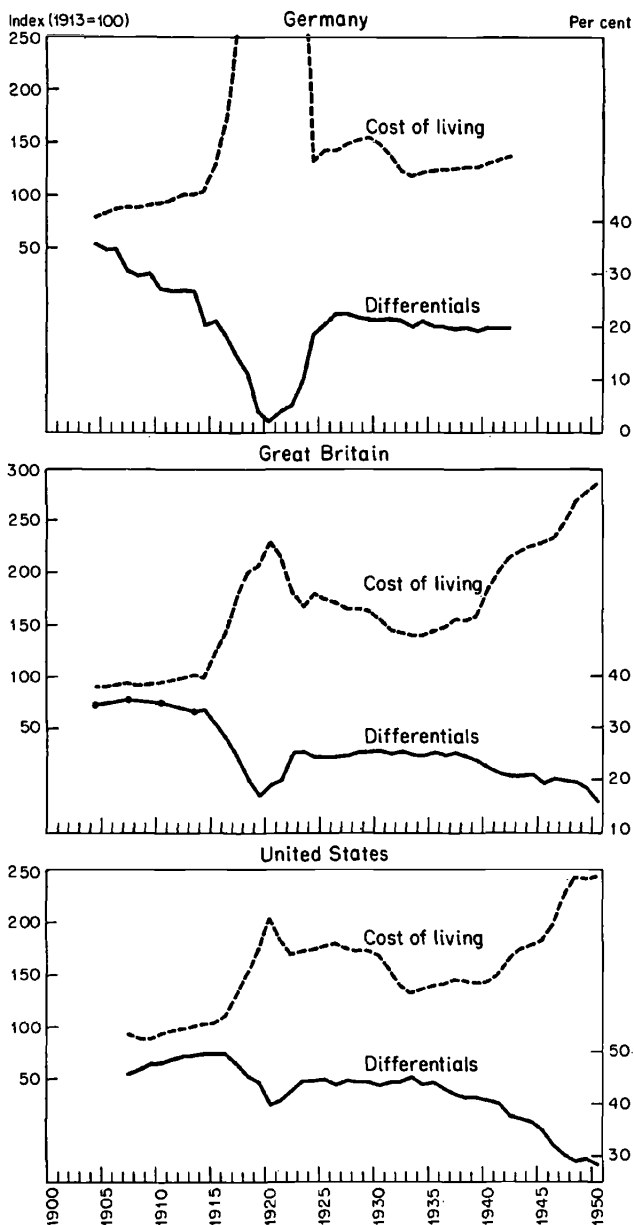


CHART 40
Skill Differentials in the Building Industry and Cost of Living, Germany,
Great Britain, and the United States, 1904-1950



The differentials are the difference between wage rates of skilled and unskilled workers, expressed as percent of the former.

Source: Table 74, Appendix Tables A-49, A-53, and their sources.

is worth noting that the magnitudes of the skill differentials, despite their dependence upon the classification used and upon the occupations selected, tended to resemble each other roughly in the three countries. To take an illustration from the close of our period: around 1943 wage rates of unskilled workers for the average of all manufacturing industries in Germany were about 80 percent of those for skilled; practically the same relation existed in Great Britain for the skill differentials of wage rates in the building, shipbuilding, and engineering industries; in the United States average hourly earnings for unskilled workers were about 73 or 74 percent of those for skilled and semiskilled. The comparable ratios for the period before World War I were around 60 percent for Germany and Great Britain, and a little below 70 percent for the United States.¹¹

Skill differentials were narrowest in all three countries at the close of each war and during the years immediately following, largely owing to the inflationary price rises. A relationship between skill differentials and cost-of-living movements for all three countries appears clearly from Chart 40. The differentials declined with the price rises from 1914 to the early 1920's; they increased to more than prewar size with the subsequent deflation; and in the late 1930's and the 1940's they declined in the non-regimented countries while living costs rose.

The effect of retail price rises on skill differentials under extreme circumstances is illustrated by the fact that the differentials were virtually obliterated in Germany where, during the Great Inflation, skyrocketing of prices was practically unchecked. The reasons for the narrowing of skill differentials in times of rapidly rising prices do not apply uniformly from country to country or from circumstance to circumstance. In Germany during World War I and the Great Inflation the need to protect the low-paid unskilled worker was probably the most important cause. However, the development may be very different in a country where inflation is not accompanied by a rapid deterioration of living conditions. In the United States during World War II, for example, increased living costs and the narrowing of skill differentials appears to have resulted from the increasing relative scarcity of goods and manpower, rather than from the social need to protect low-paid workers. Here the scarcity of goods led to a rise in the general price level, including living costs; and the scarcity of labor gave rise to a need to procure labor for "less desirable," mostly unskilled, jobs.¹²

August 1957, pp. 348-51. The tendency toward closing of skill gaps between 1913 and 1920, and the moderate widening thereafter have been observed also for other countries. See, for instance, J. H. Richardson, "Some Aspects of Recent Wage Movements and Tendencies in Various Countries," *International Labour Review*, 1928, pp. 179-203.

¹¹ Caution is required in the interpretation of the similarity of these figures. While it seems significant that the skill ratios are higher than about 50 or 60 percent, the reported average ratios are affected by the selection of industries and occupations. Around 1943, for instance, these ratios in Germany ranged from 58 percent (hard-coal mining) to 89 percent (soft-coal mining).

¹² Albert Rees made valuable suggestions on this point.

The evidence presented in Chart 40 suggests that living costs are not the only major determinant of skill differentials. In the United States we may note the diverse directions of the changes in these two variables before World War I, and the stability of the differentials during much of the interwar period—while living costs showed distinct short-term variations. But even broad long-term tendencies show far from perfect correspondence. Apart from the rise in living costs, a wide variety of long-term factors tend to operate toward a narrowing of skill differentials. Among these are: (1) the increasing use of mass-production techniques with an accompanying breakdown of skilled operations into simpler jobs; (2) the mechanization of some typical tasks of unskilled labor, such as handling, storing, and transporting materials, entailing large expenditures for capital equipment; (3) the spread of general education, democratic ideologies, and political franchise; (4) the efforts of trade unions to reduce skill differentials, and the increasing unionization of unskilled workers; (5) the growing role of government in wage determination, tending to promote greater wage equality especially in times of social stress; and possibly (6) the equalization of efficiency fostered by generally higher levels of health and economic well-being. There are, on the other hand, factors that set limits to the narrowing of skill differentials: (1) differences in aptitudes and training; (2) the growing supply of unskilled labor; (3) greater ease of substitution and sharper competition among unskilled workers; (4) a tendency to “freeze” the wage structure in order to simplify negotiation of wage contracts. Skill differentials, despite the observed historical trends toward narrowing, must be regarded as a permanent feature of any industrial wage structure.¹³

AGE DIFFERENTIALS

Information on differentials in German wage rates is largely qualitative. There are no series by which trends in these differentials can be measured over long periods of time. But information available for a number of briefer periods shows that:

1. Wage rates for younger workers during World War I tended to increase more than those for adults, and especially more than those for skilled adults.
2. During the 1920's and early 1930's, age differentials tended to decline, largely as a consequence of the inclusion of wages for youths in collective bargaining contracts.
3. Over the whole period 1871-1945, the status of apprentices changed from that of paying workers to that of paid workers.
4. The coverage of apprentice remuneration by collective bargaining

¹³ There might, of course, also be factors leading toward wider skill differentials. An example may be technological developments requiring high skills and affecting the relative scarcity of skilled workers as compared with unskilled. For a discussion of a related subject see Richard Perlman, “Forces Widening Occupational Wage Differentials,” *Review of Economics and Statistics*, May 1958.

contracts tended to standardize and raise the level of such wages in relation to adult workers' pay.

Age differentials, apart from their decrease, diminished in importance in the wage structure, largely as a result of the increasingly stringent provisions of child labor legislation.

Indications of a narrowing of age differentials and of a decline in their importance in the wage structure can be found also in the wage histories of Great Britain and of the United States. In Great Britain, child labor legislation as well as union campaigns tended to improve the wage levels of children and youths relative to those of adults. A special problem, that of "dead-end employment," was created by the fact that age differentials, for instance in British coal mines, were large for youths up to 17 years of age but contracted sharply at age 18 and over. This resulted in a common practice of "sacking" most youths at the age of 18, when higher wage levels made their employment less profitable. A gradual raising of wages for youths and a consequent narrowing of age differentials brought the solution to this problem.¹⁴ And reduced employment of youths generally brought about a decreasing importance of age differentials in the British wage structure.

There is little doubt that in the United States, as well, the general trend in age differentials between wages of youths and adults was downward. During the last decades of the period under review the general tendency in both governmental wage regulations and collective bargaining contracts in this country was to establish "entry rates" without special provisions for the remuneration of youths.¹⁵ As in the other two countries, a decreasing importance of the age differential in the wage structure can be observed as child labor legislation gained ground. In keeping with the experience of other industrial countries, child labor, as reported by the Census, increased up to the beginning of this century, when about one-fifth of all children between 10 and 16 years of age were listed as gainfully occupied. It is possible that the reported increase may reflect to some degree improved reporting, and shifts from agricultural to industrial jobs, since earlier reporting of gainfully employed youths in agricultural occupations might have been unreliable. Less subject to doubt, however, is the subsequent drastic reduction of the percentage of youths in the American labor force. By 1930 less than one-twentieth of the 10 to 16 age group was gainfully occupied; by 1940 this ratio must have dropped further.¹⁶ Thus the major

¹⁴ See Paul T. David, *Barriers to Youth Employment* (American Council on Education, 1942), pp. 85-86.

¹⁵ It is sometimes pointed out that this does not always mean an improvement in the relative remuneration of youths. See *Ibid.*, p. 87.

¹⁶ *Ibid.*, p. 50. See also Clarence D. Long, *The Labor Force in Wartime America*, (National Bureau of Economic Research, Occasional Paper 14, 1944), Table 2; and, by same author, *The Labor Force under Changing Income and Employment* (Princeton University Press, for the National Bureau of Economic Research, 1958), Appendix Table A-2.

trends observed in wage levels, related to age of German workers, appear to have been experienced also in Great Britain and the United States.¹⁷

SEX DIFFERENTIALS

Sex differentials in Germany tended to show a moderate decline during the period under investigation. The decline was concentrated largely between 1914 and 1924, and was more clearly apparent when wages of women (skilled or unskilled) were compared with those of skilled men. The rise of wage rates for unskilled men, during the period noted, was steeper than that for women. During the 1920's the gap between rates for women and those for men closed somewhat more, but from 1933 on, the rate structure was practically frozen, and little change can be observed in the relation of women's wage rates to those of skilled male workers.

The above observations are based on rates for comparable occupations.¹⁸ More important for the average wage level of employed women—but not measurable by available statistics—is the fact that more and more women were admitted to remunerative occupations and to industries paying higher wages, a factor contributing heavily to the general trend toward greater equality between women's and men's wages. Investigations of fairly wide coverage but somewhat doubtful comparability show average sex differentials to have been about 60 percent during the 1870's, about 55 percent before the outbreak of World War I, and somewhat below 50 percent on the eve of World War II.

The long-term decline in sex differentials has been observed also in other industrial countries. In Great Britain the differential between men's and women's earnings was reported as 56 percent of men's earnings in 1906 and 52 percent in 1924 and 1935. A further narrowing of the differential is reported on the basis of a different sample for the period 1938-45 (from 53 percent to 47 or 48 percent).¹⁹ Both the dimensions and the trends of the British differentials are rather close to their German counterparts. For the United States a long-term trend toward declining sex differentials can be inferred from the statistics of average hourly earnings published by the National Industrial Conference Board. For the group of industries reported on, average hourly earnings by women workers were below 60 percent of those received by male workers in 1914. This ratio fluctuated between 60 and 70 percent during the period 1920-44, and tended to stay above 70 percent in 1947 and 1948.²⁰ A recent study of

¹⁷ For a description of recent world-wide trends toward a decline of age differentials and toward equal pay for equal work, see "Wage Differentials Affecting Young Workers," *International Labour Review*, December 1955, especially pp. 531-34.

