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CHAPTER 5

Wages during War, Inflation, and Dictatorship

THE present chapter is concerned with wage behavior in World War I, the Great Inflation, and the period of National Socialism including World War II. During these extraordinary episodes of German history, the course of wages was so much affected by drastic changes in political and economic circumstances and in governmental control measures that it can be understood only in terms of these unique determinants.

The Great Inflation may be regarded as an aftermath of World War I. And World War II follows the political, economic, and military preparations carried out in the preceding phase of National Socialism. Thus the contiguous episodes are related. It appears advisable to treat the periods 1913-18 and 1919-23 separately, and to consider 1933-45 as a unit. The periods 1913-18 and 1919-23 present sharp contrasts; the war years of the Kaiserreich differed widely from the postwar years of the Weimar Republic, when the prevalent sentiments were pacifist and anti-imperialist. The war period and the post-war years, moreover, form two distinct business cycles, reflecting the initial success and final collapse of the war adventure (1914-17-19) and the inflationary boom and bust of the reconstruction period (1919-22-23). Also in the labor market there were decisive changes, in employment conditions, composition of work force, degree of organization, and the like. Finally, there are marked differences in the quality and quantity of statistics available for the war years and for the postwar period.

For the entire period of the National Socialist regime, on the other hand, the unifying elements outweigh the differences. Both prewar and war years are characterized by the increasing importance of armament efforts, and by political and ideological continuity. The high level of military expenditures supported high levels of business activity and welded the two periods into one huge cycle, for which we have fairly continuous and consistent data on labor market conditions and on wages.

Wages in World War I

GENERAL[1]

The Labor Market. The War of 1914-18 confronted the economy of an industrially matured Germany with the first of a series of extraordinary experiences. For the labor market, the initial effect of the declaration of

[1] For this section on wages during World War I, extensive use is made of the following sources: Waldemar Zimmermann, "Die Veränderungen der Einkommens- und Lebensverhältnisse der deutchen 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,

war and of mobilization was a drastic increase in unemployment. Appendix Table A-35 shows that the unemployment ratio for trade union members jumped from about 3 percent in the immediate prewar months to 22 percent in August 1914. This sharp rise is based on union statistics, refers largely to skilled workers, and may not be altogether representative of industry at large. But even with an admitted bias of the data, there can be no question of the disorganizing effects of mass mobilization on industrial enterprises, of the dismissal of workers in nonessential sectors of the economy, and of temporary materials shortages—all of which contributed to the increase in unemployment at the beginning of the war. By the summer of 1915, employment was back to prewar levels. At this time the principal war industries were already feeling the pinch of labor scarcity. In the course of the following year shortages of workers became fairly general, and unemployment ratios declined somewhat further.[2] The great expansion of industrial efforts began after the battle of the Somme in 1916. By the end of August of that year Generals Hindenburg and Ludendorff had taken over the high command, established a special ministry of war production, and launched the all-out effort known as the Hindenburg program. The unemployment ratio of union members went down still further, remaining below 1 percent from June 1917 to the end of the war.

There are thus to be distinguished four major phases in labor-market developments during World War I: first, the mobilization crisis; second, the formation of a civilian labor force under wartime conditions; third, the Hindenburg program; and fourth, the defeat. The timing of these periods corresponds fairly well with the cyclical fluctuations of general business activity during the war, as measured by the National Bureau. In its reference chronology the initial mobilization period up to the last quarter of 1914 appears as a continuation of the contraction that began in May 1913; the period of a gradually developing war economy and the subsequent all-out effort under the Hindenburg program appear as expansion; the final period of labor and raw material shortages appears again as a contraction.[3]

In the course of the war, the total industrial work force was reduced.

Stuttgart, Deutsche Verlags-Anstalt, 1932). Peter Quante, "Lohnpolitik und Lohnentwicklung im Kriege," *Zeitschrift des preussischen statistischen Landesamts*, 1919, Vol. 59, pp. 323 ff. Friedrich Hesse, "Die deutsche Wirtschaftslage von 1914 bis 1923. Krieg, Geldblähe und Wechsellagen," *Beiträge zur Erforschung der wirtschaftlichen Wechsellagen: Aufschwung, Krise, Stockung*, No. 16 (Jena, 1938).

[2] Union membership dropped rapidly during the early years of the war; hence the representativeness of the sample of unionized workers has been seriously questioned. See W. Woytinsky, *Der Deutsche Arbeitsmarkt* (Berlin, Verlagsgesellschaft des Allgemeinen deutschen Gewerkschaftsbundes, 1930), pp. 11 and 32. The figures from 1915 on are held to overstate the degree of unemployment; nevertheless, they reflect the gradual tightening of the labor market, even if they fail to picture adequately the extent of the developing labor shortages.

[3] Arthur F. Burns and Wesley C. Mitchell, *Measuring Business Cycles* (National Bureau of Economic Research, 1946), p. 79.

In establishments subject to factory and mining inspection (those with ten or more workers), 7.4 million were employed in 1913, and about 6.7 million[4] in 1918. As important as the change in over-all levels were changes in the composition of the work force. It can be seen from the following tabulation that the ratio of female workers in the inspected establishments rose from about one-fifth to about one-third. Women made up for about half of the net loss suffered through mobilization of men. The increasing employment of women, at least in the industrial plants covered by inspection, resulted mainly from absorption of female unemployed, transfer of women from nonindustrial to industrial jobs (particularly in war plants), and shifts from smaller to larger enterprises.[5] Our tabulation shows also a rise in the proportion of young workers. However, since that classification covers only workers under 16 years of age, the reported figures can merely indicate the existence, but not the extent, of the substitution of youths for workers of draft age. Postponed retirement, re-employment of superannuated workers, and employment of civilian foreigners and prisoners of war also affected the composition of the labor force.

Employment in Establishments Subject to Factory Inspection, by Sex and Age, 1913 and 1918 (thousands)

	1913	*1918*
Men		
adult	5,410	3,876
under 16	384	421
Total	5,794	4,297
Women		
adult	1,406	2,139
under 16	187	181
Total	1,593	2,320
Men and Women		
adult	6,816	6,015
under 16	571	602
Total	7,387	6,617

SOURCE: Zimmermann, *op. cit.*, pp. 350-51.

