Changes in Occupational Wage Differentials

by

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Occupational wage differentials were the subject of several articles in the International Labour Review *in 1955 and 1956.*[2] *In these articles attention was focused on wage differentials between broad skill categories—the skilled workers and the unskilled. In the first part of the present article some of the earlier findings are re-examined with the help of more recent data. In the second part some tentative conclusions are drawn from observed changes in the inter-occupational wage structures of a number of countries during the past ten or 12 years. Finally, brief comments are made on what appear, in the light of the preceding analysis, to be the dominant factors underlying changes in occupational wage patterns and the article concludes with some remarks on recent policies affecting the wage structure.*

IT has been said that " the most outstanding characteristic of the existing wage structure is the absence of any consistent pattern which can be explained on any logical basis or within the scope of any one general principle ".[3] This is probably true for most countries : consequently the analysis of wage structures is usually a very complex matter. Moreover, wage structures are constantly undergoing transformation, either slowly or rapidly according to the influence of the various factors involved.

Although few countries yet have statistics fully adequate for the purpose of analysing wage differentials, an attempt is made below to discover whether the available data reveal any general tendencies among the different countries regarding the changes in occupational wage differentials. The author concludes that short-

[1] Statistical Division, International Labour Office.

[2] See, e.g., " Changing Wage Structures : An International Review ", Vol. LXXIII, No. 3, Mar. 1956, pp. 275-283 ; Earl E. MUNTZ : " The Decline in Wage Differentials Based on Skill in the United States ", Vol. LXXI, No. 6, June 1955, pp. 575-592 ; and John T. DUNLOP and Melvin ROTHBAUM : " International Comparisons of Wage Structures ", Vol. LXXI, No. 4, Apr. 1955, pp. 347-363.

[3] Florence PETERSON : *Survey of Labor Economics* (New York, 1951), p. 283.

term trends frequently do not give a reliable indication of structural changes, especially when the findings are based on nominal rates. Recent developments in some countries lead, however, to the impression that the long-term decline in differentials experienced by them may soon be reversed. Certain countries have shown a highly stable wage structure during the past decade. There is no discernible uniform pattern of evolution, however, even within particular regions such as Western Europe. Compared with pre-war years, the relative position of unskilled workers has improved practically everywhere, a development influenced by social policy and various other institutional and market factors, but promoted undoubtedly also by the change in the level of qualification of labourers as a result of improved education throughout the world. There is, in fact, a constant evolution of work and occupational skills, as well as of the economic and social environment, which is insufficiently reflected in the statistics and which needs to be borne in mind in making long-term comparisons.

It should be stressed that the statistical data available are often subject to reservations. Attention is therefore concentrated on broad trends and mainly on manual workers in the industrial sector, to whom most of the available statistical series apply. The statistical indicators presented reflect changes due to the influence of various factors operating simultaneously and therefore the figures alone seldom permit the assessment of the effect arising from a particular cause. Also, it is important to recognise that each country has its own institutional framework within which market factors may work with only a limited degree of freedom. Specific factors therefore may have a different impact on the composition and the evolution of wage structures in individual countries. Many of the driving forces transforming or affecting the wage structure cannot be measured in figures. In other cases, statistical analyses, including the computation of correlation coefficients, can reveal relationships between different series ; but the evaluation of the individual factors of change and the identification of ultimate causes will generally remain a matter of judgment or opinion.

The Trend of Wage Differentials Based on Skill

It is widely held that all over the world there has been and still is a continuous narrowing of wage differentials associated with differences in levels of skill. This assumption seems to accord with a universally-observed gradual diminution of differences between social classes. However, many observers have based their conclusions on only a small sample of countries and, moreover, a short-run trend may diverge, during some periods, from a long-run tendency.

Available statistics demonstrate that there are some countries where wage differentials based on different levels of skill have virtually not narrowed at all during the past decade or even the past quarter of a century. Nevertheless, in the majority of countries, particularly in those economically developed, wage differentials based on skill have indeed diminished as compared with the years before the Second World War, more especially in the sense that the position of the unskilled has improved in relation to other workers.

Tables I-V contain illustrative data on France, the Federal Republic of Germany, Italy, Switzerland and the United States. The main conclusions to be drawn from these data are that skill differentials tended to decline sharply during the period 1938-46, but have since remained fairly stable—except that the lowest group (unskilled) has generally gained slightly.

In Switzerland the gross hourly earnings of male skilled and semi-skilled wage earners in manufacturing, commerce and private transport increased from the year 1939 to the first six months of 1962 by about 200 per cent., those of unskilled wage earners by 225 per cent. Consequently the earnings of unskilled labour, which in 1939 had reached about 77 per cent. of the level of the skilled and semi-skilled workers, had risen in 1962 to 84 per cent. (see table I). It is to be noted that this percentage is about the same as for the period 1946-56.

TABLE I. SWITZERLAND : RATIO OF HOURLY EARNINGS OF UNSKILLED MALE WAGE EARNERS TO THOSE OF SKILLED AND SEMI-SKILLED

(Average earnings of skilled and semi-skilled = 100)

1939	1946-51	1952	1953-56	1957-58	1959	1960	1961	1962
77	84	85	84	82	83	82	83	84

Source of basic data : Office fédéral de l'industrie, des arts et métiers et du travail : *La vie économique* (Berne).