¹⁸ Sex differentials in average hourly earnings for a combination of industries (constant weights) can be computed from the mid-1930's on. Between 1935 and 1943, sex differentials declined minutely (see Table 61).

¹⁹ Bowley, "Wages, Earnings and Hours of Work, 1914-1947, United Kingdom," p. 6.

²⁰ National Industrial Conference Board, *The Economic Almanac*, 1950, p. 343. Publication of the data ceased after July 1948.

sex differentials in the American cotton textile industry revealed a clear tendency toward reduced differentials, between 1933 and 1952. The narrowing of the gap was largely concentrated in the periods of the early New Deal and World War II.²¹

It appears that labor shortages during times of war have played an important role, historically, in equalizing wages of men and women. The relative gains in women's wages were sometimes reduced after the war—but never to prewar levels. It might be mentioned in this context that the trend toward narrowing sex differentials during and after a war has been observed also in France and other countries.²²

CITY-SIZE, REGIONAL, AND INDUSTRIAL DIFFERENTIALS

Tendencies toward a tightening of the German wage structure, measured by narrowing differentials, have been observed as between cities of different size, between different regions, and between different industries. The narrowing of these differentials appears to have been less marked and less unambiguous than, for example, the narrowing of skill differentials.

Some information on the narrowing of regional differentials is available also for Great Britain and the United States. Although no published report of long-term changes of these differentials in Great Britain was found, it appears that regional differentials narrowed in the course of time and—because of the development of national minimum rates—possibly more for unskilled than for skilled workers.²³ For the United States the narrowing of North-South differentials—due to broadening industrialization, unionization, and so on—is well established. "In most industries, southern wage rates have been rising relative to comparable northern rates during the past fifty years. The narrowing of the South-North differential has generally been more marked during the past two decades."²⁴ For the cotton textile industry, the decline of the North-South differential during the past twenty years has recently been analyzed.²⁵ A narrowing of regional differentials for the United States as a whole has also been found by several observers.²⁶

Also industrial differentials in the United States have narrowed. This is

²¹ Mansfield, *op. cit.*, p. 82.

²² See, for example, Richardson, *op. cit.*, p. 191.

²³ This evaluation was contributed by K. G. J. C. Knowles of the Institute of Statistics, Oxford University. A suggestion of decreasing regional differentiation appears also in the discussion of district and local wage variations in Great Britain, in Margot Heinemann's *Wages Front* (London, Lawrence and Wishart, 1947), pp. 145-53. This author, incidentally, describes also long-term trends toward narrowing of differences between wages for time workers and for piece workers (p. 210).

²⁴ R. A. Lester, "Southern Wage Differentials: Developments, Analysis, and Implications," *Southern Economic Journal*, April 1947, p. 386.

²⁵ Mansfield, *op. cit.*, p. 81.

²⁶ For the period 1907-19, see J. W. Bloch, "Regional Wage Differentials 1907-46," *Monthly Labor Review*, April 1948, p. 371. For 1939-46, see W. Woytinsky and associates, *Employment and Wages in the United States* (Twentieth Century Fund, 1953), p. 481.

evident from 1933 on,²⁷ but was particularly pronounced during and after World War II.²⁸ Woytinsky analyzed the industrial earnings structure during the first four decades of this century, but his findings did not lead to clear-cut conclusions.²⁹ The decline of industrial differentials since the Great Depression was largely brought about by the establishment of minimum wages, and by wage increases in similar absolute amounts for different industries.³⁰

CONCLUSIONS

A general trend toward a tightening of the wage structure is observable for all three countries, pronounced in skill, age, and sex differentials but perceptible also in regional, city-size, and industrial differentials. It can hardly have come about by chance that in all these aspects of the wage structure the long-term trend was in the same direction—toward greater equality. The mass production of goods, their distribution throughout wide areas, the tendencies toward tight industrial organization, the growth of communication, and the spread of education—all these tend to reduce differences among groups of the labor force and thus the differences in their wages.

Cyclical Behavior

MONEY WAGES

The discussion of German money wages in Chapter 4 dealt with the conformity of wage cycles to general business cycles, their timing in relation to reference turning points, their cyclical amplitudes, their numerical contribution to total payroll changes, and their relation to labor market conditions. The results of the investigation are summarized below and, whenever possible, compared with related findings on wage behavior in Great Britain and the United States.

Conformity. Perhaps the most important finding on the cyclical behavior of German wage rates as distinguished from earnings is the rarity of substantial cyclical declines. Between 1871 and 1944 wage rates showed

²⁷ A. M. Ross and W. Goldner, "Forces Affecting the Interindustry Wage Structure," *Quarterly Journal of Economics*, 1950, pp. 255 and 263.

²⁸ See, for instance, David R. Roberts, "The Meaning of Recent Wage Changes," in *Insights into Labor Issues*, R. A. Lester and J. Shister, eds. (Macmillan, 1948), pp. 228-29. See also Herman P. Miller, "Changes in the Industrial Distribution of Wages in the United States, 1939-1949," in *An Appraisal of the 1950 Census Income Data* (Studies in Income and Wealth, Vol. 23, Princeton University Press for National Bureau of Economic Research, 1958).

²⁹ W. Woytinsky, *Earnings and Social Security in the United States* (Social Science Research Council, 1943), p. 202.

³⁰ Ross and Goldner regard the closing of the wage structure as a kind of statistical illusion produced by the unsatisfactory method of measuring fairly uniform absolute increases in percentage terms (*op. cit.*, pp. 263-65). It seems to this writer that increasing equality in the wage structure remains a tangible effect of the fairly uniform absolute increases—whatever form be used to describe the underlying wage changes.

material losses only twice: during the long and severe contraction following the *Gründerjahre* boom of the early 1870's, and during the Great Depression of 1929-32.³¹ At times, as during the 1925-26 contraction, monthly wage rates leveled out or decreased minutely; declines in some industries amounted to one and one-half percent of the peak level. In other industries contracts were permitted to lapse but the levels of the expired agreements continued to appear in the statistics (see Chart 15 and Chapter 4, p. 130). At other times, as during the major contractions prior to 1913, a deceleration in the increase of wage rates has frequently been observable, even on the basis of the crude annual data. Finally, there were instances where no cyclical responses of wage rates to changes in business conditions could be discovered. However, if all responses—including deceleration of growth—are counted, money wage rates on the whole appear to have conformed fairly closely to major cyclical changes in general business conditions.

Both the resistance of wage rates to sizable downward adjustments, and cyclical response in the form of deceleration or leveling out can be observed also in British and United States wage experience. For the period before World War I, cyclical observations are based on annual data only. In Great Britain, wage rates reacted to all major contractions in the form of actual, albeit mild, declines. Their reaction to the briefer contractions, such as those occurring between 1900 and 1914, are not clear.³² For the United States there is no doubt that during the major price and earnings declines wage rates also receded.³³ However, the available annual series on rates, show no reaction to the three brief contractions that occurred in the period 1907-14.³⁴

For the period following World War I the cyclical behavior of wage rates can be judged on the basis of monthly information. In the course of the five contractions between 1919 and 1945 in both Great Britain and the United States, wage rates showed substantial declines only in connection with the deflationary postwar contraction of 1920-21 and during the Great Depression. Wage rates either did not react cyclically to the other contractions or responded so imperceptibly that only special techniques revealed the responses.³⁵ However, the mild rate cycles thus established

³¹ The change of money wage levels brought about by the stabilization of the currency at the close of the year 1923 are disregarded here.

³² For basic data see Wood, *op. cit.*, pp. 102 ff., and Bowley, *Wages and Income in the United Kingdom since 1860* (London, Cambridge University Press, 1937).

³³ For basic data see Appendix Table A-48, col. 7 (1871-90), and *Historical Statistics of the United States, 1789-1945*, p. 69. The latter figures refer to union rates and may not be representative for the period.

³⁴ See Wesley C. Mitchell, *Gold, Prices, and Wages under the Greenback Standard* (University of California Publications in Economics, 1908), Table 37. Furthermore, wage material published by labor departments of various states contains instances of cyclical sensitivity of wage rates during later contractions.

³⁵ See Daniel Creamer, assisted by Martin Bernstein, "Behavior of Wage Rates during Business Cycles" (National Bureau of Economic Research, Occasional Paper 34, 1950), Charts 1 through 5.

could be related to reference cycles. All in all, it can be said that in Britain and the United States, as well as in Germany, wage rates conformed fairly well to major changes in business conditions.

The response of earnings to cyclical changes in business activity is clearer than that of rates. In Germany quarterly shift earnings of coal miners showed, on the whole, good conformity over the period 1889-1932 and a skipping of only a few brief, mild cycles. Comprehensive earnings series became available in 1924, but for a decade were published in annual form only. From these series it appears that earnings responded clearly to the later of the two business cycles occurring between 1924 and 1932. During the brief and mild contraction of 1925-26, the rise in hourly earnings showed only a minute deceleration, and that in weekly earnings a somewhat stronger one. A more regular cyclical response of hourly earnings, compared to wage rates, emerges also from an examination of United States data.

In general, weekly earnings show more reliable cyclical responses than hourly earnings. There is, however, a strong difference between series on an annual and on a monthly basis. On an annual basis, weekly earnings series tend to be cyclically rather insensitive to mild business cycles. This is valid for both Germany and the United States. As pointed out previously, weekly earnings in Germany showed only a mild response to the 1925-26 contraction. In the United States weekly earnings, on an annual basis, declined during only three out of the five business contractions occurring between 1920 and 1939. Monthly series of weekly earnings on the other hand, declined in all five contractions.

Timing. The outstanding feature in the timing of turning points in German wage rates is their substantial lag behind turns in general business conditions. At the two times when distinct specific turns in wage rates occurred (the *Gründerjahre* and the Great Depression), wage rates in annual form show lags of one year or more. For the interwar period, the timing of wage rates can be established on the basis of monthly data. Only two business cycles fall into the poststabilization phase of this period. However, at each of the four turning points involved, a substantial lag of wage rates behind monthly reference dates appears. The lags vary between seven and twenty months, their precise extent being dependent partly on the rules adopted for determining specific turning points.³⁶

The tendency of turning points in wage rates to lag behind those in general business conditions appears clearly also in British and United States experience (compare the annual dates for reference and specific turning points given in Table 71; see also Chart 35). For Great Britain, the average length of the lag during the 1920-40 period has been computed at eleven months, for the United States over the period 1923-31, at nine months.³⁷ With reference to the turning point preceding the Great

³⁶ See Chapter 4, pp. 138 ff.

³⁷ See Cleamer, *op. cit.*, pp. 17 and 30. NBER reference cycle turns are used throughout.

