada as well as Britain. In the States although nation-wide bargaining is a very different proposition due to purely physical factors, while alliances of employers in the U.S., similar to Britain has never been popular (save on the West Coast), it is likely that pattern bargaining will develop to a much greater extent than now, and that the proportion of gainfully employed unionized will rise considerably. As the unions invade the deep South, they will use the same techniques for appealing to new members as British unions have done - flat increases. Similarly in Canada, when more favourable conditions for unionization appear in Quebec, and the question of the distribution of wage gains in the Province becomes much more a matter of union concern than it is at present, the tendency will be for a further narrowing to take place.

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(3) See above Chapter Three.

Thus despite the important effects that management attitudes and government regulations have had on occupational wage differentials from time to time, the most persistent and most important influence has been the union one. Underlying factors, such as immigration policies, technological advance, and the breakingdown of barriers to entry to skilled jobs, have had very significant effects on market pressures on wage differentials from time to time. Here the most important underlying factor has been technological change which has affected both the pattern of demand for labour, and the structure of union growth. However these forces still work through, and are translated into bargaining pressures by the aggregates of management and union.

The questions of how far the narrowing trend will go, how significant is the occupational skill differential, and what should policy aim at, are the final ones dealt with in this study.

How narrow will occupational differentials become?

In Britain and the U.S. there have been pronouncements saying in effect "This far and no further". In 1949 J. Tanner, speaking at the annual conference of Shipbuilding and Engineering Unions suggested that the skill differential was too narrow. However, the national increase of March 1951, for the engineering trades, narrowed the differential even further - to 85.3% of the skilled rate. Again, the Trades Union Council in a publication of policy towards skill differentials, insisted on the safeguarding of craft differentials. (4) Despite this, the decrease continued.

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(4) See K.L.J.C. Knowles and D.J. Robertson; op.cit.

In Australia, however the differential has been maintained at the 80% level for the last thirty years (5). This has been due to conscious policy towards wage differentials enforced by the method of wage bargaining employed there, and therefore is a rather different proposition from the case of Great Britain, the U.S. and Canada. There have been recent examples of the resistance of the skilled group to the narrowing differential - such as the recent railway strike in the U.K. and the attitude of certain C.I.O. unions in the U.S.. I do not personally see the wage differential disappearing altogether, although it is probably the nominal amount that is important, rather than the percentage amount.

This leads us on to the question of the significance of occupational wage differentials. Reynolds (6) maintains that in view of the difference between basic wage rates and take home earnings, with the impact of piecework and overtime earnings, taken in conjunction with fringe benefits of various kinds, the economic significance of these differentials is slight. If he means that the effect on the long term supply of labour is slight then this is agreed. There is no real evidence to show that the supply of skilled labour long term has fallen off, (as we have seen above), because of the reduction in differentials. There are many non-monetary factors operating in this long term supply picture.

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(5) D.W. Oxnam; "The Relation of Unskilled to Skilled Wage Rates in Australia"; Economic Record. June 1950.

(6) L.G. Reynolds; "The Economics of Labour" from "A Survey of Contemporary Economics" edited by H.S. Ellis; American Ec. Assoc.; Blakeston. Philly. 1948 (Vol. 1)

However, if he means that the differential is an insignificant factor in the bargaining situation, then our analysis has not shown this to be the case. Turner (7) points out the importance in the case of district wage rates of fitters and turners in the U.K. in the maintenance of absolute wage differentials which have been the same for twenty two years. This absolute amount may be the key to the significance of wage differentials to the craftsman. He wants to be distinguished from the unskilled and semi-skilled and this is the distinguishing mark. He may dislike but not be prepared to take violent action against percentage decreases. He may not even be too conscious of percentage decreases. But he does seem very aware of absolute decreases in wage differentials. In view of job evaluation plans, the absolute amount may become the refuge of managements too, in their approach towards skill differentials.

What of policy attitudes towards skill differentials? Traditionally such differentials have been regarded as necessary to reward the effort that has gone into such training. The reduction of wage differentials would have an adverse effect on the recruitment of skilled personnel. We have seen this is not noticeable at present. However it is probable that if the differentials sank below a ten percent difference, a definite reaction might be noticeable. This effect might occur in recruitment, or equally well in morale at the plant level.

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(7) See above Chapter Three p. 49.

While no definite answer can therefore be given to the question "How far can wage differentials be compressed without affecting the propensity of workers to move up the ladder", it can be said that a further compression can take place in the U.S. (based on British experience), and to a lesser extent in Canada without undesirable repercussions. In Britain, however any further movement will seriously affect the significance of such differentials in a 'status' sense. Of course, the effect of any movement in wage differentials depends on the speed with which the narrowing occurs. A gradual narrowing may well take place unnoticed, whereas a continuation of the narrowing trend in the U.S. for instance at its present rate, may well bring a significant reaction.

APPENDIX.

A. Definition of skill levels.

Skilled.

Occupations comprising trades or crafts that normally require an extensive learning period under formal apprenticeship or equivalent arrangement. Knowledge required of tools, machinery and measuring instruments and certain basic principles relating to materials and to standard computations. Varying assignments. Some scope for independent judgment based on extensive experience.

Semi-skilled.

a). Advanced.

Limited in scope to part of a trade - or operating a specific machine or unit of equipment. Knowledge required of relevant tools and measuring devices.

b). Routine.

Highly repetitive operations. Judgment very limited. Quantity and quality of output recognizable and close supervision involved.

Unskilled.

Very limited training period (under one week). Only simple tools used - shovels, crowbars, etc..

B. (1) Wage rates in skilled occupations in manufacturing industries in U.S. as a percentage of those in unskilled- selected periods 1907-47.

(Average wage rates for Representative Unskilled Occupations = 100.)

	Median	Range (Middle half of all indexes.)
1907	205	180-280
1918 - 1919	175	150-225
1931 - 1932	180	160-220
1937 - 1940	165	150-190
1945 - 1947	155	145-170

(1) Table 115 p.760 W.S. Woytinski.

C. Average wage rates for machinists and labourers in Canadian iron and steel industry. 1943-1952. (cents per hour)

Year	Machinist wage rate.	Labourer wage rate.	Percent. Labouring rate of machinist rate.
1943	83	57	69
1944	87	58	67
1945	87	59	68
1946	91	64	70
1947	1.00	74	74
1948	1.11	83	75
1949	1.18	89	75
1950	1.26	95	75
1951	1.46	1.13	77
1952	1.55	1.22	79

The basic figures are taken from the Canadian Department of Labour's Annual report on wage rates and hours of labour in Canada, 1943-52. Figures for the iron and steel industry are set out separately for various sections of the industry - such as primary iron and steel production, iron castings, steel ship-building, machine tools, motor vehicles and parts, and so on. Twelve sections were taken, and a simple average wage rate derived for each of the occupations above. The figures are therefore rather limited in their value by the crude statistical treatment. However they do provide some indication of the course of occupational wage differential trends in Canada.

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