A somewhat different picture is found for the United States, where the narrowing in the wage differentials due to skill did not stop a few years after the war, as in Switzerland, but continued steadily (see table II). The tendency towards lower margins for skill is not only a characteristic of the two industries reviewed (the building trade and local city trucking) but is also a general feature of the total wage structure in the United States, as for instance Muntz[1] has demonstrated. According to Ober[2] a decline in those differentials has been observed in the United States since the beginning of the century.

[1] Op. cit.

[2] Harry OBER : " Occupational Wage Differentials 1907-1947 ", in *Monthly Labor Review* (Washington), Vol. 67, No. 8, Aug. 1958.

TABLE II. UNITED STATES.
A. BUILDING TRADE INDUSTRIES : RATIO OF HOURLY UNION WAGES OF HELPERS AND LABOURERS TO THOSE OF JOURNEYMEN

(Hourly union wages of journeymen = 100)

1939	1946	1948	1950	1952	1954	1956	1958	1960
56	64	67	68	69	70	72	73	75

B. LOCAL CITY TRUCKING : RATIO OF HOURLY UNION WAGES OF HELPERS TO THOSE OF DRIVERS

(Hourly union wages of drivers = 100)

1939	1946	1948	1950	1952	1954	1956	1958	1960
81	84	85	86	88	88	89	90	89

Source of basic data : Estimates based on data in " Union Wage Scales in Building Trades, 1960 " and " Union Wage Scales in Local City Trucking, 1960 ", in *Monthly Labor Review* (Washington), Vol. 84, No. 5, May 1961, pp. 513-518. The wage data for 1939 refer to 1 June ; those for other years refer to 1 July.

The evolution of wage margins in France in the mining industry, building and construction, commerce, transport and services in the years after the Second World War followed by and large the same pattern as in Switzerland. The differentials for male wage earners remained astonishingly rigid (see table III).

TABLE III. FRANCE : RATIOS OF RATES OF PAY ACTUALLY APPLIED IN PARIS

(Rates of skilled workers [1] = 100)

Wage earners	1948	1950	1953	1956	1959	1960	1961	1962
Males :								
Common labourers [2] . . .	72	73	73	73	72	72	72	72
Specialised labourers [3] . . .	78	79	79	78	77	77	77	77
Semi-skilled workers [4] . . .	87	88	87	87	85	86	85	85
Highly skilled workers [5] . .	118	120	123	123	119	119	119	119
Females :								
Common labourers [2]	76	77	78	80	75	75	75	73
Specialised labourers [3] . . .	81	82	82	84	79	80	79	79
Semi-skilled workers [4] . . .	89	90	90	90	86	87	87	86

Source of basic data : Ministère du Travail : *Revue française du travail* (Paris). The data refer to 1 January.

[1] Ouvriers qualifiés. [2] Manœuvres ordinaires. [3] Manœuvres spécialisés. [4] Ouvriers spécialisés. [5] Ouvriers hautement qualifiés.

A slight widening of differentials can be observed for skilled female workers. Semi-skilled male workers have lost some ground. The data for France are the more significant because they represent rates of pay actually applied (straight time earnings), not minimum rates. An interesting feature is the stability since 1959 of the wage differential of the " highly skilled " category.

In Italy the margin of highly skilled workers has widened in the course of the last 12 years (see table IV).

TABLE IV. ITALY: RATIOS OF COLLECTIVELY AGREED RATES [1] OF MALE WAGE EARNERS IN INDUSTRY

(Rates of skilled workers [2] = 100)

Wage earners	1938	1951	1952	1953-57	1958-61	1962	1963 [6]
Unskilled [3]	78	81	89	90	91	93	92
Semi-skilled [4]	89	94	95	95	95	96	96
Highly skilled [5]	121	111	112	112	113	115	115

Source of basic data : *Rassegna di Statistiche del Lavoro* (Rome).

[1] Without family allowances. [2] Operaio qualificato. [3] Manovale comune. [4] Manovale specializzato. [5] Operaio specializzato. [6] Jan.

Since 1951 the unskilled have gained much ground compared with the skilled and semi-skilled.

In the Federal Republic of Germany from 1950 to 1962 the earnings of unskilled males rose a little faster than those of skilled workers and the same was true of females for the period 1950-56 (see table V). Earnings of the semi-skilled, both men and women, followed very closely those of skilled workers, so that the differential between them remained virtually constant.

TABLE V. FEDERAL REPUBLIC OF GERMANY: RATIOS OF HOURLY GROSS EARNINGS IN MANUFACTURING, MINING AND CONSTRUCTION

(Rates of skilled workers = 100)

Wage earners	1950	1951	1952	1953	1954	1955	1956	1957 [1]	1958	1959	1960	1961	1962
Males :													
Unskilled . .	79	79	79	79	79	80	81	80	80	81	81	81	81
Semi-skilled .	93	93	93	93	94	94	94	94	92	92	93	93	93
Females :													
Unskilled . .	87	88	89	88	88	90	90	88	88	88	87	88	88
Semi-skilled .	100 [2]	100 [2]	100 [2]	100 [2]	100 [2]	100 [2]	100 [2]	96	96	95	95	95	95

Source of basic data : Statistisches Bundesamt: *Statistisches Jahrbuch für die Bundesrepublik Deutschland.*

[1] Revision of series. [2] 1950 to 1956 : skilled and semi-skilled together = 100.

Although not fully comparable, available statistics for 1938 give the impression that differentials due to skill have definitely narrowed for male wage earners ; on the other hand, however, they have probably widened for females.