TABLE 71

Percentage Change of Money Wages during the Great Depression,
Germany, Great Britain, and the United States
(change expressed in percent of peak levels)

	GERMANY			GREAT BRITAIN			UNITED STATES		
	<i>Peak</i>	<i>Trough</i>	<i>Change</i>	<i>Peak</i>	<i>Trough</i>	<i>Change</i>	<i>Peak</i>	<i>Trough</i>	<i>Change</i>
RATES AND EARNINGS, ALL INDUSTRY									
<i>Reference Contraction</i>									
Hourly rates	1929	1932	-19	1929	1932	-4	1929	1932	-18
Hourly earnings	1929	1932	-24	...	...	..	1929	1932	-21
Weekly earnings	1929	1932	-33	...	...	..	1929	1932	-32
<i>Specific Contraction</i>									
Hourly rates	1930	1937	-22	1927	1934	-7	1929	1933	-23
Hourly earnings	1929	1933	-27	...	...	..	1929	1933	-22
Weekly earnings	1929	1932	-33	...	...	..	1929	1933	-33
HOURLY WAGE RATES, BUILDING									
<i>Reference Contraction</i>									
Skilled workers	1929	1932	-25	1929	1932	-7	1929	1932	-11
Unskilled workers	1929	1932	-25	1929	1932	-8	1929	1932	-11
<i>Specific Contraction</i>									
Skilled workers	1930	1936	-35	1929	1934	-9	1931	1933	-17
Unskilled workers	1930	1936	-34	1929	1934	-10	1930	1933	-19

SOURCE: Appendix Tables A-48 and A-51. For United States rates, see *Statistical Abstract of the United States, 1940*, p. 339 (entrance rates for 13 industries).

Depression, German wage rates lagged as much as nineteen months, those in Great Britain and the United States about one year. In this instance the German rates obviously exhibited a particularly effective resistance to downward revision.

The fact that there were pronounced lags in the turning points of wage-rates in all three countries supports the thesis that such lags are inherent in the economic nature of wage rates. Some major reasons for the occurrence of the lags were discussed in connection with the German experience (see Chapter 4, p. 142 ff.). Among them were the difficulty of identifying turning points at the time of their occurrence; the unpopularity of wage-rate cuts, and the need for a sufficiently strong change in employment and profit conditions to make moves for wage adjustments feasible; the existence of contractual obligations extending over many months. No doubt these factors help to explain the wage-rate lags in Great Britain and the United States as well.

At this point we should note the relation between the strong lags in the turning points of wage rates and the skipping of brief mild cycle phases, which we have observed earlier. Briefer contractions might run their

course before wage rates begin to respond, and significant declines be prevented by the ensuing recovery. This tendency is re-enforced in periods of long-term upward trends in wage rates, which tend to delay the occurrence of upper turning points and thus contribute further to the skipping.

Besides the timing of turns in wage rates, Tab'e 71 also gives some indication of the timing of turns in earnings during the Great Depression. The German evidence shows greater frequency of coincidences and reduced lags of earnings compared with lags in wage rates. There is no comparable evidence for Great Britain for the same years. In the United States, annual series of both average hourly and weekly earnings show coincidence at the 1929 peak and a one-year lag at the 1932 trough. The generally closer timing of turns in weekly earnings, and to a certain extent also hourly earnings, was brought about by the lead (or, on an annual basis, the approximate coincidence) of turns in average hours worked compared with turns in general business conditions. It should be noted, however, that the observed coincidences are based on annual data. On the basis of monthly data, earnings in the United States definitely show lags,³⁸ and a similar situation might be surmised in the case of Germany.

Amplitudes. One of the characteristics of German wage rates, mentioned above in connection with their conformity to business cycles, is their strong resistance to downward adjustments. Thus, cyclical responses to contractions consisted often merely of growth deceleration or leveling-out into plateaus. Close scrutiny of plateau periods for which monthly data are available reveals, however, that behind the macroscopic picture of these plateaus there may lie mild cycles with minute amplitudes. Appendix Table A-21 and Chart 37, for instance, show that in connection with the 1925-26 business contraction average wage rates not only leveled out, but actually declined by about 0.5 percent of the peak—with somewhat larger declines in certain industries. This finding checks neatly with Creamer's measurement of similar mild wage-rate cycles in Great Britain and the United States.³⁹ During the two periods when German wage rates underwent major full cycles, their fluctuations happened to be roughly similar. During the *Gründerjahre* cycle their specific advance was about 50 percent, their decline 20 percent. During the interwar period the specific advance between 1924 and 1930 was 68 percent, and the decline during the Great Depression was 22 percent—all measured on an annual basis in percent of levels at initial turns.⁴⁰

The annual reference turning points marking the boundaries of the Great Depression are set by the National Bureau at 1929 and 1932 for

³⁸ *Ibid.*, p. 32.

³⁹ *Ibid.*, Charts 1, 2, 3, and 5.

⁴⁰ Measured in percent of peak-trough averages, the increase during the *Gründerjahre* cycle is 45 percent for building rates and 33 percent for printing rates, the decline 20 percent and 7 percent respectively. During the interwar period average hourly rates increased by 50 percent of the peak-trough average, and decreased 25 percent.

each of the three countries covered by the present study. The coincidence of these reference years enables us to compare wage changes in the three countries. The comparative data are set forth in Table 71 which also presents information on amplitudes during the corresponding specific cycles. As to the amplitudes of wage rates, the most conspicuous feature of the comparison is the mild decline in British as compared with German and United States rates, an observation which applies both to the comprehensive wage measures and to the building industry wage rates. The relatively mild decline in British rates, furthermore, is apparent in both reference and specific cycle behavior. The question arises why British rates declined relatively little and why, for instance, wage rates in Germany—the country that experienced the longest lag before any rate reaction appeared at all—finally showed significantly stronger declines. In principle, there are many factors which could be held responsible for the comparatively severe decline of rates in Germany, and the mild decline in Britain. Prominent among them might be the severity of the contraction of business activity as measured by the cutbacks in real national income or employment. Also, the fall in price levels would be expected to exert an important influence. The following tabulation describes the decline in these factors in the three countries between 1929 and 1932. Great Britain shows the mildest declines in all the selected indicators of contraction severity.⁴¹

Percentage Changes in Per Capita Real Income, Employment, Wholesale Prices, and Retail Prices: Germany, Great Britain, United States, 1929-1932 (percent of peak levels)

	<i>Germany</i>	<i>Great Britain</i>	<i>United States</i>
Per capita real income	-26	-4	-37
Employment, excluding agriculture	-29	-9	-25
Wholesale prices	-34	-29	-32
Retail prices	-21	-13	-20

SOURCE:

Per capita real income, Table 5. Employment, United Nations, *Statistical Yearbook* 1948, p. 80. Wholesale prices, Table 70. Retail prices, Appendix Table A-49.

For Germany and the United States, behavior of wage rates as well as that of earnings can be compared on the basis of the data in Table 71. Both comprehensive measures show broadly similar declines during the Great Depression. During the reference contraction the declines in the composite series of rates amounted to 18 to 19 percent, in hourly earnings to a little more than 20 percent, and in weekly earnings to somewhat more than 30 percent. For specific contractions a similar relation generally prevailed.⁴² The close resemblance between wage declines in the two countries is not found in building wage rates. As shown by the lower

⁴¹ Note also, however, that between 1924 and 1929 British wage rates declined, in contrast to the increases observable in Germany and the United States.

⁴² The exception is the relation between hourly rates and earnings in the United States. However, the coverage of the hourly rates and earnings series for this country is so different that little systematic importance can be attached to their relative amplitudes in either reference or specific contractions.

panel of Table 71, German building rates decreased about twice as much as United States rates.

Per capita national real income experienced a greater decline in the United States than in Germany (see the tabulation above), and the employment and price measures give evidence of roughly similar behavior. Why, then, did German wages react as strongly or even more strongly to the Great Depression than their counterparts in the United States? It is possible, of course, that the difference is due to variations in the concepts and the industrial coverage of the measures used. The steep German wage-rate decline, on the other hand, occurred under circumstances which could well provide an explanation for it. One of the unique features of German wage history during the Great Depression was the "deflationary" intervention by the government. In particular, it was Chancellor Brüning's Fourth Emergency Decree which finally forced German wage rates down almost to their ultimate trough levels. It may be surmised that such government intervention brought rates to levels lower than they would have touched if market factors alone had been the prevailing force. Brüning's intervention may also explain the curious fact that the decline could be as strong as it was in the very country where the delay of the wage-rate decline was so prolonged.

Occasionally one encounters statements to the effect that wage rates have a long-term tendency toward increasing rigidity. Since German wage rates underwent only two substantial declines during the period 1871-1945, broad generalizations would scarcely be acceptable on the basis of the available evidence. Nevertheless, it is interesting to compare the two instances of marked decline. The wage-rate declines during the post-*Gründerjahre* contraction and during the Great Depression were roughly similar in magnitude. But wholesale-price declines were somewhat milder and production declines very much milder during the first contraction than during the second. That is, although the limited German evidence does not of itself indicate any "tendency" toward more pronounced downward rigidity, it would not be incompatible with such a thesis, if the wage decline is measured against employment and price changes. The British experience has been examined by Dunlop,⁴³ who finds no evidence of long-term trends in wage-rate variability, measured either by itself or in relation to employment and price changes. Creamer notes some tendency toward increasing rigidity for the United States during the period 1920-49, especially if wage reactions are compared with fluctuations in production and employment. However, Creamer hesitates to generalize from so brief a period.⁴⁴ Our knowledge of the wage behavior in the three countries obviously does not support any sweeping statements on long-term trends toward increasing rigidity.

⁴³ John T. Dunlop, "Trends in the Rigidity of English Wage Rates," *Review of Economic Studies*, June 1939, pp. 190 and 198.

⁴⁴ Creamer, *op. cit.*, pp. 39-40.

Wage Cycles and Labor Market Conditions

EMPLOYMENT. Since wage rates are prices prevailing in the labor market, some major processes in this market were studied in order to determine their effect on wage behavior. Wage-rate behavior in Germany has been related to employment on an aggregative, as well as on an industry-by-industry basis. As far as timing relationships are concerned, the substitution of cyclical turns in employment for those in general business conditions does not modify the basic findings on the sluggishness in the response of wage rates. In particular, the lag in German wage rates behind changes in general business conditions cannot be explained by a systematic lag of turns in employment or unemployment. Creamer has set forth similar findings for Great Britain and the United States.⁴⁵ Moreover, the differences between turning points in various industries do not appear to be related to corresponding differences in employment conditions in these industries, but rather to the length and expiration dates of wage agreements.

More fruitful has been the attempt to relate the amplitude of wage rate responses to those in employment. For Germany it has been shown that cycles which brought only mild wage responses were those characterized by milder declines in employment. The same situation prevailed also in Great Britain and the United States.⁴⁶ However, for none of the three countries would the evidence support a statement to the effect that cyclical responses of wage rates are directly proportional to declines in employment. The declines of United States wage rates during the 1920-21 and 1929-32 contractions certainly bear little resemblance to employment changes during the same periods. Nor is this finding surprising; the amplitude of wage-rate declines is obviously codetermined by other factors, such as changes in price levels.

If comparisons between employment changes and wage-rate changes were carried out industry-by-industry during the same cycle, the effect of changes in the price level would be minimized. Such changes would in fact be ruled out if the comparisons were made between the same dates. In order to see whether, under such circumstances, wage-rate changes bear any relation to business activity in various industries, German employment and production data were compared with wage rates, for the reference contraction 1929-32. A fair degree of correlation was established (see Chapter 4, p. 159 and Table 39). In Great Britain, juxtaposition of the available wage-rate and employment information by industry, for the Great Depression, showed no significant relationship between changes in wages and those in employment.⁴⁷ Exploratory study of hourly wage

⁴⁵ *Ibid.*, Table 1 and Chart 5.

⁴⁶ *Ibid.*, pp. 12 and 26.

⁴⁷ This observation is based on changes in wage rates, as given by E. C. Ramsbottom in "The Course of Wage Rates in the United Kingdom, 1921-1934," *Journal of the Royal Statistical Society*, 1935, pp. 665-66; and as given by Bowley, *London and*

and employment behavior in the United States suggests a low positive correlation between the mentioned variables.⁴⁸ The relationship observed for Germany should not, of course, be interpreted as denoting a simple causal relationship between employment and wage fluctuations. Many of the cyclically sensitive industries, such as building and hard-coal mining, happen also to be high-wage industries. The positive relation between employment and wage-rate decline could thus be due, at least in part, to the tendency of high rates to decline more than low rates.⁴⁹ Similarly, the fact that some industries with smaller wage-rate declines also experienced relatively small employment setbacks does not necessarily support contentions that employment changes determine wage changes, or that wage rigidity has but slight effect upon employment. Again, it must be understood that the low-wage consumers' goods industries may tend to suffer less decline in wages and employment for reasons other than those reflected in either of the two variables.