The industrial composition of the work force also underwent major changes during the war years. If the major industries are classified roughly into war industries proper (metals, machinery, chemicals, petroleum, and oil), predominantly civilian industries (food, clothing, textiles, printing),

[4] W. Zimmermann, *op. cit.*, pp. 350-51. For 1918, the industry detail given in this source adds up to 6.8 million, and the printed total is 6.6.

[5] See Clarence D. Long, *The Labor Force in Wartime America*, Occasional Paper 14, (National Bureau of Economic Research, 1944), pp. 48-49.

and an intermediate group (wood, paper, leather,[6] stone and clay, building, mining, miscellaneous), the expansion of the war industries, the moderate decline of the intermediate group, and the strong contraction of the civilian industries appear clearly from the following tabulation:

Employment in Establishments Subject to Factory Inspection, by Broad Industrial Groups, 1913 and 1918

	Thousands of employees		*Change, 1913 to 1918*	
	1913	*1918*	*Thousands*	*Percent*
War industries	2,116	3,050	+934	+44.1
Intermediate group	2,970	2,359	−611	−20.6
Civilian industries	2,301	1,380	−921	−40.0

SOURCE: Zimmermann, *loc. cit.*

The wartime shifts in the composition of the work force can be followed on the basis of semiannual inquiries by the Statistische Reichsamt on man-days worked. Thus we learn from Table 46 that, in the 370 establish-

TABLE 46

Total Days Worked, 370 Establishments, by Sex, March and September 1914-1918

Year and Month	DAYS WORKED (thousands)			INDEX (March 1914 = 100)		
	Men	*Women*	*Total*	*Men*	*Women*	*Total*
1914 Mar.	1,997	316	2,313	100	100	100
Sept.	1,452	250	1,702	73	79	74
1915 Mar.	1,693	313	2,006	85	99	87
Sept.	1,650	383	2,033	83	121	88
1916 Mar.	1,664	468	2,132	83	148	92
Sept.	1,699	566	2,265	85	179	98
1917 Mar.	1,897	704	2,601	95	223	112
Sept.	2,024	739	2,763	101	234	119
1918 Mar.	2,070	771	2,841	104	244	123
Sept.	2,116	754	2,870	106	239	124

SOURCE: Investigation by the Statistische Reichsamt, *Reichsarbeitsblatt*, 1919, p. 619.

ments covered, total days worked dropped about a quarter in the months following the mobilization order, then slowly returned toward prewar levels, and began to exceed those levels after the launching of the Hindenburg program. By the end of the war, these establishments employed

[6] Leather is included in the intermediate group because it was not available for civilian products except at the very beginning of the war.

about as many men as before the war, but more than twice as many women.

These drastic changes in the supply and demand for labor of various sorts created an enormous turnover, placed the traditional wage structure under extreme pressure, led to serious wage inequalities, and gave rise to inflationary dangers. For the first time in modern German history the government was challenged to tamper with the hitherto autonomous labor market.

Wage Policies. The government did intervene, at first hesitantly, then moving more firmly in response to acute pressures, but without the guidance of a preconceived general policy. The haphazard character of wage regulation and other measures affecting the labor market was accentuated by the great number of governmental agencies authorized to intervene, or in fact able to do so. Let us follow the major steps taken by the authorities during various stages of the conflict.

In the earliest phase of the war the principle of contractual freedom was fully maintained. Prices as well as wages were left to "find their own levels" in response to market conditions. The general expectation was that the war would be brief and victorious, so the only acute need seemed to be maintenance of peace in the domestic labor market. Since all major unions had entered *Burgfrieden* (labor truce) arrangements and voluntarily relinquished the strike weapon, the war ministry decided to assist in wage negotiations and in the mediation of disputes. Its assistance was supposed to be technical in nature; the government was not to be concerned with the adequacy of particular wage levels. It was not long, however, before conditions developed which led the government to commit itself somewhat further. When employment fell, during the initial mobilization, some employers reduced wage rates. The unions protested but were powerless. The war ministry, fearing a general lowering of labor morale, tried to discourage such wage cutting. It announced that no military contracts would be awarded to firms paying less than union wages and, at a later phase (December 1915), it introduced into its contracts penalty clauses for wage payments below levels collectively agreed upon. The impact of the government's contract rules was, however, limited to a few industries, such as clothing, wood, building, and tobacco, since in the typical war industries collective agreements were extremely rare. The solution of the problem of maintaining union standards was brought about by circumstances quite apart from governmental efforts—the developing scarcity of workers.

As early as 1915 the ministry of war began to receive complaints from war plants on pirating of workers. The ministry recommended that employed workers should not be approached directly with offers of new jobs, that advertisements of openings should not contain promises of wage increases, and—at a later date—that *Abkehrscheine* (permissions to change jobs) should not be granted if the current employer paid rates at

collectively agreed-upon levels. Such recommendations could do little to stem the wage trends produced by the developing labor shortages. During the first two years of the war the pressures toward wage increases had been dampened by the early unemployment and by the availability of labor reserves—women, youths, and retired workers. But when casualties and military recruitment began to exhaust the labor reserve[7] and the Hindenburg program decreed all-out production efforts, the scarcity, especially in the armament industries, became acute. The result was extreme pressure in the direction of rising wage levels.