For other countries (see table VI) use has been made of the results for 1938 and 1962 of the I.L.O. Annual October Inquiry relating to wages in specified manual occupations, mainly in mining, manufacturing, construction and transport. Where, for a number of different industries, the ratios of wages of unskilled workers to those of workers in a specified skilled occupation show a similar tendency when compared for 1938 and 1962, a general trend may be deduced.

A narrowing of wage rate differentials related to skill, often pronounced, can be deduced between 1938 and 1962 in Argentina, Australia, Belgium, Canada, New Zealand and the United Kingdom. Because of the rather small sample of occupations and possible modifications during the period in the definitions of occupations, some of the extreme ratios noted in table VI are probably of a fortuitous character.

More extensive statistical material available for the post-war period has been used in table VII. Composite national indicators spanning the last decade have been derived by combining the respective wage ratios between selected skilled and related unskilled occupations.

Since the coverage varies from one country to another, the ratios given in the table are not comparable internationally but indicate the trend within the respective countries. There seems to have been no significant change in the ratio of unskilled to skilled wage rates in Austria, the Netherlands and the United Kingdom. In no country mentioned in table VII has there been a significant or general widening of wage margins associated with skill : the figures suggest rather that in the majority—Argentina, Canada, Chile, Hong Kong, Nigeria, Pakistan and Venezuela—margins have tended to narrow during recent years. Thus the first (smaller) group shows the same pattern as has been found above in France and Switzerland, while the second (larger) group comes closer to the findings for the United States and the Federal Republic of Germany.

In 1950 differentials were and still remain very much larger in developing countries than in industrialised countries but the process of narrowing of differentials in the developing countries under consideration has been far more rapid in recent years than in industrialised countries. Data of the I.L.O. October Inquiries for the past five to six years show a tendency towards a narrowing of skill differentials in numerous African countries which because of

TABLE VI. RATIO OF WAGE RATES OF UNSKILLED WORKERS TO THOSE OF SKILLED WORKERS (MALES), OCTOBER 1938 AND OCTOBER 1962

(Rate of skilled workers = 100)

Country	Rate [1]	Printing and publishing: ratio to machine compositors		Manufacture of machinery: ratio to iron moulders		Construction: ratio to bricklayers		Electric light and power: ratio to electrical fitters	
		1938	1962	1938	1962	1938	1962	1938	1962
America:									
Canada [2]	I	—	—	63	—	50	62	54	67 [3]
United States (New York)	II	—	—	—	73 [4]	57	80	—	—
Argentina (Buenos Aires)	II	34	80	59	80	67	73	72	75
Europe:									
Belgium (Brussels)	II	58	—	81	89	80	95	83	73
Denmark (Copenhagen)	III	73	85	76	78	74	80	—	87
Ireland (Dublin)	IV	62	77	76	81	72	85	69	80
Netherlands [5] (Amsterdam)	IV	74	78	77	85	92	76	95	88
Sweden (Stockholm)	II	87	87	88	90	91	95	88	87
Switzerland (Zürich)	II	43	70	—	—	80	84	87	80 [6]
United Kingdom (London)	II	74	82	75	81	75	89	76	83
Oceania:									
Australia (Melbourne)	II	71	75	89	78	67	85	72	72
New Zealand (Wellington)	II	74	80	88	81	81	86	85	88

Source of basic data: I.L.O. October Inquiry: " Wages and Normal Hours of Work of Adult Males in Certain Occupations in Various Countries in October 1938 ", in *International Labour Review*, Vol. XXXIX, No. 3, Mar. 1939, p. 384; and " Statistical Supplement ", Special Issue: Results of the I.L.O. 1962 October Inquiry, in *International Labour Review*, Vol. LXXXVIII, No. 1, July 1963.

[1] I. Average rates. — II. Minimum rates. — III. Average earnings. — IV. Prevailing rates. [2] 1938 Ottawa; 1962 whole country. [3] Oct. 1961. [4] Straight-time earnings of unskilled to fitters. [5] 1962 " Class I areas ". [6] Maximum rates.

TABLE VII. RATIO OF AVERAGE WAGE RATES OF UNSKILLED TO THOSE OF SKILLED INDUSTRIAL MALE WORKERS IN SELECTED COUNTRIES, 1950/52 AND 1960/62

(Wages of skilled workers = 100)

Country	Ratio	
	1950/52	1960/62
Nigeria [1]	40 (1952)	50 (1962)
Canada [2]	72 (1950)	77 (1960)
Argentina [3]	74 (1950)	79 (1961)
Chile [1]	59 (1952)	66 (1962)
Venezuela [1]	66 (1952)	82 (1962)
Hong Kong [1]	51 (1952)	57 (1962)
Pakistan [1]	59 (1952)	63 (1962)
Austria [4]	81 (1950)	79 (1960)
Netherlands [1]	83 (1952)	85 (1962)
United Kingdom [5]	84 (1954)	85 (1962)

NOTE. Ratios are based on unweighted arithmetic averages of wage ratios for selected unskilled and skilled occupations.

Source: The basic data for Argentina, Austria, Canada and the United Kingdom used for the computations have been taken from a West German serial publication in which selected official national statistics for a number of countries are reproduced in their original form (Statistisches Bundesamt: *Verdienste und Löhne im Ausland* (Wiesbaden). For other countries see the I.L.O. October Inquiry, published in *Year Book of Labour Statistics 1953* and "Statistical Supplement", Special Issue, July 1963, to the *International Labour Review*.

[1] Estimates based on wage rates for a few selected occupations of male wage earners obtained through the I.L.O. October Inquiry in: Netherlands 7 occupations; Nigeria and Venezuela 3 occupations; Pakistan (1952 Peshawar, 1962 Western Region) 4 occupations; Hong Kong 6 occupations; and Chile (Santiago) 8 occupations.