LABOR STRIFE AND GOVERNMENT ACTIVITY. In studying the German experience, no way was found to isolate the effect of union or employer activity on wage cycles. It was possible, however, to relate the occurrence of labor strife—strikes and lockouts—to the lag of wage rates after lower turning points. Strikes tended to reach their heights (in terms of man-days lost) close to mid-expansion, that is, after the rise of living costs began to depress the purchasing power of the hourly rate, after increased employment began to ease competitive pressures in the labor market, and after increased sales provided some leeway for businesses to grant wage rises. Evidence in the United States confirms the occurrence of peaks in labor strife well within the expansion phase. Albert Rees⁵⁰ finds, on examination of the period 1915 to 1940, that strike peaks characteristically precede peaks in general business activity by about five months. He reports also a lag of strike troughs behind reference troughs. Rees's findings are in keeping with the observation in Germany of low-strike activity during contractions, though the German evidence does not show sufficient regularity to permit a generalization on the timing of troughs in labor strife. For Great Britain, it is possible to establish a basically positive general conformity of strike activity to business cycles. However,

Cambridge Economic Service, May 1947, p. 12. For employment, see Agatha L. Chapman, *Wages and Salaries in the United Kingdom, 1920-1938* (London, Cambridge University Press, 1953), pp. 98-100. The wage-employment comparisons were hampered by the fact that information for these two measures is rarely available for comparable industrial classifications. Furthermore, wage rates showed relatively small declines during the Great Depression.

⁴⁸ This study was based on (1) average hourly earnings and employment in twenty-one manufacturing industries, as reported by the National Industrial Conference Board, and (2) entrance rates for common labor and employment as reported by the Bureau of Labor Statistics.

⁴⁹ This is not always true, however. Brewing, a high-wage industry, showed a small decline in wage rates.

⁵⁰ "Industrial Conflict and Business Fluctuations," *Journal of Political Economy*, October 1952.

the annual information examined does not show any evidence of peaks in labor strife at or close to the mid-expansion phase of the cycle, as was observable for Germany.⁵¹

German wage history offers many examples of effective government intervention in wage setting. Throughout the Weimar Republic, the settling of wage disputes by compulsory arbitration provided a tool for government influence. Up to the onset of the Great Depression, this tool was used largely to promote "social progress"—to iron out wage inequities and to support, in a moderate fashion, wage earners' demands that they participate in the fruits of economic recovery. After the depression was under way, however, the arbitration boards changed their goals, attempting instead to bring about a moderate decline of wage rates. More drastic acts of intervention by the government were embodied in the deflationary emergency decrees of 1930 and 1931. The second effected a reduction of wage rates to 1927 levels—leading to a total wage-rate cut of about 10 percent. After the National Socialists took power, wages became wholly subject to government administration, and wage rates were stabilized at or close to depression levels. In Great Britain there was no comparable government initiative aimed at wage setting, but the United States government did intervene in the process. Its intervention was initiated only after the trough of the Great Depression was reached, and had as its objective the raising and not the lowering or stabilization of wage levels. These differences in wage policy are reflected clearly in the differentiated short-term trends of German and United States wage levels (see Charts 35 and 36).

WAGES AND OTHER PAYROLL COMPONENTS. Chapter 4 sets forth the attempt to establish for Germany the separate contributions to changes in the total industrial payroll, of wage rates, excess of hourly earnings over rates, average hours worked, and employment. Tabulated below are the percentage changes in each of the above variables and the percentage contribution made by each factor to the decline of the total payroll for the years 1929-32 in Germany and in the United States. Unfortunately, comparable information is not available for Great Britain.

A striking feature of this evidence is the close resemblance of German and United States experience in both the extent and structure of payroll declines. During a contraction of roughly similar magnitude—as measured by employment—the changes in the payroll and its components, and the contribution of the various components to the total decline were very similar in the two countries. For both countries about 60 percent of the total payroll decline is attributable to the drop in employment and only 18-20 percent to the change in wage rates.⁵²

⁵¹ See data on industrial disputes, International Labour Office, *Yearbook of Labour Statistics*, 1937, and 1951-52.

⁵² This statement refers, of course, to the numerical contribution of these factors only, not to their causal importance.

	<u>Germany</u>	<u>United States</u>
	<i>Percentage Changes, 1929-32</i>	
1. Employment	-41	-38
2. Average hours worked	-9	-13
3. Hourly earnings	-25	-21
4. Excess of earnings over rates	-8	-4
5. Wage rates per hour	-18	-18
Payroll	-59	-57

Contribution^a to Payroll Decline, 1929-32
(percent)

1. Employment	59.7	57.2
2. Average hours worked	11.9	17.4
3. (Hourly earnings) ^b	(28.4)	(25.4)
4. Excess of earnings over rates	10.8	5.3
5. Wage rates per hour	17.6	20.1
	100.0	100.0

^a The method used in the derivation of these measures is briefly explained in Chapter 4, footnote 59.

^b Hourly earnings (line 3) are subtotals of lines 4 + 5.

WAGES AND PRICES

German wage rates were found to be a rather insensitive type of price, with regard both to timing and amplitudes. They turned later and declined less than most major categories of wholesale prices—in fact later and less than living costs.

The later and lesser cyclical reactions of wage rates as compared with wholesale prices can be said to have occurred in all three countries. On an annual basis, the specific peaks of wage rates, closest to the 1929 turn in general business conditions, were reached in the following years:

	<i>Hourly Wage Rates</i>	<i>Wholesale Prices</i>
Germany	1930	1928
Great Britain	1927	1924
United States	1929	1928

As for amplitudes, a comparison of percentage declines, measured from peak levels, between the reference turning points of 1929 and 1932 stands as follows:

	<i>Hourly Wage Rates</i>	<i>Wholesale Prices</i>
Germany	-19	-34
Great Britain	-4	-29
United States	-18	-32

The lesser variability of wage rates can be demonstrated also by a comparison of wage and price behavior during periods when wage rates underwent the minute declines observable in monthly records, described previously. While German wage rates declined by about 0.5 percent in connection with the 1925-26 contraction in general business conditions,

wholesale prices dropped by 10 percent or more. Similarly, in the two mild contractions of the 1920's (1924-26 and 1927-28 in Great Britain; 1923-24 and 1926-27 in the United States) both countries experienced only minute indications of cyclicity in wage rates but clear reactions in wholesale prices.⁵³ Thus, although the differing compositions of the national indexes preclude a quantitative comparison of, for instance, the change in wage-price ratios in the three countries, the finding that there is relatively slight variability in wage rates, as compared with wholesale prices, is firmly established.

The cyclical insensitivity of wage rates to downward pressures appears less pronounced in comparison with retail prices for goods and services. The German experience during the years 1924-32 shows that in specific and reference expansions wages went up more, and in contractions declined less, than living costs. Somewhat analogous relations prevail also, for the same period, in Great Britain and the United States. The relation of money wages and living costs, and the consequent changes in real wages, can be observed in Charts 35 and 36.⁵⁴ In all three countries the prevailing tendency during the period 1924-32 for wage levels was to increase or hold their own in the face of mild decreases in living costs and, when living costs declined radically, to show smaller declines than the latter. The relations of living costs and wage rates in the three countries for the period 1924-38 can be followed in Chart 35. They are, of course, reflected in the movements of real wages, to which we shall now turn.

REAL WAGES

Conformity. Real wage rates in Germany before World War I showed occasional evidence of inverse conformity to business cycles, particularly when wage rates were fixed for a number of years—as in the printing industry—and when real wage fluctuations were thus due entirely to cost-of-living changes. On the whole, however, and particularly if the later and more sensitive monthly information of the interwar period is used as a guide, positive conformity of real wage rates with changes in business conditions must be regarded as the norm. Appraisal of conformity is

⁵³ The price indexes used in these comparisons are the Sauerbeck Index for Great Britain, and the Bureau of Labor Statistics Index of Wholesale Prices for the United States. Note that the declines of British wholesale prices in the contractions of 1924-26 and 1927-28 are not separated by any significant specific expansion.

⁵⁴ In Great Britain wage rates changed but little between 1924 and 1932. But the slight increase, and the leveling-out through 1927, were accompanied by a living-cost decline of about 8 percent. And during the remainder of the period both wage rates and living costs declined, the latter exhibiting significantly larger movements. In 1932 wage rates were about 5 percent below their 1925 levels, living costs about 19 percent below. Also in the United States, wage rates, hourly earnings, and living costs showed relatively shallow movements up to 1930. In 1924 and 1925 living costs rose, and during 1926 through 1930 they decreased, in the face of practically stable wage rates. From 1930 to 1932 or 1933, the decrease in living costs exceeded the declines in wage rates. (Based on wage rate and earnings data as reported by Creamer, *op. cit.*, Table A. The cost-of-living data are those compiled and published by the Bureau of Labor Statistics.)

complicated by long lags in real wage rates, but if allowance is made for timing relations, the preponderance of positive conformity is clear enough. In the case of real earnings, even the pre-1913 evidence tends to show positive conformity, an impression that is confirmed by the behavior of earnings during the interwar period.

The positive conformity of German money and real wage rates to business cycles lends support to the critics of J. M. Keynes' thesis that money and real rates tend to move, cyclically, in opposite directions. As Chart 14 shows, the behavior of money and real wage rates was characterized by positive co-variance rather than by inverse variation, especially during cyclical rather than intracyclical movements.

A tendency toward positive conformity in the cyclical fluctuations of money and real wage rates has been found also by Dunlop⁵⁵ and by Tarshis⁵⁶ for Great Britain and the United States. Their findings have been doubted by Ruggles.⁵⁷ Dunlop makes the following summary statement: "Statistically, real wage rates generally rise with an increase in wage rates, rise during the first period after the peak, and then fall under the pressure of severe wage reductions."⁵⁸ This would describe quite well the behavior of German wage rates during the 1926-32 cycle. It would describe only approximately, however, the German wage behavior of the 1924-26 cycle, since the eventual decline of real wage rates was brought about by rising living costs rather than by severe money wage-rate reductions, and since the decline occurred only after the next expansion in business had begun. Ruggles has expressed, on a priori grounds, some expectations about the behavior of money and real wage rates, as follows:⁵⁹ "In a mild recession or in the early phases of a major depression it would be quite possible for the real wage rate to decline, largely because of the lag in the response of rent to changes in income. In a deeper, more prolonged depression, however, it seems likely that the real wage rate would rise. Rent becomes more variable than money wage rates in the longer run, so that the only components of expenditures whose prices remain less flexible than money wage rates are a few public utilities." It is clearly outside the scope of this study to evaluate the theoretical merits of Ruggles' expectations. It appears, however, that the behavior of German wage rates does not support his view. Typically, German real wage rates rose during mild contractions and during the early phases of severe contractions, but declined as the depression deepened.

⁵⁵ John T. Dunlop, "The Movement of Real and Money Wages," *Economic Journal*, June 1938, pp. 413-434.

⁵⁶ Lorie Tarshis, "Changes in Real and Money Wages," *Economic Journal*, March 1939, pp. 150-154.

⁵⁷ Richard Ruggles, "The Relative Movements of Real and Money Wage Rates," *Quarterly Journal of Economics*, November 1940, pp. 130-144.

⁵⁸ *Op. cit.*, p. 434.