The government supplemented the Hindenburg production program by the *Vaterländische Hilfsdienstgesetz* (national labor service law), which was designed to recruit additional manpower and to bring about a more equal sharing of the burdens of war. All able-bodied men were now obliged to participate in the economic war effort if called upon.[8] The law furthermore restricted labor mobility to some extent and provided for strict screening of applications for *Abkehrscheine*—but very few of its provisions had to do with wages. In theory the *Hilfsdienstgesetz* was supposed to accomplish total economic mobilization. In practice, however, the number of persons called up under the law was relatively small, so that mobilization of manpower fell considerably short of the original goal. This must be largely attributed to the fact that in 1917 most able-bodied men were either in the armed forces or were gainfully employed. Nor did the new law effectively cut down labor turnover; eventually a formulation was adopted which permitted the granting of *Abkehrscheine* in cases where the job change promised "sufficient improvement of working conditions." Since war industries, with their cost-plus contracts, were easily in a position to offer "sufficient improvement," labor pirating went on unabated, contributing to the rise of wage levels.[9] The war ministry continued, in principle at least, to keep aloof from determining actual wage levels. As late as July 5, 1917 it ruled: "A definite position regarding actual wage levels must be avoided under all circumstances, and suggestions regarding wage increases are not in order."[10] In practice, there were many instances of intervention. The armament industrialists, "through channels," affected the decisions of mediation commissions which consisted of labor, management, and government representatives. And in a number of cases upward adjustments of wages were ordered to forestall unrest

[7] The government tried to augment the native labor supply by compulsory recruiting of foreigners (starting as early as 1915 with Belgian workers), employing prisoners of war, and granting temporary leaves to soldiers. These measures mitigated somewhat the shortages of labor, but could not abate the pressures.

[8] Women were not affected. The trade unions had agreed to the law only under the condition that it was restricted to men between 17 and 60 years of age.

[9] The inability of the war ministry to take strong measures in combating labor turnover is well illustrated in a decree of September 14, 1917, which says in part: "Industry must be relied upon, in its own interest, to resist labor turnover as much as possible." Quante, *op. cit.*, p. 332 (translation ours).

[10] *Ibid.*, p. 324 (translation ours).

in mines, shipyards, or other enterprises essential to the war program.

Clearly, the needs of the hour and the economic strength of the interests involved conditioned the actions of the government. In general the armament industries had their way, whether by appeal to the national welfare or by exerting their influence in the war ministry itself. Civilian industries had less recourse to governmental intervention either in their own interests or in the interests of their workers. What movements in wages actually developed under those conditions will be discussed in the following sections.

MONEY WAGE LEVELS

During World War I money wages roughly doubled. It was a period of increasing working hours, rising incidence of overtime payments, rapid shifts of workers toward war industries, and basic changes in the sex, age, and skill composition of the work force within each industry. To what extent are these changes reflected in wage measures? There are no comprehensive surveys of wage changes over time; in an attempt to answer this question we shall have to content ourselves with the best available sample studies. In general, wage rates increased less, of course, than earnings, and hourly earnings less than weekly, for comparable groups of workers. Furthermore, measures reflecting the shifts toward war industries tend to indicate larger increases than those that exclude the effects of these shifts by using fixed industry weights.

An unweighted average of weekly straight-time earnings of male workers in seventeen occupations in Hanover increased by about 75 percent between June 1914 and June 1918.[11] The data are an approximation to weekly rates; changes in hours and premium payments are not included. The wage increase registered by this sample is particularly low, for several reasons. First, the data refer to straight-time earnings. Second, the terminal date of the comparison is June, whereas the war continued until November. Third, the sampled factories were located in relatively small cities, which were less affected by the armament boom. Finally, and most important, only one of the five industries covered is a typical war industry. How different the situation was in the war industries is apparent from the data, presented on Table 47, which cover hourly wage rates in metals and machinery as well as in chemical plants in the district of Magdeburg. Here the unweighted average rates of skilled adult men increased to almost two and one-half times their prewar levels, although this rise is measured only to July 1918 and not to the end of the war.

For gross hourly earnings we can utilize the results of some fairly

[11] Ida Meyer, "Die Löhne in Hannover, während des Krieges und nach dem Kriege," *Vierteljahrshefte Deutscher Städte* (Berlin, 1921), Vol. 1, No. 3-4. See also *Wirtschaftsstatistisches Taschenbuch*, (Jena, 1922), p. 199. Data cover building, woodworking, printing, metals and machinery, and municipal services. For each of the five industries, two factories with more than 10 workers, in each of several cities in the district of Hanover, were sampled.

TABLE 47
Hourly Wage Rates in Magdeburg, Two Industries, January and July 1914-1918

Year and Month	MONEY RATES (pfennigs)				INDEX (July 1914 = 100)			
	Skilled Men	*Unskilled Men*	*Juveniles and Apprentices*	*Women*	*Skilled Men*	*Unskilled Men*	*Juveniles and Apprentices*	*Women*
			METALWORKING AND MACHINERY					
1914 July	52.9	42.5	12.2	23.5	100	100	100	100
1915 Jan.	55.4	45.0	13.0	25.0	105	106	107	106
July	58.5	48.0	13.6	26.5	111	113	111	113
1916 Jan.	61.5	49.5	14.6	28.5	116	116	120	121
July	65.6	52.5	15.8	31.0	124	124	130	132
1917 Jan.	77.9	61.5	18.8	36.5	147	145	154	155
July	97.3	72.0	20.8	43.5	184	169	170	185
1918 Jan.	114.6	85.5	22.4	49.0	217	201	184	209
July	130.4	94.0	25.8	54.5	247	221	211	232
			CHEMICALS					
1914 July	45.3	41.0	16.5	22.0	100	100	100	100
1915 Jan.	47.1	42.5	16.5	23.5	104	104	100	107
July	53.6	45.5	16.5	25.0	118	111	100	114
1916 Jan.	56.6	47.5	17.0	27.0	125	116	103	123
July	63.5	52.0	19.0	30.5	140	127	115	139
1917 Jan.	78.2	58.5	20.0	36.0	173	143	121	164
July	93.0	67.0	22.5	41.5	205	163	136	189
1918 Jan.	103.3	79.0	23.5	63.5	228	193	142	289
July	104.7	91.0	32.5	67.5	231	222	197	307

Computed from the *Monthly Labor Review*, July 1920, p. 126. The above averages cover 19 occupations in 26 establishments of the metalworking and machinery industry, and 16 occupations in 18 establishments of the chemical industry. They are simple averages of the rates quoted for selected occupations and thus do not reflect the effect of shifts in the numerical importance of the various occupations. The rates include cost-of-living bonuses.