[2] Estimated average wage ratio of unskilled to skilled male wage earners (whole country) in the following 17 industries selected from national rates statistics: mining, meat industry, milling, beverages, wood, furniture, paper, leather, chemical, petrol, basic iron, iron foundries, iron and metal products, machinery, shipyards, automobile industry, building.

[3] Estimates based on national statistics of collectively agreed minimum rates for skilled and unskilled male wage earners in Buenos Aires in the following 12 occupations: weavers, tailors, workers in shoe industry, blacksmiths, electricians, radio electricians, carpenters, turners, painters, bricklayers, compositors, bakers.

[4] Estimates based on data on 17 different occupations selected from national rates statistics in the following industries in Vienna: food, beverages, textiles, clothing, wood, printing, leather, chemical, stone, clay and glass, metal and machinery, building and construction.

[5] Estimated average minimum wage ratio of unskilled to skilled male wage earners (whole country) in the following 12 industries selected from national statistics: milling, wood, furniture, printing, leather, chemical, glass, primary iron, machinery, shipyards, car industry, building and construction.

the lack of earlier wage information could not be included in table VII.[1] However, in Africa the evolution has apparently been more hesitant than in other underdeveloped regions of the world.

CHANGES IN THE INTER-OCCUPATIONAL WAGE STRUCTURE

Statistics of wage rates or earnings for adult males in specified skilled occupations permit some tentative findings regarding the transformation taking place in the inter-occupational wage structure within various countries. Since the statistics vary considerably in scope from one country to another the figures presented in

[1] See also I.L.O. African Advisory Committee, Second Session, Tananarive, April 1962: *Methods and Principles of Wage Regulation* (Geneva, 1962) (mimeographed), p. 20.

table VIII are not suitable for international comparison but indicate only the time trends in the different countries.

Changes in a given structure may be subjected to statistical analysis by, for example, computation of the standard deviation and the coefficient of variation. However, it is obvious that the available information on wage structures is subject to various inconsistencies and biases.[1] It was decided therefore to illustrate the general tendency by the use of a simplified and easily calculated measure: the relative quartile deviation (R), i.e. the quartile deviation divided by the median.

In order to get a more uniform set of data the figures in table VIII have been based on wage rates for skilled male workers only. They suggest that in the last decade the inter-occupational structure of wages has shown little change in most of the economically developed countries considered. A high degree of stability may be deduced for the Federal Republic of Germany, New Zealand and Sweden. In Australia, Canada and Switzerland a certain widening of inter-occupational differentials is indicated. There also appears to have been a slight tendency in various developed countries for the span between the lowest and the highest paid occupation to increase. A narrowing of inter-occupational wage differentials seems to have occurred in some developing countries such as Argentina, Nigeria and Pakistan, as well as in Spain. The findings for Chile, Hong Kong and the United Kingdom suggest some simultaneous contrary movements in different parts of the wage structure.

In the United Kingdom, for example, a slight lengthening of the span of the wage scale was accompanied by a narrowing of occupational wage differentials for workers receiving rates lying within the second and third quartiles of the wage scale, which cover the bulk of the industrial labour force. The absence of corresponding statistics on employment by occupation does not permit further analyses.

It should be emphasised that a narrowing (or a widening) of the inter-occupational wage differences is not necessarily accompanied by a more equal (or a less equal) income distribution since there is a continuous shift of employment among occupations and industries.

According to the results of a special study conducted in 1957 by Haddy and Tolles[2], a compression of both the inter-industry

[1] A particular type of bias has been described recently by Uri BAHRAL: " Wage Differentials and Specification Bias in Estimates of Relative Labor Prices ", in *Review of Economics and Statistics* (Cambridge, Mass., Harvard University Press), Vol. XLIV, Nov. 1962, No. 4.

[2] Pamela HADDY and N. Arnold TOLLES: *British and American Changes in Inter-Industry Wage Structure under Full Employment* (New York, 1957).

TABLE VIII. CHANGES IN THE INTER-OCCUPATIONAL WAGE STRUCTURE

(Adult skilled males)

Country	1950/52			1960/62		
	Relative span [1]		R [2] (per cent.)	Relative span [1]		R [2] (per cent.)
	(a)	(b)		(a)	(b)	
Nigeria [3]	4.3	3.1	20.4	1.9	1.4	10.0
Canada [4]	2.2	1.6	13.3	2.6	1.7	17.3
Argentina [5]	1.8	1.3	16.6	1.5	1.4	8.2
Chile [3]	7.3	2.6	20.3	3.5	1.9	23.1
Hong Kong [3]	3.4	2.1	10.9	2.9	1.8	25.9
Pakistan [3]	3.4	2.0	20.2	1.9	1.5	8.7
Germany (F.R.) [3]	1.8	1.5	10.6	1.8	1.4	14.2
Ireland [6]	1.3	1.2	1.7	1.2	1.0	0.8
Spain [7]	1.5	1.5	10.7	1.4	1.3	7.4
Sweden [3]	1.5	1.1	13.9	1.7	1.5	13.3
Switzerland [8]	1.4	1.2	5.1	1.5	1.3	8.5
United Kingdom [3]	1.6	1.4	17.9	1.7	1.5	9.9
Australia [3]	1.2	1.2	2.2	1.5	1.3	7.3
New Zealand [9]	1.3	1.1	2.9	1.4	1.1	2.2

Source of basic data: I.L.O. October Inquiry (*Year Book of Labour Statistics 1953* and "Statistical Supplement", Special Issue, July 1963, to the *International Labour Review*) and *Verdienste und Löhne im Ausland*, op. cit.