⁵⁹ Richard Ruggles, "The Nature of Price Flexibility and the Determinants of Relative Price Changes in the Economy," *Business Concentration and Price Policy* (Princeton University Press for National Bureau of Economic Research, 1955), p. 495.

Timing. The lag of turning points in German real wage rates behind those in general business conditions is still more pronounced than the lag in money wage rates. At the 1925 peak the lag in money wage rates was eight months, that in real wage rates twelve months. At the 1929 peak, a money wage lag of thirteen or twenty months occurred, as compared with a real wage lag of about two or even two and one-half years.⁶⁰ It is not clear whether a similar extension of lags occurred also at troughs. Following the 1925-26 contraction, money and real wage rates showed about the same lag. After the Great Depression, on the other hand, there occurred a slight upturn of real rates between July 1932 and February 1933, while money rates were still declining. It is difficult, however, to distinguish cyclical and shorter-term movements at that point; and from 1933 on, the stabilization of money wage rates under the Nazis led to an abnormally extended decline in real wage rates—with no revival up to the end of World War II.

The lag of real wages behind money wages can be observed also in German hourly earnings. Annual series of hourly real earnings, for instance, show a lag of two years, while the peak of hourly money earnings coincides with the business cycle peak. When we look at weekly earnings, however, we find that both the money and real wage series turn together with general business conditions—a result of the important role played by hours in the determination of weekly earnings.

The more pronounced lag of real as compared with money wages can be shown to prevail in all three countries at the 1929 peak. The peak in real wage rates was reached in Germany, Great Britain, and the United States in 1931, that is, two years after the reference turning point and one or more years after the turn of money rates in each country. (See Table 72 and Charts 36 and 37.) Real wage rates also lagged considerably behind the 1932 reference trough. However, while real wages lagged behind money rates in Germany and Great Britain, they turned in the same year in the United States. Comparison of the lower panels of Tables 71 and 72 indicates the extended lags of real wage rates as compared with money rates for skilled and unskilled building workers in the three countries. The findings are similar to those based on the comprehensive measures.⁶¹

⁶⁰ At the 1925 peak, the break of the sharp wage rise and the leveling-out into the intermediate plateau in November was regarded as the upper turning point of money wage rates. Real wage rates show a clear peak in March 1926. For the onset of the Great Depression, the alternative figures mentioned refer to the beginning (P_1) and end (P_2) of their peak plateau in the case of money rates, and to the first and second double peak in the case of real rates (see Chart 14).

⁶¹ All series show longer lags of real rates at both the peak and the trough. With the exception of one instance (the turn of skilled workers' rates in the United States after the 1929 peak), all real rates had their peak in 1931, that is, two years after the reference peak and one or two years later than money rates. At the subsequent trough the lag of real rates was two years longer than that of money rates in the United States, three years longer in Great Britain, and at least eight years longer under the extraordinary conditions prevailing in Germany.

TABLE 72

Percentage Change of Real Wages during the Great Depression,
Germany, Great Britain, and the United States

	GERMANY			GREAT BRITAIN			UNITED STATES		
	Peak	Trough	Percent	Peak	Trough	Percent	Peak	Trough	Percent
			Change			Change			Change
RATES AND EARNINGS, ALL INDUSTRY									
<i>Reference Contraction</i>									
Hourly rates	1929	1932	+4	1929	1932	+10	1929	1932	+3
Hourly earnings	1929	1932	-4	...	...	...	1929	1932	-1
Weekly earnings	1929	1932	-15	...	...	...	1929	1932	-15
<i>Specific Contraction</i>									
Hourly rates	1931	1944	-18	1931	1937	-4	1931	1933	-3
Hourly earnings	1931	1936	-6	...	...	...	1931	1932	-3
Weekly earnings	1929	1932	-15	...	...	...	1929	1932	-15
HOURLY WAGE RATES, BUILDING									
<i>Reference Contraction</i>									
Skilled workers	1929	1932	-4	1929	1932	+7	1929	1932	+10
Unskilled workers	1929	1932	-5	...	1932	+5	1929	1932	+11
<i>Specific Contraction</i>									
Skilled workers	1931	1944	-30	1931	1937	-6	1933	1935	-7
Unskilled workers	1931	1944	-29	1931	1937	-5	1931	1935	-6

SOURCE: Appendix Tables A-50 and A-52.

Also in hourly earnings, the stronger lag of real wages as compared with money wages is in evidence. The peak of hourly money earnings in 1929 coincided with that of general business conditions, both for German and for United States wage earners; but hourly real earnings did not turn until 1931. The longer delay in the turn of hourly real earnings appeared in Germany also at the end of the Great Depression. However, in the United States hourly real earnings hit their trough in 1932—one year before money earnings. For Great Britain, there are no earnings data for the period under review.

The cyclical timing of weekly real earnings, finally, reflects the responsive behavior of average hours worked, of the output of piece work, and of the incidence of premium payments, rather than changes in basic rates. In Germany and the United States weekly earnings, both money and real, turned at the reference peak year of 1929. Weekly real earnings also turned in the reference trough year of 1932. However, in the United States the real earnings trough occurred one year earlier than that of money earnings, reflecting the anomaly previously reported for average hourly earnings.

Amplitudes. Even a casual comparison of the record of money wages

(Charts 33 and 34) with that of real wages (Charts 38 and 39) reveals clearly the smaller cyclical amplitudes of the latter. Let us look more closely at real-wage behavior during the Great Depression. In all three countries we find the smaller amplitudes of real wages (see Tables 71 and 72 and Charts 35 and 36). There are, however, a number of special situations which modify the generalization, to be considered below.

Between the terminal years of the 1929-32 slump, money wage rates in all three countries show uniquely steep declines. Yet living costs declined still faster, so that the indexes of hourly real rates show actual increases in the three countries (and building rates, increases in Great Britain and the United States). These increases indicate, of course, a low degree of responsiveness of real wage rates to the decline in business conditions. The described increases of real wage rates, between the reference turns, do not imply that real rates were depression-proof. Declines in real rates did occur, albeit with delay. However, the comprehensive rate indexes, as well as the series describing changes in building rates, all show specific real rate decreases, which are smaller than the comparable decreases in money rates.

The general observation that real wages have smaller amplitudes than money wages holds also for average hourly and weekly earnings. Comparative information is available for Germany and the United States only. In these two countries real wages as well as money wages experienced declines of very similar magnitudes; the weekly real earnings declines in both countries amounted to 15 percent.

Wages during War and Inflation

GENERAL

Chapter 5 of this study dealt with the behavior of German wages under extraordinary circumstances, such as the two world wars and the Great Inflation. The purpose of that chapter was to describe the unique determinants of wage behavior in Germany during those episodes. Here, the task is to compare the major findings with corresponding findings for Great Britain and the United States. Apart from the difficulty of summarizing the detailed description presented for Germany, it might seem altogether futile to undertake a comparison of individual national situations. Nevertheless, despite the unique character of special events in each of the countries, their national histories have some features in common. The two world wars involved all three countries. The Great Inflation and subsequent stabilization were but the specific ways in which Germany underwent its postwar adjustment; and the development of National Socialism up to World War II was, to be sure, the peculiar course Germany followed in moving out of the Great Depression and into rearmament. Thus the course of events in Germany had historic and economic counterparts in British and American experience, although, of course, with

marked differences from country to country. Germany lost the two world wars; Great Britain and the United States were victors. Germany was unable to control her currency depreciation after World War I; the other two countries managed to do so. Germany's economic expansion after 1932 was dominated by a rearmament drive, while the expansions in Great Britain and the United States, at least for the greater part of the period before 1939, were predominantly in the civilian sector of the economy.

The broad similarities as well as the broad differences in the three countries' experiences during these unusual periods must be reflected in their wage histories. This, at least, is a surmise worth testing. For this purpose, the major similarities and differences in the economic fortunes and in the wage behavior of the three countries will be analyzed below.

WORLD WAR I

Money wages during World War I increased each year in Germany, Great Britain, and the United States. In all three countries wage levels went up more sharply in the second half of the war than in the first. And in all three countries earnings tended to rise more than wage rates. However, there were marked differences in the extent of wage increases, the rise being sharpest in Germany and mildest in the United States. The differences, already discernible between 1914 and 1916 levels, became more pronounced during the latter part of the war.

The information underlying the above generalizations is assembled in Table 73. Data on wage rates of skilled building workers and earnings of coal miners, available for all three countries, permit comparisons of tolerably similar categories. The comprehensive wage indexes presented in the last three columns of the table show so many differences in concepts, coverage, and composition that they cannot be directly compared. They do, however, shed some light on the representativeness of the more narrowly defined measures and, at least for Germany and the United States, provide some rough indication of comparative wage trends. Over the years 1914 to 1918 wage rates of building workers rose by about a quarter in the United States, by 60 percent in Britain, and by about 100 percent in Germany. Average weekly earnings rose more sharply in all instances, and again the most marked increase occurred in Germany, the least marked in the United States. Indications are that between the first and the last year of the war, average earnings increases in each country may have exceeded those in its building rates by roughly 30 percentage points.

The order of wage rises corresponds with the extent to which the countries were affected by the war. Germany, closest to actual battle-grounds and ultimately defeated, experienced the strongest rises. The United States, far removed from the scenes of the conflict, entering it later than the other participants, and being on the victorious side, showed

TABLE 73

Money Wages in Germany, Great Britain, and the United States, 1914-1923

Year	WAGE RATES OF SKILLED BUILDING WORKERS, PER HOUR			EARNINGS OF COAL MINERS PER WEEK OR SHIFT			COMPREHENSIVE INDEXES WAGES PER WEEK OR DAY		
	Germany	Great Britain	United States	Germany, weekly	Great Britain, shift	United States, weekly	Germany, earnings or rates	Great Britain, weekly rates (July)	United States, weekly earnings
1914	100 ^a	100	100	100	100 ^b	100	100 ^c	100	100
1915	102 ^a	103	101	110	115 ^b	106	121 ^c	108	100
1916	116	108	104	130	129 ^b	116	141 ^c	118	111
1917	152	123	110	160	136 ^b	144	194 ^c	135	125
1918	201 ^a	160	122	200	195 ^b	178	235 ^c	175	152
1919	...	188	139	340	224 ^b	207	360 ^d	210	175
1920	703	259	186	794	260	233	820 ^b	252	213
1921	859	252	189	1,206	246	250	920 ^b	250	194
1922	3,171	191	179	4,100 ^b	154	250	4,220 ^b	188	186
1923	237,627	183	197	2,762,100 ^b	160	257	2,781,300 ^b	168	200

^a April.^b July.^c Average of March and September.^d Third quarter.

SOURCE:

Building Rates

Germany (data refer to Berlin): 1914-18: Waldemar Zimmermann, "Die Veränderung der Einkommens- und Lebensverhältnisse der deutschen Arbeiter durch den Krieg," in *Die Einwirkung des Krieges auf Bevölkerungsbewegung, Einkommen und Lebenshaltung in Deutschland*, *Wirtschafts- und Sozialgeschichte des Weltkrieges* (Carnegie Foundation for International Peace, Stuttgart, Deutsche Verlags-Anstalt, 1932), p. 398. For 1920-23: Robert Kuczynski, "Postwar Labor Conditions in Germany," U. S. Bureau of Labor Statistics, *Bul.* 380, pp. 125-27. Weekly rates given are adjusted for change of hours. (Adjustment factor: 51 to 46, prewar to postwar hours as reported in source.)

Great Britain: Bowley index, as given in C. E. Lyon, *British Wages*, U.S. Department of Commerce, Trade Promotion Series, No. 42, 1926. Weekly rates given are adjusted for change of hours in London. (Adjustment factor: 50 to 44, prewar to postwar hours as reported by A. L. Bowley, "Wages, Earnings and Hours of Work, 1914-1947, United Kingdom," *London and Cambridge Economic Service*, Special Memorandum No. 50, p. 11.) The change of hours in London is fairly representative for that in the cities included in the wage-rate index. See A. L. Bowley, *Prices and Wages in the United Kingdom, 1914-1920* (Oxford, Clarendon Press, 1921), pp. 116-20.