TABLE 48

Average Hourly Earnings, 479 Establishments in Bavaria, by Industry, Skill, Age, and Sex; Change from June 1914 to October 1918

Industry	OCTOBER 1918 IN PERCENT OF JUNE 1914			
	Skilled Men	*Unskilled Men*	*Women*	*Youths*
Metals	227	219	150	233
Machinery	233	228	213	276
Instruments	263	218	233	229
Chemicals	214	215	238	222
4 War industries	234	220	208	240
Mining	205	218	147	218
Stone and clay	207	214	233	241
Wood	210	226	220	239
Leather	227	207	222	236
Paper	179	189	218	193
Building	191	210	254	250
6 Intermediate industries	203	211	216	230
Food	189	197	200	211
Brewing	173	192	250	218
Textiles	176	190	185	188
Clothing	196	184	229	218
Shoes	208	219	227	225
Printing	174	185	200	176
Glass	207	234	240	204
Pottery	174	169	173	175
Gas and electric	171	186	188	191
Transportation	185	177	200	268
Trade	178	208	179	191
11 Civilian industries	185	195	206	206
Unweighted averages of 21 industry relatives	199	204	209	219
Relatives of average[a]	204	220	205	235

[a] Earnings averages equal total payroll divided by total manhours.

SOURCE: Karl Kreiner, "Die Arbeits-, Lohn-, und Produktionsverhältnisse der bayrischen Industrie im Juni 1914, Oktober 1918 und Mai 1919, auf Grund der Wirtschaftserhebung des Staatskommissars für Demobilmachung," *Zeitschrift des bayrischen Statistischen Landesamts*, 1921, p. 33. For earnings in pfennigs see Appendix Table A-36.

extensive investigations. Skilled male workers in 479 companies distributed over twenty-one industries in Bavaria approximately doubled their average hourly earnings between June 1914 and October 1918, although more than half of the industries covered were essentially civilian in character (see Table 48 and Appendix Table A-36). The greater incidence of premium payments is reflected in this record of hourly earnings. Similar results emerge from a government investigation into average

TABLE 49

Average Daily Earnings, 370 Establishments, by Sex and Industry, March and September 1914-1918

Industry	1914		1915		1916		1917		1918	
	March	Sept.	March	Sept.	March	Sept.	March	Sept.	March	Sept.
	(March 1914 = 100)									
MALE WORKERS										
Metals	100	102	114	125	135	145	178	213	217	234
Machinery	100	98	120	132	139	149	173	202	243	245
Chemicals	100	96	104	118	125	134	157	194	203	232
Electrical	100	89	110	117	127	165	205	242	267	298
4 War Industries	100.0	96.2	112.0	123.0	131.5	148.2	178.2	212.8	232.5	252.2
Stone and clay	100	85	88	100	106	116	132	151	166	188
Wood	100	102	108	109	123	133	147	185	184	236
Leather and rubber	100	98	97	114	115	126	144	154	162	173
Paper	100	106	114	124	129	141	160	188	210	240
4 Materials	100.0	97.8	101.8	111.8	118.2	129.0	145.8	169.5	180.5	209.2
Food	100	102	104	105	103	108	114	132	137	150
Textiles	100	88	101	111	110	115	122	142	159	178
Clothing	100	72	94	98	106	97	130	155	180	216
Printing	100	92	104	111	116	118	142	140	148	179
4 Civilian industries	100.0	88.5	100.8	106.2	108.8	109.5	127.0	142.2	156.0	180.8
Unweighted averages of industry relatives	100.0	94.2	104.8	113.7	119.5	128.9	150.3	174.8	189.7	214.1
Relatives of averages[a]	100.0	99	114	127	135	146	176	209	226	241
FEMALE WORKERS										
Metal	100	81	108	147	169	200	228	277	287	324
Machinery	100	86	126	140	159	170	189	214	264	275
Chemicals	100	81	100	111	131	150	174	221	239	280
Electrical	100	76	109	124	142	175	191	225	239	267
4 War industries	100.0	81.0	110.8	130.5	150.2	173.8	195.5	234.2	257.2	286.5
Stone and clay	100	89	97	112	117	131	154	172	186	232
Wood	100	89	116	98	111	130	159	191	219	274
Leather and rubber	100	84	88	98	108	113	134	147	148	171
Paper	100	104	107	118	123	133	170	190	213	250
4 Materials	100.0	91.5	102.0	106.5	114.8	126.8	154.2	175.0	191.5	231.8
Food	100	90	100	110	114	138	135	177	192	202
Textiles	100	89	97	101	105	101	112	144	170	187
Clothing	100	67	95	80	100	95	125	156	175	219
Printing	100	90	89	103	110	114	126	147	167	199
4 Civilian industries	100.0	84.0	95.2	98.5	107.2	112.0	124.5	156.0	176.0	201.8
Unweighted averages of industry relatives	100.0	85.5	102.7	111.8	124.1	137.5	158.1	188.4	208.2	240.0
Relatives of averages[a]	100	85	99	112	132	154	178	214	239	264

[a] Earnings averages equal total payroll divided by total man-days.

SOURCE: Investigation by the Statistische Reichsamt, *Reichsarbeitsblatt*, 1917-1919, *passim*. For earnings in marks see Appendix Table A-37.

daily earnings in 370 establishments covering several hundred thousand workers in twelve industries.[12] The information is classified by industry and sex. The unweighted average increase in daily earnings of male workers in each of the twelve industries amounts to 114 percent between March 1914 and September 1918 (see Appendix Table A-37 and Table 49). Reflected in this measure are longer hours per day, premium payments, and shifts in the composition and occupational distribution of male workers, but not interindustry shifts.[13] Appendix Tables A-38, A-39, and A-40, which will be referred to later in another context, present further examples of wage development in the printing, metals, transportation, mining, and building industries.