[1] Relative span (a) = Ratio of highest to lowest occupational wage rate; Relative span (b) = Ratio of the median rate in the 4th quartile to the median rate in the 1st quartile.

[2] R = Relative quartile deviation = QD as percentage of the median.

[3] Findings based on selected wage rates for skilled adult male wage earners received through I.L.O October Inquiry for 1952 and 1962: Australia (Melbourne) 30 occupations; Chile (Santiago) 28 occupations; Germany (F.R.) 31 occupations; Hong Kong 26 occupations; Nigeria 16 occupations; Pakistan (Western Region) 22 occupations; Sweden (Stockholm) 18 occupations; and United Kingdom (London) 28 occupations. The occupations relate, as a rule, to manufacturing, building and construction and transport.

[4] Based on rates for 43 occupations of adult male skilled wage earners in manufacturing, building and construction and transport, selected from national statistics (Oct. 1950 and Oct. 1960).

[5] Based on national rates statistics for 12 occupations of skilled male wage earners in manufacturing and building (1950 and 1961). Data relate to Buenos Aires.

[6] Based on national rates statistics for 1950 and 1961; findings refer to 20 typical occupations of adult male skilled wage earners in manufacturing and building.

[7] Based on national rates data for 15 typical occupations of male adult skilled wage earners in manufacturing, mining, building and transport in 1950 and 1960.

[8] Based on national rates data for 18 typical occupations of adult male skilled wage earners in manufacturing, building and construction and transport in 1950 (Oct.) and 1962 (Apr.). Data relate to Zürich.

[9] Based on national rates data for 30 occupations of skilled male wage earners in manufacturing, mining, building and transport (1950 and 1961).

and the inter-occupational wage structure has occurred in the United Kingdom and in the United States since 1938. Some rough computations[1], derived from statistics published in the I.L.O. *Year Book of Labour Statistics*, suggest that the inter-industry earnings differentials in manufacturing tended to become larger between 1951 and 1961 in Argentina, Canada, Ireland, Sweden and the United Kingdom. In the Federal Republic of Germany and Switzerland (where there were no noticeable changes

[1] Not reproduced here.

in the values of R) the relative earnings in the different manufacturing industries seem to have remained fairly stable during that period. There is thus little parallelism with changes in the inter-occupational structure of wages.

Changes in the Ranking of Occupations

Some additional knowledge of structural alterations is obtained from an examination of the ranking of particular occupations within the wage hierarchy in 1950/52 and in 1960/62. In a number of countries, printers and compositors retained high or even the highest ranks in the occupational wage scale, for instance in Argentina, Chile, Finland, France, Ireland, Portugal and the United Kingdom. They advanced their relative position in Austria, the Federal Republic of Germany, Italy, New Zealand, Spain and Venezuela but slipped back somewhat in Hong Kong, the Netherlands, Sweden and the United States.

In Switzerland the occupations related to the building industry continued to fare well (bricklayers, paper hangers and carpenters advanced). They kept their high rank also in Australia, Belgium, the Federal Republic of Germany and the Netherlands. Bricklayers (and, frequently, related occupations) climbed in the wage hierarchy in Denmark, Greece, Hong Kong, Ireland, Italy, Spain, the United Kingdom and the United States. There are, on the other hand, industrialised countries like France where building occupations do not hold top rank in the occupational rates scale.

Occupations in the metal and machinery industry achieved higher relative positions in Argentina, Australia, the Federal Republic of Germany, Spain and Sweden ; in France they remained among the highest ranks ; but it appears that they lost some ground in Italy.

The wage rates of coal hewers[1] (underground) retained their top position in Belgium, Hungary and the Netherlands but dropped to third place in the Federal Republic of Germany. In October 1962 in the latter country the hourly earnings of coal hewers (as distinguished from minimum wage rates) were exceeded by occupations in the basic steel industry and in printing and publishing. In the United Kingdom the rates for coal hewers lost the leading position they had held in 1951 but remained in 1962 among the top ranks, exceeded only by occupations in printing and publishing and by electrical fitters.

The lowest industrial rates were found in both periods for unskilled workers in traditionally low-wage industries such as textiles, clothing, shoes, leather and skins, and sometimes certain

[1] Findings based exclusively on the annual I.L.O. October Inquiry.

food industries. It is, however, noteworthy that some skilled or highly skilled male occupations in those industries were also found among the higher wage ranks (for instance highly skilled textile workers in France and the United Kingdom). In other cases, for instance in the Italian wool industry, skilled workers are in fact definitely rated lower than semi-skilled workers in other industries, such as building and construction and meat canning.

The occupational wage structures of France and Italy are illustrated in table IX. The first 20 ranks in France are with four exceptions held by skill group I, highly skilled workers: those exceptions are the skilled workers (group II) in the printing and publishing and the paper and cardboard industries and in the miscellaneous industries group, together with semi-skilled workers (group III) in printing and publishing. The first 20 ranks in Italy seem to be determined to a much greater extent than in France by industrial affiliation. Even the unskilled (group IV) in printing and publishing, in meat canning and in building and construction are found among them. It should be noted that the figures for Italy relate to minimum rates whereas those for France represent rates of pay actually applied—a difference which may, however, not seriously bias comparison. The main difference between the wage scales—the lower differentials for skill in Italy—which can be deduced from the data in table IX is also seen by comparing the ratios given above in tables III (France) and IV (Italy).