United States: *Historical Statistics of the United States, 1889-1945*, p. 69, Series D 154 and D 156.

Miners' Earnings

Germany (data refer to Ruhr): *Wirtschaft und Statistik*, 1925, "Zahlen zur Geldentwertung in Deutschland, 1914 bis 1924," p. 41.

Great Britain: 1914-19, A. L. Bowley, *Wages and Prices in the United Kingdom, 1914-1920*, p. 150. (Figures refer to July.) For 1920-23, A. L. Bowley, *Wages and Income in the United Kingdom since 1860* (Cambridge University Press, 1937), p. 22.

United States: Paul H. Douglas, *Real Wages in the United States, 1890-1926* (Houghton Mifflin, 1930), p. 162.

Comprehensive Indexes

Germany: 1914-18, daily earnings of male workers in twelve industries, average for March and September; see Appendix Table A-37. For 1919-23, weekly wage rates of skilled workers in eight industries, see Appendix Table A-42, col. 3.

Great Britain: Wages in eleven occupations, predominantly weekly rates. Bowley data as reported in C. E. Lyon, *op. cit.*, p. 52. Where range was given, mid-point was selected.

United States: Full-time earnings in all manufacturing industries, see Douglas, *op. cit.*, p. 130.

smaller increases. The connection between the two sets of facts lies probably in the extent to which direct participation and all-out effort increased inflationary tendencies—in the absence of direct price and wage controls.

TABLE 74
Cost of Living in Germany, Great Britain, and the United States, 1914-1923

Year	Germany	Great Britain ^a		United States
		Ministry of Labour	Bowley	
		I	II	
1914	100	100	100	100
1915	125	125	120	101
1916	165	145	135	108
1917	245	180	160	128
1918	304	205	180	150
1919	403	210	...	172
1920	988	232	...	200
1921	1,301	219	...	178
1922	14,602	184	...	167
1923	15,437 bill	169	...	170

^a The adjusted (Bowley) index takes into account the increasing proportion of income spent on food and clothing during the years 1914 to 1918. It assigns progressively larger estimated weights to these items. The unadjusted (Ministry of Labour) index keeps weights constant throughout. See A. L. Bowley, *Prices and Wages in the United Kingdom, 1914-20* (Cambridge University Press, 1937), pp. 74-75.

SOURCE:

Germany: Appendix Table A-41, col. 2, put on base 1914 = 100.

Great Britain: For 1914-18, from Bowley, *op. cit.*, p. 106. For 1919-23, see Charles E. Lyon, *British Wages*, p. 52 (base shifted to 1914).

United States: *Historical Statistics of the United States, 1789-1945*, p. 236. Series L 41 (B.L.S. Index, all items), base shifted to 1914 = 100.

The available wholesale price indexes are too different in composition and coverage to permit comparisons in the wartime changes of price levels.⁶² The movements of retail prices, as represented by cost-of-living indexes, exhibit indeed the same order, with regard to price increases, as that observed for wages. Table 74 shows that living costs in the United States increased by one-half, in Great Britain they doubled, and in Germany trebled.

⁶² The German index comprises thirty-eight commodities—eighteen foods and twenty industrial raw materials (see *Wirtschaft und Statistik*, 1925, "Zahlen zur Geldentwertung in Deutschland 1914 bis 1923"). For Great Britain there is the Board of Trade Index covering forty-seven articles—twenty-five foods, six coal and metals, six textile raw materials, and ten miscellaneous; the Economist Index covering forty-four raw materials; and the Statist Index covering forty-five raw materials. (See U.S. Bureau of Labor Statistics, *Bul.* 284, pp. 261-62, 270, and 276-78.) For the United States there are various indexes, the most comprehensive being that of the Bureau of Labor Statistics, which during the war years covered between three hundred and four hundred commodities. See *Bul.* p. 284, p. 109 and *Bul.* 200, p. 8).

Whatever the merits of the foregoing speculation on the connection between money wage levels and degree of war effort, the relation between retail price changes and wage changes is close and significant. The extent to which retail price changes modified the comparative movement in money wages will be examined next. The reader is asked to bear in mind that the quotients describing the relation of money wage changes and cost-of-living changes in comparison with prewar levels are particularly difficult to interpret in times of rapid shifts such as wars. Real wages under such circumstances, are indeed far from "real." It is, therefore, the broad changes rather than the specific numerical values of the real wage quotient with which we are here concerned.

In contrast to the direction of money wage changes, the general trend of real wages was downward. Specifically, the data assembled in Table 75 show lower real wage levels in 1918 than in 1914 for all series except miners' shift earnings in the United States and possibly in Great Britain—depending upon the cost-of-living index used as deflator.⁶³ In each country, real-rate declines are more pronounced than earnings declines, a fact which follows from the smaller rise of money rates as compared with earnings. The changes in real wage rates range from -35 percent to -3 percent, in earnings from -32 percent to +13 percent. While in money wages Germany experienced the most pronounced and the United States the smallest rises, in real wages the decline was largest in Germany and smallest in the United States.⁶⁴

The comparison of real wage movements in the three countries illustrates—in different ways than comparison of money wage movements—the close relation between wage behavior and the political and economic developments of each country. The extraordinary decline of real wages in Germany during World War I was traced, in Chapter 5, to the long-drawn-out war experience, to the proximity of military operations and, most important, to the military disasters that befell that nation. The somewhat smaller decline in British real wages would appear plausible in the light of the greater protection from war damage and the victorious outcome of the conflict. The remarkably favorable showing of the United States, with earnings levels approximately maintained or even increased, must be explained by the same factors.

POSTWAR ADJUSTMENTS

The behavior of money wages, in the five years following World War I, is dominated by the fate of the respective price levels in the three countries. The major differences are to be noted between countries with rapidly depreciating currencies and those that underwent deflation or

⁶³ Note, however, that the weekly earnings decline in the United States was negligible.

⁶⁴ This is true for each of the selected wage types if the cost-of-living indexes published by the respective governments are used as deflators. Real rates in building appear to be an exception, if A. L. Bowley's adjusted living-cost index is used to deflate the British wage data.

TABLE 75
Real Wages in Germany, Great Britain, and the United States, 1914-1923

Year	WAGE RATES OF SKILLED BUILDING WORKERS, PER HOUR				EARNINGS OF COAL MINERS PER WEEK OR SHIFT				COMPREHENSIVE INDEXES WAGES PER WEEK OR DAY					
	Germany		United States		Germany		Great Britain		Germany		Great Britain		United States	
	(May)		(May)		Weekly Earnings (Year)		Shift Earnings (Year)		Weekly Earnings (Year)		Earnings or Rates (Year)		Weekly Earnings (Year)	
	I (July)	II (July)	I (May)	II (May)	I (Year)	II (Year)	I (Year)	II (Year)	I (Year)	II (Year)	I (July)	II (July)	I (Year)	II (Year)
1914	100 ^a	100	100	100	100 ^b	100 ^b	100 ^b	100	100 ^c	100	100	100	100	100
1915	79 ^a	86	99	87	92 ^b	96 ^b	96 ^b	108	96 ^c	86	90	86	90	102
1916	71	80	96	80	88 ^b	96 ^b	96 ^b	108	87 ^c	80	87	80	87	104
1917	60	77	85	67	76 ^b	85 ^b	85 ^b	112	79 ^c	75	84	75	84	98
1918	65 ^a	89	83	68	95 ^b	108 ^b	108 ^b	113	77 ^c	85	97	85	97	99
1919	...	...	81	88	107 ^b	...	...	116	90 ^d	100	...	100	...	101
1920	55	112	89	83	112	...	...	113	74 ^e	109	...	109	...	103
1921	87	115	105	95	112	...	...	141	73 ^e	114	...	114	...	110
1922	92	104	106	74 ^b	84	...	...	151	72 ^e	108	...	108	...	113
1923	56	108	115	51 ^b	95	...	...	153	62 ^e	99	...	99	...	119

^a April.

^b July.

^c Daily earnings averages for March and September.

^d Weekly rates, third quarter.

^e Weekly rates, July.

SOURCE: The series for real wages are derived from money wages

(Table 73) and cost-of-living indexes (Table 74 and sources thereto), with this exception: Real earnings in the United States for coal miners and all manufacturing workers were taken directly from Paul H. Douglas, *Real Wages in the United States, 1890-1926*, pp. 130 and 162. For Great Britain columns (i) are deflated by the Ministry of Labour index, columns (ii) by the Bowley index.

managed to maintain their price levels. Germany suffered one of the most conspicuous sieges of hyperinflation, as a comparison of its money wage levels with those of Great Britain and the United States amply demonstrates. Some differences between price behavior in Great Britain and in the United States are worth mentioning. Although in comparison with prewar conditions both British and United States retail price levels in 1923 (measured by living costs) are about equally high (roughly 70 percent above 1913), in Great Britain the level was attained after rapid price rises up to 1920 and subsequent declines, while the amplitudes of price fluctuations in the United States were appreciably milder (see Table 74). These conditions are reflected in the differential movement of money wages in the two countries. Between 1920 and 1923, for instance, a sharp decline in British wage rates and earnings compares with an actual increase in the corresponding measures in the United States. The decline in British wages is obviously related to the deflationary price behavior during this period. However, the increase in United States wage levels occurs despite a reduction in living costs. Thus, factors other than the fate of the currency must have affected money wage movements. These factors will be reflected more clearly in the behavior of real wages.

Table 75 contains real wage information for the series introduced in this section, up to the year 1923. The prewar base is maintained, since it offers a more meaningful standard for comparison than, say, the immediate postwar years 1919 or 1920.⁶⁵ Comparisons of real wage movements relative to prewar levels are startling. In 1923, for instance, real wages in Germany were 44 to 49 percent below prewar levels, in Britain from 5 percent below to 8 percent above, and in the United States 15 percent to 53 percent above 1913—the position within the range depending upon the particular wage category in each instance. Thus, in the adjustment period after World War I the tendencies that developed during the war itself were continued. The political and economic conditions after the war obviously were consequences of the differentiated war experiences. They affected real wage levels of the three countries in much the same directions as war conditions had affected them previously. This perpetuation of fortunes and calamities was to lead, also in subsequent years, to differentiated courses in general economic trends and in wage behavior.

THE WAY OUT OF THE GREAT DEPRESSION

Wage behavior from the trough of the Great Depression to the outbreak of World War II differed substantially among the three countries (see Table 76). Money wage rates of building workers declined in all three countries from 1932 to 1933, but the decrease in German building rates

⁶⁵ The year 1914 is here used as indicating prewar levels, in order to maintain comparability with the measures describing wage behavior during World War I. The use of the year 1913 as basis of comparison would not affect any conclusions, since neither wages nor prices changed substantially between these two years.

was particularly steep, owing to especially unfavorable conditions in the building industry.⁶⁶ Fundamental differences in wage-rate behavior emerge from 1933 onward. Between that year and the outbreak of World War II, building wage rates in Germany were stabilized close to their depression levels, while in Great Britain they increased by 10 percent, and in the United States by more than 20 percent—all measured from their specific troughs. Comparison with levels at the reference turn of 1932 further increases the differences between the experience of the three countries. The reasons for these extreme differences may be traced to government interference in wage determination. In Germany the policies of the National Socialists aimed at wage stabilization, while in the United States the policies of the New Deal tended to encourage wage-rate increases both directly and indirectly by furthering collective bargaining and the growth of unionism.