It is difficult to arrive at an orderly summary of the many, often widely varying, pieces of evidence. Hourly wage rates over the nation as a whole seem to have increased by less than 100 percent in the course of the war. For weekly earnings, both Quante and Zimmermann evaluated the over-all situation about as follows: only a relatively small group of workers failed to double their earnings during the war. For a majority of workers earnings increased by 120 to 150 percent. Finally, a small group of privileged workers enjoyed greater increases, sometimes amounting to more than a tripling of their prewar earnings.

The increases in hourly earnings were, of course, more moderate than in weekly earnings. Of the twenty-one industries in Bavaria for which average data on hourly earnings are available, increases of less than 100 percent were reported as follows: for skilled men by eleven industries, for unskilled men by nine, for women by five, and for youths by six. These industry averages imply that the number of workers experiencing less than a doubling of their hourly earnings must have been sizeable.

Whatever the increases of wages from 1913 to 1918, the patterns of all wage trends were similar in some respects. During the initial mobilization, wages declined, maintained their level, or increased but slightly.[14] In the subsequent years, up to about mid-1916, increases were general. From then to the end of the war wage rises accelerated, tending to exceed the net increase of the first half of the war. (See Table 47 and Appendix Tables A-37, A-38, A-39, and A-40.)

Basically, the pattern in the change of wage levels must be explained

[12] Data compiled and published by the Statistische Reichsamt.

[13] A simple division of total man-hours into total payroll, at the beginning and at the end of the war, results in an increase of average daily earnings of 141 percent. The difference between the two increases furnishes an indication of the importance of shifts between industries.

[14] Up to 1916 union wage rates in civilian industries tended to be ceiling rates. Management held the line tenaciously, even by denouncing malcontent workers as troublemakers to the recruiting officers. The normal consequence was induction of the accused workers into the military services, which the unions called *Drohung mit dem Schützengraben* (threatening with the trenches). This practice ceased when procurement rather than labor costs became the major problem. See Zimmermann, *op. cit.*, pp. 360-61.

in terms of the major phases of labor market and general economic conditions. The early maintenance or reduction of wages is related to the mobilization crisis. The subsequent wage increase to 1916 is to be understood in terms of gradual acceleration of war production, depletion of labor force reserves, and rising price levels. The marked increases toward the end of the war must be viewed against the background of the desperate efforts in both the military and economic spheres, the acute shortages of manpower and goods, and the spiraling inflationary trends.

Up to this point wage behavior during World War I has been described in fairly broad averages, covering many occupations, establishments, and sometimes industries. We have found that even these data showed considerable variety of response to wartime conditions—but of course they do not fully express the extreme diversity of wage trends. Examples of the diversity are numerous. In private and government-owned war plants in large industrial centers, three- to fourfold increases of earnings were reported for a number of occupations or departments; these contrast with earnings increases amounting to only 70 or 80 percent, as in southeastern textile plants.[15] Other differential trends developed as between workers paid on a time basis and those working on piece rates. Piece rates were rarely lowered during the war, with the result that unskilled or semiskilled men and women doing piece-rate work often obtained appreciably higher earnings than their skilled co-workers who remained on time rates.

In terms of marks and pfennigs rather than wage trends, we find that by the end of the war some highly specialized metal workers in the Berlin industrial region earned 50 or even 60 marks per day—that is, about 10 times as much as the daily rates for common labor in Dresden nonwar plants (6 marks), 17 times as much as the corresponding rate in Elbing (3.50 marks), and 20 to 30 times as much as the daily rate for young girls working in nonwar plants outside the big industrial centers. In prewar times such differences were unheard of.

WAGE DIFFERENTIALS[16]

Skill Differentials. Skill differentials tended to narrow during World War I. The Statistische Reichsamt, in tracing the development of wages and prices through the war period and the Great Inflation, presented comparable series of wage rates for skilled and unskilled employees of the German railways. These series show a narrowing of skill differentials from 31 percent in 1913 to 6 percent in 1917 (see Appendix Table A-14). Similar findings emerge for rates of building workers in Berlin, Hamburg, and Stettin (Appendix Table A-39) and for the average hourly earnings of male workers in twenty-one Bavarian industries (first two columns of

[15] *Ibid.*, pp. 400 ff. The above observations all refer to earnings, not to wage rates. Rate increases in the textile plants mentioned were sometimes as low as 50 percent.

[16] As in previous chapters, the term differential describes the difference between wages of higher paid and wages of lower paid workers in percent of the former.

Table 50).[17] The latter data constitute good evidence for the claim that the prevailing tendency was toward a narrowing of wage differentials between skilled and other workers. Differentials, computed on the basis of weighted averages for the whole sample, changed from 27 to 21 percent. Of the twenty-one industries covered, fourteen showed a narrowing, one showed no change, and six showed a widening in skill differentials.

Reasons for a narrowing of skill differentials in wartime come readily to mind. Negotiations during the war reflected the greater need for protection of low-paid workers in the face of monetary depreciation. In this spirit, cost-of-living adjustments were given in absolute rather than percentage terms. As for earnings, it appears that the entry into the work force of quickly trained or elderly people diluted the quality of the skilled groups in particular. Furthermore, mass-production methods used in filling war orders, together with the incentive system as administered during the war, served to boost the pay of the unskilled. As noted above, earnings of unskilled men on piece work sometimes exceeded those of their skilled neighbors.

There are, on the other hand, numerous examples of widening skill differentials. Table 47 shows that wage rates of unskilled metal and chemical workers in Magdeburg increased less than those of their skilled fellow-workers. The same holds true for average shift earnings of workers in the Krupp steel works at Essen (see Appendix Table A-38) and for certain industries in Bavaria. In that state, average earnings for war industries as a group indicate an increase in skill differentials due, no doubt, to the extreme scarcity of such specialized personnel as tool- and diemakers or workers able to handle the large tools used in making heavy arms. We find then that, though unskilled workers on the whole tended to improve their wage position in relation to the broad group of skilled workers, they did not do so in relation to such skilled persons as precision workers in metals and machinery.