Factors of Change in the Occupational Wage Structure

The wage scales in the different countries reflect influences of institutional and of market factors. Most of the institutional factors are in the short run relatively rigid or fixed, whereas many market factors are in a constant state of evolution. Market factors and institutional factors are, however, intimately linked. The state of the market in a given country cannot be isolated from the institutional framework ; and the institutional organisation (in particular, the wage-fixing bodies) must take account of the special prevailing market conditions. An evaluation of the separate effects of certain factors is therefore frequently impossible.

Market Factors

Economic Activity, Level of Employment.

Haddy and Tolles[1] demonstrated that the average wages paid by different industries have become more clearly uniform and that the occupational differentials (measured in percentage terms) have

[1] Op. cit.

TABLE IX. RANKING OF OCCUPATIONS AND SKILLED GROUPS BY INDUSTRY IN 1962 BY LEVEL OF WAGE RATES FOR ADULT MALE WORKERS IN FRANCE AND ITALY

(Highest wage = 100)

France [1] (Paris region) : rates of pay actually applied per hour				Italy [2] (Milan, Turin) : minimum rates per day			
Rank	Skill group [3]	Industry	Relative wage level	Rank	Skill group [3]	Industry	Relative wage level
1	I	Printing and publishing	100.0	1	I	Printing and publishing	100.0
2	II	Printing and publishing	84.4	2	I	Building and construction	85.9
3	I	General engineering	84.2	3	II	Printing and publishing	85.3
4	I	Electrical engineering	82.1	4	I	Meat canning	82.4
5	I	Miscellaneous industries	82.1	5	II	Building and construction	79.0
6	I	Clothing and cloth products	81.5	6	I	Petroleum manufacturing	75.9
7	I	Paper and cardboard	81.3	7	III	Printing and publishing	75.7
8	I	Machine building	80.6	8	II	Meat canning	75.2
9	I	Metal transformation	78.6	9	I	Cement	72.4
10	I	Textiles	76.8	10	II	Petroleum manufacturing	71.5
11	I	Wood and furniture	76.7	11	III	Meat canning	71.4
12	I	Trade (non-food)	75.5	12	III	Building and construction	71.1
13	I	Leather and skins	75.4	13	IV	Printing and publishing	69.7
14	III	Printing and publishing	71.7	14	I	Dairy manufacturing	69.5
15	I	Chemicals and rubber	70.8	15	I	Paper and cardboard	69.2
16	II	Paper and cardboard	70.2	16	I	Boots and shoes	69.0
17	I	Building and public works	70.2	17	I	Wool	68.0
18	I	Glass, ceramics and building material	70.0	18	I	Glass	67.1
19	I	Trade (food and agricultural)	69.0	19	IV	Meat canning	67.1
20	II	Miscellaneous industries	69.0	20	IV	Building and construction	67.0
Last but two	IV	Agricultural and food industry	44.7	Last but two	IV	Mining	48.3
Last but one	IV	Leather and skins	44.0	Last but one	IV	Ceramics	48.2
Last	IV	Glass, ceramics and building material	43.7	Last	IV	Vegetable canning	48.0

Source of basic data : Ministère du Travail : *Revue française du travail*; and Instituto Centrale di Statistica : *Bolletino Mensile di Statistica* (Rome).

[1] April 1962. Data are published in the national source for 76 occupations of male workers in manufacturing, building and construction, trade, transport (excluding state railways and Paris transport) and services. [2] Data are published in the indicated source for 86 occupations of male workers in mining, manufacturing and building and construction. [3] I=highly skilled workers, II=skilled workers, III=semi-skilled workers, IV=unskilled workers (for France " manœuvres ordinaires " and " manœuvres spécialisés " are included in group IV).

narrowed significantly under full employment in the United Kingdom and the United States since 1938. As far as is shown by the results of table VIII and other information there was no similar general tendency among all the countries during the last ten to 12 years. The majority of the developed countries included in table VIII enjoyed high employment and rapid economic growth within that period. In some of them a widening rather than a narrowing of inter-occupational wage differentials has been observed. It would seem therefore that high employment can be accompanied, at least in the short run, by a certain widening of inter-occupational (and inter-industry) differentials.

Changes in the ranking of particular occupations seem frequently correlated with variations in economic activity. For instance an advance of the metal and machinery or the building industry in the wage scale of occupations is, as a rule, associated with sharp rises of production or employment. The decline of the relative position of coal miners in the Federal Republic of Germany, the United Kingdom and elsewhere occurred during a period of stagnation (or even reduced output), whatever other factors may have been involved.

Inflation.

Dunlop and Rothbaum[1] have put forward the hypothesis that inflation tends to narrow wage structures and, especially, occupational margins (measured in percentage terms) in a much more pronounced way than high employment. A particular role is attributed to the extension of the practice of cost-of-living adjustments (especially when paid in the form of flat rates) and obviously this wage element tends to result in more uniform wage scales. There are no recent studies dealing with the change of inter-occupational wage structures under inflation, but examination of data for a few countries quoted in this article leads to the conclusion that the general hypothesis cannot be proved. Countries like Argentina and Chile, which have suffered from hyper-inflation, have not shown peculiar trends. Compared with before 1939, at least some skill differentials appear to have increased in Chile. France during many post-war years had one of the highest rates of price increase in Europe but skill differentials nevertheless remained fairly stable.

Business Cycles.