The differential behavior of wage rates is reflected in differences among earning trends. Coal miners' earnings in 1939 were 18 percent above 1932 levels in Germany, 31 percent above in Great Britain, and 72 percent above in the United States. The data used would, however, appear to favor the United States experience, where earnings are measured per week, while in Germany and Great Britain they are measured per shift. Number of shifts worked per man and week are cyclically sensitive and thus, in expansions of general business activity, tend to boost the rise of average weekly earnings above that of average shift earnings. For the comprehensive weekly earnings measures, direct comparison is possible only between Germany and the United States. The comparison shows stronger gains for the United States than for Germany, whether 1932 or 1933 is used as a point of departure. However, the difference between the composite indexes (weekly earnings for both countries) is far less pronounced than that between the reports on miners' earnings (shift earnings for Germany, weekly earnings for United States). Part of the explanation must lie in the fact that German wage policy under National Socialism brought about a significant extension of working hours per week, while hours in the United States actually declined.⁶⁷ Moreover, in Germany the increasing resort to payment according to results helped to raise average weekly earnings.

The comparative behavior of money wages should be evaluated in the light of concomitant changes in price levels, and especially in living costs. Reference to Table 77 shows that for the period 1932-39 changes in living costs can provide only part of the explanation of wage behavior. Living costs declined in all three countries between 1932 and 1933, and rose thereafter—just as wage rates did. But the rises of living costs in the three

⁶⁶ The comprehensive index of German wage rates shows a decline of only 4 percent between these dates.

⁶⁷ In Germany average weekly hours in manufacturing establishments increased by 17 percent between 1932 and 1939, while in the United States they declined fractionally between the two dates (see Table 69).

TABLE 77

Cost of Living in Germany, Great Britain, and the United States,
1932-1945

Year	Germany		Great Britain		United States	
	I	II	I	II	I	II
			(1932 = 100)			
1932	100	100	100	100	100	...
1933	98	...	96	...	95	...
1934	100	...	98	...	98	...
1935	102	...	99	...	101	...
1936	103	...	102	...	102	...
1937	104	109	107	...	105	...
1938	104	109	108	...	103	...
1939	105	110	110	111	102	...
1940	108	113	122	129	103	...
1941	110	116	138	141	108	109
1942	113	119	138	151	119	121
1943	115	120	138	155	127	130
1944	117	123	139	159	129	133
1945	122 ^a	...	141	161	132	136
			(1939 = 100)			
1939	100	100	100	100	100	...
1940	103	103	110	117	101	...
1941	106	106	125	127	106	107
1942	108	108	125	136	117	118
1943	110	110	125	140	124	127
1944	112	112	126	143	126	130
1945	116 ^a	...	128	145	129	133

^a August.

SOURCE:

Germany: See Table 68, both for the official index (i) and for the index adjusted for admitted bias (ii).

Great Britain: Official index (i) as published contemporaneously by Ministry of Labour, and reprinted in *London and Cambridge Economic Service* Bul. iv, Nov. 10, 1947, p. 129. Adjusted index (ii), as computed by R. G. D. Allen, *ibid.*, Bul. i, February 1949, p. 16.

United States: Official index (i) as published by the U. S. Bureau of Labor Statistics, see *Monthly Labor Review*, May 1952, p. 615. Index (ii) adjusted for underestimate reported by the Mitchell Committee in *Prices and the Cost of Living in Wartime—An Appraisal of the Bureau of Labor Statistics Index of Cost of Living 1941-44* (Report of the technical committee of the President's Committee on the Cost of Living, Wesley C. Mitchell, chairman, Simon Kuznets, and Margaret G. Reid, June 15, 1944).

countries during the subsequent period bore scant relation to wage-rate behavior. Whereas in the United States, between 1933 and 1939 building wage rates, for instance, rose more strongly than in the other two countries, living-cost increases in this country were comparatively low. The largest increase of living costs occurred in Great Britain, the country that held an intermediate rank with regard to wage-rate rises. This situation

emphasizes the favorable wage trends in the United States, shown in the following comparison of real wages.

Real wage rates in Germany declined between 1932 and 1939, approximately maintained their levels in Great Britain, and increased in the United States. For building wage rates, the movements may be followed in detail in Table 78.⁶⁸ The same order is maintained in the movement of real earnings of coal miners and—for Germany and the United States—of comprehensive weekly earnings series. The larger increase of real earnings in the United States and the smaller increase in Germany cannot be traced to the developments of real per capita income in these countries. Reference to Table 5 shows indeed that income increased considerably faster in Germany than in the United States between 1932 and 1939. The distribution of the increase of income rather than the extent of the increase accounts for the differential development of workers' real earnings in the two countries. It is the contrast between the guns-before-butter policy of the German National Socialists and the social policies of the New Deal, which is reflected in the real earnings behavior of the two countries in the years following the Great Depression.

WORLD WAR II

Money Wages. During World War II wage levels in all three countries rose, continuing a post-1932 trend. As can be seen in Table 76 and Chart 41, Germany, during the war, experienced very mild wage increases only, reflecting the thoroughgoing system of controls and perhaps the high utilization of manpower that were in effect as early as 1939. Between 1939 and the years 1943 or 1944 (the last years for which information is available) wage rates of German building workers increased by 3 percent, shift earnings of coal miners by 6 percent, and weekly earnings in all German industry by about 10 percent. Much greater increases occurred in wage levels in Great Britain and the United States than in Germany—just as they had before the war. This is true both for wage rates and for earnings. Weekly earnings levels in the latter countries rose by about 80 to 90 percent, compared with the 10 percent increase in German weekly earnings reported above.

For the period of World War II wage comparisons of the three countries may be based on several sets of fairly similar data. Specifically, hourly wage rates of skilled building workers, average shift or weekly earnings of coal miners, and average weekly earnings for all industry (or an approximation to such coverage) will be used for the following observations. The most striking characteristic of wage rates for building workers is their relatively mild rise in all three countries, amounting to only 3 percent in

⁶⁸ The reader is reminded of the nonrepresentative character of the decline in German building wage rates, particularly during the first two years of the comparison period. Between 1932 and 1934, real building wage rates in that country declined by 20 percent whereas the comprehensive index of real wage rates declined by only 3 percent. (See also Table A-13.)

TABLE 78

Real Wages in Germany, Great Britain, and the United States, 1932-1945

Year	A. BUILDING WORKERS, COAL MINERS HOURLY WAGE RATES OF SKILLED BUILDING WORKERS						EARNINGS OF COAL MINERS PER WEEK OR SHIFT					
	Germany		Great Britain		United States		Germany, Hard Coal Per Shift		Great Britain, All Coal Per Shift		United States, Bituminous Coal Per Week	
	I	II	I	II	I	II	I	II	I	II	I	II
	1932 = 100											
1932	100	100	100	100	100	100	100	100	100	100	100	100
1933	83	...	99	...	106	...	103	...	103	...	110	...
1934	80	...	99	...	101	...	101	...	102	...	133	...
1935	78	...	99	...	99	...	101	...	102	...	140	...
1936	77	...	100	...	103	...	100	...	108	...	161	...
1937	77	69	96	...	104	...	101	91	109	...	160	...
1938	77	69	99	...	116	...	102	92	116	...	147	...
1939	78	70	97	97	119	...	112	101	119	119	169	...
1940	75	68	89	82	119	...	114	103	121	114	173	...
1941	75	68	90	86	118	117	110	99	122	120	206	204
1942	74	67	91	82	111	109	108	97	142	131	211	210
1943	72	65	96	84	106	104	108	97	156	139	236	232
1944	71	64	94	82	105	102	...	...	176	156	287	279
1945	...	...	100	87	104	101	...	...	186	164	285	275
	1939 = 100											
1939	100	100	100	100	100	100	100	100	100	100	100	100
1940	97	97	91	85	100	...	101	101	102	96	103	...
1941	96	96	92	89	99	98	98	98	103	101	122	121
1942	95	95	93	85	93	92	96	96	120	110	125	124
1943	93	93	99	87	89	87	96	96	132	117	140	137
1944	91	91	97	85	88	86	...	...	148	131	170	165
1945	...	...	103	90	87	85	...	...	157	138	169	163

Germany, to 32 percent in Great Britain and to 14 percent in the United States. All these rises are appreciably below the corresponding increases in earnings. The stronger increase of hourly rates in Great Britain than in the United States is attributable to a virtual absence of wage controls in Britain.⁶⁹ Shift earnings of coal miners show the insignificant rise characteristic of all wages in Germany in that period. Earnings of British coal miners doubled, those of United States miners somewhat more than doubled.⁷⁰ A basically similar relationship is to be observed among the

⁶⁹ See Jean Flexner, "Great Britain: Wage Trends and Policies, 1938-47," *Monthly Labor Review*, 1947, pp. 290, ff.

⁷⁰ The difference in coverage might affect these comparisons. The British data refer to shift earnings and include all branches of coal mining. The United States data are average weekly earnings and cover bituminous coal mines only (see p. 313).

Table 78, *continued*

B. COMPREHENSIVE INDEXES, WEEKLY RATES OR EARNINGS

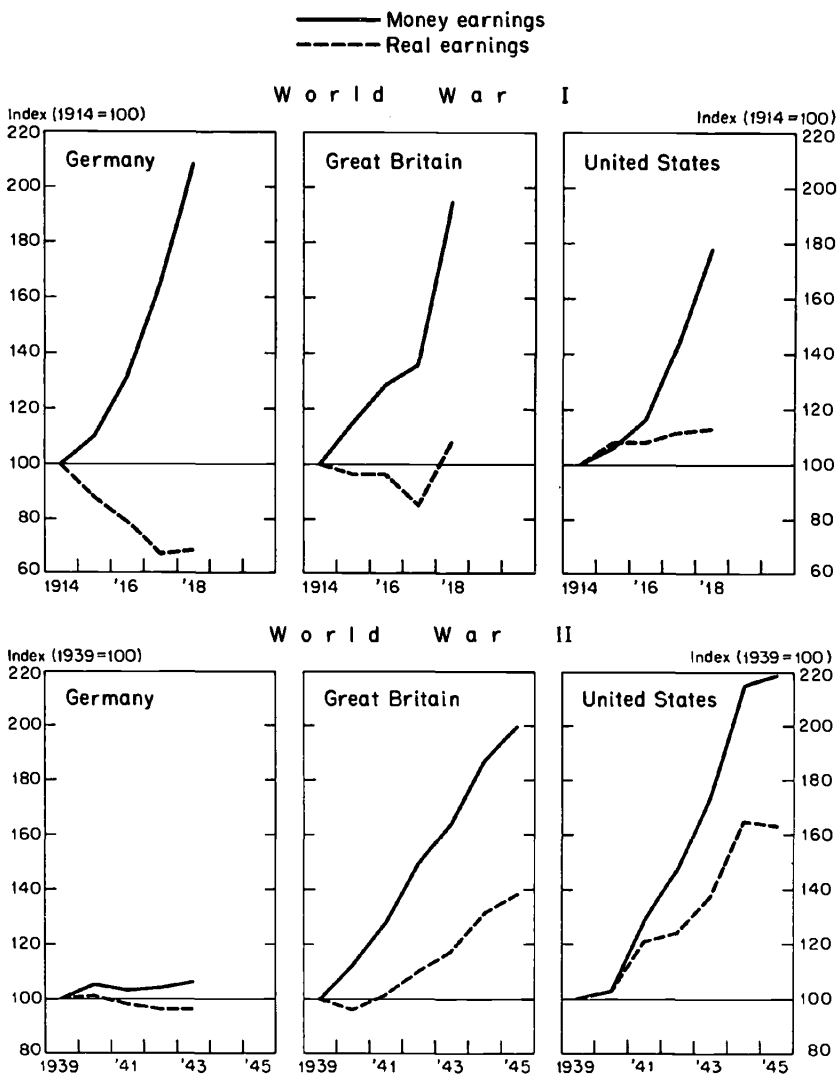
Year	WEEKLY RATES OR EARNINGS, COMPREHENSIVE WAGE INDEXES							
	Germany, Average Earnings		Great Britain				United States, Average Earnings	
			Rates		Average Earnings			
	I	II	I	II	I	II	I	II
1932 = 100								
1932	100	100	100	100			100	100
1933	105	...	100	...			104	...
1934	110	...	100	...			110	...
1935	111	...	100	...			117	...
1936	114	...	99	...			126	...
1937	117	105	98	...			134	...
1938	121	110	101	...			127	...
1939	126	113	100	100			137	...
1940	126	113	95	89			144	...
1941	131	117	97	94			161	159
1942	128	115	103	94			180	178
1943	128	114	109	96			200	199
1944	124	111	115	101			210	203
1945	...	...	121	105			198	190
1939 = 100								
1939	100	100	100	100	100 ^a	100 ^a	100	100
1940	100	100	95	89	110	104	105	...
1941	104	104	97	94	111	109	117	116
1942	102	102	103	94	124	114	131	130
1943	101	101	109	96	138	123	145	142
1944	98	98	115	101	140	124	153	148
1945	...	...	121	105	137	121	144	139

^a October 1938.