Age Differentials. One would surmise that the scarcity of adult workers led to decreasing age differentials. This can indeed be observed in many instances. From the report of the inquiry into average hourly earnings in Bavaria, we find that age differentials narrow from 68 percent to 64 if comparison is made with earnings of skilled adults, and from 57 percent to 54 if comparison is made with the earnings of unskilled and semiskilled (see Table 50). These relatively modest changes gain in significance when we note that in comparison with skilled adults, young workers maintained or improved their relative position in all but one of the twenty-one

[17] These data were not available to Quante and seem to have been neglected by Zimmermann. The average hourly earnings statistics for Bavaria are based on a special inquiry of the State Commissioner for Demobilization. The data cover 479 firms with about 170,000 employees, and report hourly earnings of skilled and unskilled men, women, and youths separately for 21 industries and for the months of June 1914, October 1918, and April 1919. The results of the inquiry, published in 1921, constitute the most important body of information for an evaluation of changes in skill, sex, and age differentials during World War I.

TABLE 50

Skill, Age, and Sex Differentials, Based on Average Hourly Earnings, 479 Establishments in Bavaria, June 1914 and October 1918
(differences between earnings, expressed in percent of earnings of the higher-paid workers)

Industry	SKILL DIFFERENTIALS		AGE DIFFERENTIALS				SEX DIFFERENTIALS			
			between Youths and				*between Women and*			
	Men		*Skilled Men*		*Unskilled Men*		*Skilled Men*		*Unskilled Men*	
	June 1914	*Oct. 1918*	*June 1914*	*Oct. 1918*	*June 1914*	*Oct. 1918*	*June 1914*	*Oct. 1918*	*June 1914*	*Oct. 1918*
Metals	25	28	68	67	57	54	54	69	38	58
Machinery	28	30	72	66	60	52	50	54	30	35
Instruments	29	41	73	77	62	60	57	62	40	36
Chemicals	22	21	64	63	54	52	52	47	38	32
4 War industries	26	30	69	68	58	54	53	58	36	40
Mining	23	18	61	59	50	50	27	48	6	36
Stone and Clay	18	15	62	56	54	48	53	47	43	38
Wood	25	19	65	61	54	51	52	50	36	38
Leather	33	39	65	64	48	40	57	58	36	31
Paper	31	27	73	71	61	60	58	48	39	29
Building	21	13	58	44	46	36	58	44	46	35
6 Intermediate industries	25	22	64	59	52	48	51	49	34	34
Food	23	20	60	55	47	44	49	46	33	32
Brewing	24	16	46	32	29	20	56	36	42	24
Textiles	26	20	60	57	45	46	38	35	16	19
Clothing	21	26	64	60	54	46	49	40	35	19
Shoes	26	22	68	65	57	56	40	35	19	16
Printing	34	30	76	75	63	65	61	56	41	36
Glass	42	34	62	62	34	43	67	61	43	41
Pottery	33	35	70	70	56	54	52	52	28	26
Gas and electric	23	17	59	54	47	45	39	33	21	20
Transportation	19	22	58	40	49	22	40	35	26	16
Trade	20	7	83	82	79	81	48	47	35	44
11 Civilian industries	26	23	64	59	51	47	49	43	31	27
Differentials between averages[a]	27	21	68	64	57	54	53	53	36	40
Unweighted average of differentials	26	24	65	61	53	49	50	48	33	31

[a] Earnings averages equal total payroll divided by total man-hours. SOURCE: Appendix Table A-36.

reporting industries. Other examples of narrowing margins between wages of young and adult workers are to be found in records of shift earnings in the Krupp steel works. Average shift earnings are available separately for youths of 16 to 21 and youths under 16 years of age. Both categories—whether measured against shift earnings of skilled or unskilled adults—show a decided improvement in the relative position of young workers (see Appendix Table A-38).

As with skill differentials, numerous exceptions to the general findings must be noted. In metals and machinery, and in the chemical industry in Magdeburg, for instance, age differentials widened in the course of the war.[18] Such situations were apt to occur in industries or establishments where adults commanded premium wages and where young workers were employed mainly as helpers.

Sex Differentials. Wages of women tended to advance more than those of men during the war period. For Bavaria, (see Table 50) in fifteen out of twenty-one industries hourly earnings of women increased more than those of skilled men, and in sixteen industries more than those of unskilled and semiskilled men. And of the twelve industries surveyed by the Statistische Reichsamt, only two showed widening sex differentials (370 enterprises, gross differentials without standardization for skill; see Table 51). According to Reichsamt data, the differential between women's and men's earnings declined from 53 to 47 percent. From the Bavarian data, the change appears to have been still smaller.

The Reichsamt data, which are semiannual, permit us to follow the change in sex differentials during the main periods of the war. During the first few months of the mobilization crisis, earnings for women in almost all industries covered declined more than those of men. After the autumn of 1914 the sex differential narrowed, reaching prewar proportions in some industries as early as March 1915, in others as late as September 1917. From these levels, sex differentials were typically further reduced although not without intermittent reversals; during the last year of the war reductions in sex differentials are observable in most industries. The net result of wage changes, from the beginning to the end of the war, led to a narrowing of sex differentials.

The stages in the development of wage differentials between men and women can be followed in terms of the major changes in labor-market conditions, particularly in employment for women. During the early war years female workers could be recruited relatively easily, while men became increasingly scarce. This explains the initial widening of sex differentials. With the intensification of military and industrial efforts, the female labor reserve shrank and additional incentives were necessary to recruit women and to attract them to war industries. In the later stages of the war, industrial processes were adapted to female workers, and with

[18] Zimmermann assumes in fact that the earnings of youths more often than not lagged behind those of adult workers, *ibid.*, p. 363.