Short-run cyclical contractions and expansions of economic activity as a rule have little influence on skill differentials or the general wage structure. Longer run cyclical movements in economic

[1] Op. cit.

activity are overlapped by or coincide with structural changes and thus their particular impact would be difficult to detect even by intensive studies.

Demand and Supply of Labour.

There is an unambiguous positive correlation between the higher rise of wages for unskilled labour and the high demand for such labour through the wartime years in a good number of countries. It is also known that the rapid development of the demand for specific types of skilled workers (e.g. certain professional categories) in recent years, which cannot be quickly met by training programmes, has led and will still lead to high remuneration margins for them (at least in the short run). It seems, on the other hand, that the elasticity of the supply of unskilled labour in various underdeveloped countries was one of the causes of the wage levels and wage ratios of such workers remaining relatively low during recent decades. The available current statistical data are unfortunately insufficient for refined analyses of structural wage changes under the influence of changes in the labour demand and supply function. Nevertheless, prima facie it is rather astonishing that technological change and productivity development, which modify the relation between the different categories of labour in the matter of demand and supply, seem not to have had substantial repercussions on the available—admittedly rough—indicators of the occupational wage structure. However, it should not be unexpected when account is taken of the absence of perfect competition in the labour market (and in the markets for the products of industry)[1] and the frequently rough methods of wage setting. The scale of occupational wage rates (especially minimum rates) does not necessarily reflect the relative productivity of occupations or skills nor fully follow their changing ratios over time. Moreover, it is in practice extremely difficult to determine even approximately the relative productivity of individual occupations. Hence the correlation between wage rates change and productivity change for particular occupations must frequently be low. In addition, the correlation between changes in average industrial earnings and changes in industrial productivity has been found rather weak in various countries.[2]

[1] For a fuller discussion of this point see I.L.O. : *Wages: General Report*, Report VI *(a)*, International Labour Conference, 31st Session, San Francisco, 1948 (Geneva, 1948), p. 84.

[2] See, for instance, H. A. TURNER : " Employment Fluctuations, Productivity and Cost-Inflation in Manufacturing Industry ", in *International Labour Review*, Vol. LXXXI, No. 5, May 1960, p. 379. See also " Wage Negotiations and Wage Policies in Sweden : II ", ibid., Vol. LXXX, No. 5, Nov. 1959, p. 391. A very low correlation was also found in Poland

Institutional Factors

Collective Agreement Policy of Trade Unions and Employers.

It is probably true in most countries, as it is in the United States, that wage differentials for non-unionised industries or occupations generally follow the trends established by collective bargaining. Hence collective bargaining has the possibility of influencing the complete wage structure. There are, however, differences of opinion regarding the roles played by trade unions and employers in the determination of wage differentials. Muntz[1] notes that the great proportion of employers in the United States " have been powerless to do more than let wage trends take their course ". The reduction of skill margins is, in his view, frequently more the result of rather simple and direct wage negotiation practice than a clear target of trade union efforts. The basic union claim is normally for a uniform cents-per-hour increase for all workers: consequently the percentage differentials between the wages of different categories of workers is automatically diminished. Escalator clauses to adjust wages to increases in the cost of living will often have a similar effect. There is no doubt, however, that the relative strength of the organisation of workers (or employers) in one industry or occupational group as compared with another can have an important bearing on increasing or reducing the wage differentials of specific types of workers. Wage-fixing boards with wide responsibilities definitely influence the wage structure (as in Australia). It must be admitted that market factors will often " correct " the ideas of wage-setting authorities regarding wage differentials.[2]

Minimum Wage Regulations.

Although perhaps not very influential as far as the general occupational structure of wages is concerned, national minimum

(1950-60): see Jerzy LISIKIEWITZ: " The Interdependence between Changes in Wages and the Productivity of Labour in Industry ", in *Ekonomista* (Warsaw), No. 2, 1963. Lisikiewitz holds the unconventional opinion that the essential cause bringing about the weakness of the connections between changes in wages and productivity of labour is technical and organisational progress, owing to which the part played by " live labour " in industrial progress is greatly decreased.

[1] Op. cit.

[2] An illustrative example is available through the annual I.L.O. October Inquiry: the hourly wage rates of unskilled workers were fixed in October 1962 for Stockholm at 90 per cent. of the wages of fitters and at 95 per cent. of those of bricklayers. However, the corresponding ratios of earnings were 84 and 79 respectively. It is conceivable that the wage ratio based on rates may change in favour of unskilled workers whereas the ratio of earnings might remain the same. The Swedish figures reflect, however, a practically simultaneous narrowing of both rates and earnings differentials in the course of the past ten years.

wage regulations have a tendency to reduce skill differentials in various occupations since most of them benefit only the workers at the bottom of the scale. There were decisive changes in the distribution of individual earnings in certain industries occasioned by the increase in the United States statutory minimum wage[1]; in many cases the relative pay advantages of skilled personnel were reduced (the indirect effects on industries not subject to the statutory minimum were relatively minor).

In some other countries, especially in Australia, where occupational wage rates consist of the basic (minimum) wage plus a differential, the periodic revision of the basic wage rate is carried into all occupational rates and thus tends to reduce margins for skill until, as happens from time to time, the wage-fixing authority makes a new determination of margins. Similarly, many French employers grant general increases when the S.M.I.G. (minimum legal wage rate) is raised.

Minimum wage provisions enacted in some African countries have often in the past established a very low rate with no noticeable influence on differentials. In other cases there was an increase at the lower levels which reduced wage margins.[2] In many parts of Africa minimum wages are of growing importance as they represent the rate at which workers coming from the traditional sector would normally enter the modern sector of the economy.[3]

Custom.