SOURCE: Money wages, see Table 76. Cost of living, see source to Table 77. The cost-of-living index numbers used for deflation were not always those given in Table 77. In cases where the wage quotation referred to a specific month, the cost-of-living index for the same month was used. For the adjusted cost-of-living indexes the monthly levels were approximated by raising the official index for the month by an adjustment factor derived from annual data. Real wages in columns (i) are derived by use of the official cost-of-living indexes as published contemporaneously. Real wages in columns (ii) take account of adjustments as presented in Table 77. Building rates for Germany refer to April, for Great Britain to September, for the United States to May. Also the comprehensive wage rates for Great Britain refer to September.

more comprehensive weekly earnings measures (available for all three countries from 1938 on, the year Great Britain started to report average weekly earnings in time series form). The increases during the war amounted

CHART 41
Coal Miners' Earnings in Two Wars, Germany, Great Britain, and the United States



Source: Table 79.

to 10 percent in Germany, 80 percent in Great Britain, and 86 percent in the United States.⁷¹

⁷¹ The German data cover the period up to 1944 only. The British and United States earnings indexes differ with regard to industrial composition and other elements of construction. For instance, the British treat two persons at half-time work as one fully employed worker, while in the United States half-time workers are fully counted in the employment indexes. It is believed, however, that for the broad comparisons here

Living Costs. It is particularly necessary, when one seeks to appraise wage behavior during wartime, to juxtapose wage developments with the concomitant changes in the retail price levels of goods typically consumed by working-class families (see Table 77). The problems created by rapidly changing consumption patterns have already been pointed out. The need to maintain the character of one's price measure over time conflicts increasingly with the need to keep the measure representative of current patterns of expenditure. How did the statistical agencies of the three nations react to these difficulties? The Germans approached the problem by gradual substitution of available goods of similar function and foods of similar caloric value—a procedure which, in view of the grave shortages, led to basic changes in the quality and composition of the goods priced. In the United States also, the composition of the index underwent changes; scarce goods were dropped, and available goods or grades of goods were linked to the established index. But these substitutions were not nearly so radical as those in the German index, and the retail price measure could thus maintain a higher degree of comparability over time without becoming obsolete. In Great Britain, at the outbreak of World War II, the government decided to postpone a long-overdue revision of its retail price measure. Thus Great Britain continued during that period to employ an index established in 1904 (and revised only slightly thereafter), geared to time-honored consumption patterns. Furthermore, subsidies to stabilize food prices were granted predominantly for the goods represented, or even overrepresented, in the British measure. The resulting "stabilization of the index" was presumably intended to limit the inflationary consequences of wage-rate changes arising out of contracts with escalator clauses. While some downward bias in the measure of living costs and some upward bias in real wages must be expected in the contemporaneous measures of all three countries, the bias is apt to be least serious in the United States index, and considerably more serious in those of Germany and Great Britain. In Germany, the bias is created mainly by lack of goods and deterioration of quality—elements whose quantitative impact on the index is difficult to measure. In Great Britain, the bias is caused mainly by the limitation of the index to a number of simple price-supported staples. In all three countries the defects of the indexes were recognized, and attempts were made to gauge the extent of bias and possibly to revise the cost-of-living measure. In Germany the inadequacy of the index had

pursued the indexes offer an adequate guide. The U.S. Bureau of Labor Statistics in 1944 computed weekly earnings changes in Great Britain and in the United States between October 1938 and July 1943, using comparable industrial groups and the same (United States) employment composition as weights. The results were in line with those shown by the unadjusted data, in that they indicated similar weekly earnings trends in both countries. The similarity was produced by a smaller increase of hours but a larger increase of hourly earnings in Great Britain as compared with the United States. See "Wartime Hours and Earnings in the United States and Great Britain," *Monthly Labor Review*, July 1944, especially pp. 153-54 and 156.

already become evident during the preparedness economy preceding the actual launching of the war.⁷² In the United States the debate raged during the war years and led to re-evaluations of living-cost changes.⁷³ In Great Britain a major revision of the index was undertaken in 1947, when attempts were made to recompute all changes in living costs on the basis of the new index structure.⁷⁴ In the present analysis of living costs and in the comparison of real wages, allowance, in the form of alternative indexes, has been made for revisions.

Real Wages. We now turn to the quotients which result when we divide consumers' goods price indexes into money wage measures—"real wages." For the years under discussion these measures can at best indicate broad tendencies. They are presented in Table 78.⁷⁵

Real wage rates per hour, as represented by time rates for skilled building workers, decreased during World War II in all three countries. The lowest relative level, 15 percent below 1939, occurred in 1942 in Great Britain (deflation by Allen index). These rates, because of their minimum character, can scarcely be regarded as describing properly the effectively paid real hourly rates in any of the three countries—not to speak of the many other important elements that shape the total wage picture in time of war. It is more instructive, therefore, to turn to measures of real earnings.

Looking at the real earnings of coal miners, we find the following order in the extent of war changes: in Germany real earnings fell, in Britain they rose, and in the United States they rose still more. Specifically, real shift earnings of German coal miners were 4 percent below 1939 levels in 1943. Real shift earnings of British coal miners rose by 57 percent between the beginning and the last year of the war, according to official figures. If deflation is carried through by the adjusted living-cost measure, as computed by Allen, the increase amounts to only 38 percent. The United States figures show a weekly earnings increase for bituminous coal miners of close to 70 percent (or 63 percent after adjustment) between the years 1939 and 1945. Coal mining was of course an important industry during the war, and earnings in that industry are not necessarily indicative of earnings behavior in general. Weekly real earnings changes for all industry are in fact somewhat more moderate, Germany registering a small decline, Great Britain an increase of 20 percent (deflated by the revised retail price measure), and the United States a rise of about 40 percent. In all three countries there was a decline of weekly real earnings in the last year reported. In Germany the decline appears in the figures

⁷² See Chapter 5, section on Wages under National Socialism.

⁷³ See Report of the President's Committee on the Cost of Living, Office of Economic Stabilization, 1945, as quoted in Table 77.

⁷⁴ See R. G. D. Allen, "Prices," *London and Cambridge Economic Service*, February 1949.

⁷⁵ The revised living-cost measures, discussed above, have also been included in the tabulations. For Germany the revisions related to increases during the period 1933-37. Thus only the level but not the movement of living costs and real wages during World War II are affected by these adjustments.

for 1944 (and must be assumed to have continued through the remainder of the war), in Great Britain and the United States it appears only in the data for 1945. Both the decline during the late war years and the differential for Germany and the other two countries reflect again the major economic, political, and military circumstances of the three powers at the end of the war.

Comparison of the Two War Periods. The availability of information on miners' earnings, in both world wars and for all three countries, permits some comparisons of wage behavior during the two wars. The course of money earnings and real earnings of miners is illustrated in Table 79 and Chart 41. In these comparisons it is important to consider that the first war lasted about four years and the second about six. For money wages, we find the greatest contrast in wage behavior in Germany for the two war periods. In that country coal miners' earnings doubled during the first war, but increased by only a very few percent during the second. The increases in miners' money earnings in England and America were

TABLE 79
Coal Miners' Earnings in Two World Wars: Germany, Great Britain, and the United States

Year	MONEY EARNINGS			REAL EARNINGS		
	Germany Hard Coal, per Shift	Great Britain, All Coal, per Shift	United States, Bit. Coal, per Week	Germany, Hard Coal, per Shift	Great Britain, All Coal, per Shift	United States, Bit. Coal, per Week
WORLD WAR I (1914 = 100)						
1914	100	100	100	100	100	100
1915	110	115	106	88	96	108
1916	131	129	116	79	96	108
1917	165	136	144	67	85	112
1918	208	195	178	68	108	113
WORLD WAR II (1939 = 100)						
1939	100	100	100	100	100	100
1940	105	112	103	101	96	103
1941	103	128	129	98	101	121
1942	104	150	147	96	110	124
1943	106	164	174	96	117	137
1944	...	187	215	...	131	165
1945	...	200	219	...	138	163

SOURCE:

For 1914-18: Germany, *Zeitschrift für das Berg-, Hütten- und Salinenwesen, passim*. Deflation by cost-of-living index as derived from data published by the Statistische Reichsamts.

Great Britain, A. L. Bowley, *Prices and Wages in the United Kingdom, 1914-20*, pp. 106 and 150. Deflation by "modified index."

United States: Douglas, *Real Wages in the United States*, p. 162.

For 1939-45: Money wages, Table 76; real wages, Table 78.

somewhat milder during the first four years of World War II than during World War I. However, in the course of the last two years of the more recent conflict, the cumulative increase in war wages clearly surpassed that experienced from 1914 to 1918. The totalitarian approach to the control of money wages obviously was more effective than the less incisive measures adopted in Great Britain and the United States.

For real wages, we observe a marked similarity in the comparative behavior of the three countries between the two wars. In both, Germany occupied the least favorable and the United States the most favorable position. The most conspicuous contrast between the two wars is the apparently more favorable real earnings record in all three countries during World War II. During World War I real earnings of German coal miners were cut drastically, and earnings of their British counterparts were moderately reduced, whereas earnings of United States miners increased by about 10 percent. These movements are to be compared with the insignificant decline of miners' real earnings in Germany (at least during the first four war years), with the substantial increase of miners' earnings in Britain, and the still more pronounced gains of miners' earnings in the United States during World War II. The findings may appear surprising, in view of the greater scope, longer duration, and greater destructiveness of the more recent conflict. Yet there are plausible explanations for the reported developments. For Germany, our information reaches only to 1943. Up to that year that country was able to avoid the worst consequences of war conditions. It was militarily successful, could base its war production not only on the efforts of Germans but also on the exploitation of foreign workers, and consistently ransacked the economies of conquered areas by sequestering their production, wearing out their equipment, and so on.⁷⁶ For the British experience the greater effectiveness of the German blockade during the first war and the more substantial aid from abroad during the second war may provide some explanation. For both Germany and Great Britain the higher productivity of labor in the second as compared with the first war forms an important condition for the more favorable showing of real earnings in World War II. As for the United States, World War II brought about such an unparalleled expansion of industrial activity that new records were set in output of war and war-related goods, and at the same time weekly real earnings could rise more than they did during the earlier war.

The experiences of the three countries during World War I had profound effects upon their respective economic conditions and upon their wage histories during the decades following the Armistice of 1918. Similarly sweeping effects were also to follow from the varying experiences of these countries during World War II. But this is a new story that will require the perspective of future students for its presentation and appraisal.

⁷⁶ See Jürgen Kuczynski and M. Witt, *The Economics of Barbarism* (London, 1942).