TABLE 51

Sex Differentials, Based on Average Daily Earnings in 370 Establishments, March and September 1914-1918
(differences between average earnings of men and those of women, expressed in percent of the former)

Industry	1914		1915		1916		1917		1918	
	Mar.	Sept.	Mar.	Sept.	Mar.	Sept.	Mar.	Sept.	Mar.	Sept.
Metal	63	71	65	56	54	49	53	52	51	49
Machinery	57	63	55	54	51	51	53	55	54	52
Chemicals	54	61	56	57	52	49	49	48	46	45
Electrical	39	48	40	36	32	35	43	43	45	45
4 War industries	54	62	55	52	48	46	50	50	49	48
Stone and clay	64	63	61	60	61	60	58	59	60	56
Wood	53	59	49	58	58	54	49	51	44	45
Leather	44	52	50	52	48	50	48	47	49	45
Paper	45	47	49	48	48	49	42	45	45	43
4 Materials	52	55	52	54	53	53	49	50	49	47
Food	63	67	65	61	59	53	56	50	48	50
Textiles	37	36	40	43	40	44	42	36	32	34
Clothing	41	45	40	52	44	42	43	40	42	40
Printing	61	61	66	64	62	62	65	59	55	56
4 Civilian industries	53	56	56	57	54	53	54	48	46	47
Differentials between industry averages[a]	53	58	54	54	51	50	51	50	48	47

Earnings averages equal total payroll divided by total man-days.

[a] Based on unweighted combination of twelve industry averages.

SOURCE: Appendix Table A-37.

growing experience women were given more responsible and more highly paid jobs. This process brought about the narrowing of sex differentials to and beyond prewar levels.

There were, however, situations in which production proper was carried out by men, while women did only subsidiary work, as in the metals industry. There were also cases where, though the earnings of women increased substantially beyond the average for women as a group, men's earnings rose still faster, as in machinery and instrument making. Perhaps more important than the extent of the change in sex differentials—which depended on the specific employment conditions of men as well as of women—was the fact that in the course of the war women learned to fill jobs and command wages which up to that period had been reserved for males.

Industrial Differentials. The most conspicuous changes in wage differentials during World War I occurred along industrial lines. A growing

inequality among industries appears in the following measures of variation computed from averages of daily earnings in 370 establishments in twelve industries:[19] Industrial inequality rose immediately in men's

	Mar. 1914	*Sept. 1914*	*Sept. 1915*	*Sept. 1916*	*Sept. 1917*	*Sept. 1918*
Men	14.7	18.5	17.8	18.4	20.6	19.0
Women	10.5	11.9	16.0	21.0	19.1	16.2

earnings and more gradually in women's earnings. It reached its peak for men in 1917, for women in 1916. At the end of the war industrial inequality of average earnings was decidedly greater than it had been before the war.

Table 49 shows that the decisive differentiation occurred between war and civilian industries. The following tabulation gives the percentage increase of daily earnings between March 1914 and September 1918, in each of three classes of industry:

	Men	*Women*
War industries	+152%	+186%
Intermediate group	+109%	+132%
Civilian industries	+81%	+102%

Differentials between average daily earnings in the civilian and in the war industry group, in percent of war industries, show the following movements:

	Mar. 1914	*Sept. 1914*	*Sept. 1915*	*Sept. 1916*	*Sept. 1917*	*Sept. 1918*
Men	4	11	17	28	36	32
Women	3	−1	26	37	35	31

Clearly, earnings differentials between war and civilian industries increased during the war, reaching their peak in 1916 or 1917.

Up to this point, the discussion of industrial differentials has been based on the Reichsamt data for 370 establishments (Table 49). Basically similar conclusions follow also from examination of the Bavarian data on hourly earnings in twenty-one industries. The requisite classification has been provided in Table 48; it shows an average increase in earnings of skilled men in war industries of 134 percent, in civilian industries of 85 percent.

Obviously the differences in earnings paid by war and civilian industries resulted from varying demand for the products of these two industry groups. In addition, there were factors that tended to augment the differentiation. First, immediately before the outbreak of the war Germany had undergone a recession, particularly in producers' goods industries; unemployment in these industries had been considerable and earnings

[19] A simplified coefficient of variation is used, consisting of the average deviation (signs ignored) of the industry averages from their own mean, divided by that mean, multiplied by 100.

levels had fallen. Thus during the war the rise was especially marked for this group. The second factor was produced by conditions prevailing around the end of the war; during 1917 and 1918 raw material shortages created unemployment, short work, and relatively low earnings levels in a number of civilian industries. The effect was to dampen the percentage increases of earnings shown by the civilian industry group.

Toward the close of the war the industrial differentials narrowed somewhat. Low-wage earners required more protection against the effects of inflation. Cost-of-living bonuses, granted in absolute terms, served to diminish the gap between high-wage and low-wage industries. Furthermore, the decline in labor force reserves and the reduction of civilian output to a bare minimum brought conditions in the two industry groups closer together. Both became equally essential and both experienced similar difficulties in recruiting labor.

WAGES AND PRICES

How do wage-rate changes during the war compare with changes in wholesale and retail prices? Only one wholesale price index is available for the period of World War I. Presented in monthly form in Appendix Table A-41 the index shows a 50 percent increase over prewar levels by July 1915, a doubling by August 1917, and an increase of about 135 percent by the end of the war. These increases, at the stated points in time, are greater than those of hourly wage rates. However, the slight coverage and doubtful representativeness of the wholesale price index[20] make it impossible to draw significant conclusions.

Although there is no "official" cost-of-living index for Germany before February 1920, there are three sets of data on which an evaluation of changes in living costs during the war can be based. The first is a series of private estimates of food-cost or living-cost changes in certain cities. Food costs are available for a few selected dates, living costs for 1914 and for October 1918 only.[21] The second set of data consists of monthly estimates of the costs of sixteen foods which made up the basic ration of a German Marine. The food prices were ascertained regularly in about two hundred cities and were weighted according to the composition of the Marine ration.[22] Third, there are annual estimates of wartime living costs

[20] The index is unsatisfactory with regard to commodity groups included, number of commodities priced per group, and regional coverage of the price sample. The index covers thirty-eight commodities, eighteen foods and twenty raw materials.

[21] Estimates for Berlin, Saxony, Danzig, and the Rhine province may be found in Quante, *op. cit.*, for food, p. 366, and for living costs, p. 368. Estimates for rationed food prices in Prussia were made by Günther up to February 1918 and continued by Zimmermann; see Zimmermann, *op. cit.*, p. 430.