The size of many wage differentials is rooted in tradition. Custom seems to have far-reaching influence in some multi-racial societies where particular occupations may be traditionally reserved, more or less completely, for specified racial groups. The element of discrimination is likewise often associated with traditional hierarchic ideas. But also in racially homogeneous modern industrialised society, traditional conceptions about the magnitude of differentials retain a great importance in wage bargaining and other forms of wage setting.

Education.

Most parts of the world are experiencing a rising educational level among the population. This appears to be one of the most potent forces increasing labour productivity and partly explains

[1] " Effects of the $1 Minimum Wage in Six Areas 1956-1959 ", in *Monthly Labor Review*, May 1960.

[2] See " Interracial Wage Structure in Certain Parts of Africa ", in *International Labour Review*, Vol. LXXVIII, No. 1, July 1958, p. 20.

[3] See *Methods and Principles of Wage Regulation*, op. cit.

some narrowing of various wage margins based on ability and specialised skill. The growth of technical education, especially in the form of vocational training, and of equal opportunity for the sexes are significant aspects of this evolution. In particular, rising educational levels have changed the basic qualifications of unskilled and semi-skilled labour and its potential productivity. The substance of many skill distinctions is thus transformed in the long run although the wage hierarchy of occupations may not be affected in the same way. On the whole, improvements in the educational background seem to be one of the prerequisites of, rather than a specific driving factor in, structural wage changes.

Fringe Benefits and Family Allowances.

The introduction or extension of wage fringe benefits in the form of flat rates has narrowed occupational differentials. Also to be considered are benefits in kind, but these are of limited significance in developed countries. Various fringe benefits and often family allowances also, especially when not paid by the employer, are generally excluded from figures of wage rates and usually also from current earnings data : this means that income differentials will have been narrowed in many instances more sharply than suggested by the currently available wage statistics. In Italy, for instance, the wages of unskilled workers in 1961 reached 94 per cent. of the wage level of the skilled if family allowances are included but only 91 per cent. if they are excluded.

Centralisation of Wage Determination.

Dunlop and Rothbaum[1] have advanced the hypothesis that the centralisation of wage decisions in the government or in national organisations of trade unions and employers (as found, for instance, in Italy and France) has probably tended to narrow differentials. The available statistical material gives no conclusive answer to this hypothesis.

Recent Policies

In the past not many governments have made the wage structure a particular object of wage policy. That would be especially difficult to do where the dominating form of wage setting is that of autonomous collective bargaining. In general, wage adjustments affecting relative levels in different occupations or sectors are not made in accordance with broad economic or social targets. A common practice in negotiation and wage fixing is to relate the

[1] Op. cit.

claim or the determination in a specific case to other wage scales. One popular procedure is to follow a wage leader—whatever industry or occupation is the first to start negotiations—whose settlement terms become the guide for other wage adjustments.[1] Hence there are also at work dynamic factors favouring the preservation of the traditional pattern of remuneration, which may no longer be appropriate to the economy. A wage structure may be a hindrance to economic development, and in recent years the problems this involves have been of increased concern to economists. Wage policy should aim at shaping the structure of wages to promote the optimum economic and social progress. Conclusions No. 49 adopted on 7 May 1963 by the Textiles Committee of the International Labour Organisation lay down some general principles for developing countries.[2]

The need to determine skill margins so that they are an incentive to the acquisition of higher skills has become an issue of acute economic importance. New production techniques increase the need for skilled workers ; as recent experience shows, technological and other forms of unemployment will hit chiefly unskilled labour even while a shortage of skilled workers may exist. The links between economic development and wage margins for skill may be illustrated by a recent statement that the shortage of skilled workers in Australia seems at some stages to have reduced the chances of increasing the intake of unskilled migrant workers.[3] Owing to the widespread interest in New Zealand in the need for adequate recognition of wage differentials for skill and competency there are signs of a change in the skill margins policy followed by the arbitration court. Between 1938 and 1950 the court had generally been favouring a reduction of margins but during the last

[1] Examples of attempts to restore given wage differentials among industries in the United Kingdom are cited in Derek ROBINSON : " Wage Rate Differentials Over Time ", in *Bulletin of the Oxford University Institute of Economics and Statistics*, Vol. 23, No. 4, Nov. 1961. Robinson comments especially upon the three practices of " simple wage leadership ", " changing wage leadership " and " leap frogging ". He emphasises also that in consequence of the time-lags in the adjustment process the comparison of wage differentials at two given dates cannot reveal the " time dimension " of wage bargaining.

[2] Paragraph 18 of the Conclusions (No. 49) concerning conditions of employment and related problems in the textile industry in countries in the course of industrialisation reads as follows : " The wage differentials between the various occupations in the textile industry should be fixed on a rational basis. In the conditions existing in developing countries special attention should be paid to ensure that the wage structure accords with the requirements of productive growth, of social justice and of the rise in the standard of living, and with the need to provide incentives to workers to advance their skills."

[3] See William MCMAHON : " Training for Skill ", in *Australian Quarterly*, Vol. XXXV, No. 1, Mar. 1963.

decade it has on several occasions expressed its concern that the effective wage differentials of skilled workers should be maintained. The skill margins of workers covered by the metal trades employees' award were increased in 1954, 1956, 1959 and 1962.[1] The metal trades are illustrative of what has been happening in industry as a whole.

[1] See " Margins for Skill ", in *Labour and Employment Gazette* (New Zealand), Nov. 1962.