[22] This index was published monthly in *Monatliche Übersichten über Lebensmittelpreise* by the private organization (Wirtschaftstatistisches Bureau, Berlin) of Richard Calwer and during the war served as the major guide for estimates of retail food costs. Frequently the index was misleadingly referred to as a cost-of-living index. The monthly data of Calwer's index are reproduced in Appendix Table A-41.

prepared by the Statistische Reichsamt during the mid-1920's.[23] The increases in living costs during the course of the war shown by the three sets of data vary considerably: 229 percent (Calwer), 257 percent (Quante), and 313 percent (Statistisches Reichsamt).[24]

The annual Reichsamt estimates constitute the best available measure of the rise in living costs during World War I. For comparison of living-cost estimates with monthly wage data, it was necessary to reduce the former series to a monthly basis. Accordingly, Calwer's monthly index of food costs, 1913 to January 1920, was adjusted to correspond with the annual level of the Reichsamt estimates of total living costs and to connect with the official cost-of-living index, which is available from February 1920 on. The estimate aimed at reflecting, as far as possible, the intra-annual movements of the Calwer data while preserving the annual living-cost levels. The basic data and the resulting monthly estimates of total living costs are set forth in Appendix Table A-41. The most conspicuous deviations between the Calwer index of food costs and the monthly index of total living costs derived in the present study are to be noted for 1917 and 1918. At the beginning of 1917 both Calwer's index and the new estimates are approximately twice as high as before the war, but for October 1918 the former index stands at 213, the latter at 273. Both the increase registered by the Calwer index and the greater rise shown by the new monthly index are larger than the increase in wage levels for the majority of all workers.

REAL WAGES

The observed relation between changes in wages and in living costs meant a sharp decline of real wages. Changes in average real weekly wages in four occupations as reported by the Statistische Reichsamt are shown in Table 52. For the three series describing wages of skilled male workers, the real wage decline between 1913 and 1918 ranges from 17 to 46 percent. The net decline in the real wage rates of unskilled railway workers during the same period is reported as only 0.2 percent, although the real wage level in 1917 is given as about 26 percent below prewar levels. Increases between 1917 and 1918 appear in all four series, but they are probably fictitious. The economic circumstances of the last war year could scarcely have permitted significant improvements in real wages.

The gradual deterioration of real earnings can be studied on the basis of the Reichsamt's investigation of 370 enterprises. Using our monthly

[23] These estimates entered the real wage computations which the Reichsamt published in connection with its attempt to describe the behavior of major economic activities during the period of monetary depreciation, 1913-23. See "Zahlen zur Geldentwertung in Deutschland, 1914 bis 23," *Wirtschaft und Statistik*, 1925, p. 40. The annual cost-of-living index presented here (see Appendix Table A-41) was derived by dividing real wages into money wages.

[24] The Calwer and Reichsamt rises refer to the full years 1913 and 1918. The Quante estimate refers to the rise between 1914 and the month of October 1918.

TABLE 52

Average Weekly Real Wage Rates, Selected Occupations, 1913-1923
(1913 = 100)

Year	Railway Workers		Printers, Compositors	Miners[a], Hewers and Haulers
	Skilled	Unskilled		
1913	100.0	100.0	100.0	100.0
1914	97.2	97.2	97.2	93.3
1915	79.7	80.8	77.3	81.3
1916	69.2	73.8	60.6	74.4
1917	63.9	74.2	49.4	62.7
1918	83.3	99.8	54.1	63.7
1919	92.2	119.8	72.3	82.4
1920	66.7	89.1	60.8	77.6
1921	74.5	100.0	68.9	89.1
1922	64.2	87.6	60.9	69.9
1923	50.9	69.1	54.2	70.1

[a] Miners' wages are earnings until November 1922, and rates from December 1922 on. Data refer to Dortmund.

SOURCE: *Wirtschaft und Statistik*, 1925, "Zahlen zur Geldentwertung in Deutschland, 1914 bis 1923," pp. 40-41.

estimates of living costs as deflators, we obtain the averages of the relatives of real earnings, in Table 53. Broadly, these changes are: a 10 to 20 percent decrease in 1914; a tendency toward stabilization up to the spring of 1916; a decline to spring 1917, lowering real earnings to levels 25 to 35 percent below prewar; and stabilization at these low levels thereafter.[25] This behavior conforms roughly to the changing economic situation. The decline from March to September 1914 coincides with the mobilization crisis, the drop after March 1916 and the subsequent stabilization at low levels with the introduction and implementation of the Hindenburg program.

In view of the differentiated wage trends as between men and women, war and civilian industries, and other groupings, it is necessary to follow the varying courses of real earnings (see Table 53). The most outstanding deviation from the all-industry trend is found for real earnings of women in war industries. These increased between September 1914 and March 1916, at a time when real wages in all other groups decreased. Moreover, by the end of the war this group showed the highest real earnings in relation to prewar levels (88 percent). At the other extreme are real earnings of men in civilian industries, which were as low as 55 percent of prewar levels. For a more complete picture of the course of real wages during the war, one should consider their development industry by industry. The relative standing of daily real earnings in each of twelve industries

[25] Other quarterly and semiannual data, such as shift earnings of workers employed by Krupp (Essen), for instance, show very similar patterns.

TABLE 53

Average Daily Real Earnings, 370 Establishments, March and September 1914-1918
(March 1914 = 100)

	1914		*1915*		*1916*		*1917*		*1918*	
	Mar.	*Sept.*	*Mar.*	*Sept.*	*Mar.*	*Sept.*	*Mar.*	*Sept.*	*Mar.*	*Sept.*
					MALE WORKERS					
War industries	100	90.8	91.8	89.8	88.9	78.4	76.2	78.8	77.8	77.4
Intermediate industries	100	92.3	83.4	81.6	79.9	68.3	62.3	62.8	60.4	64.2
Civilian industries	100	83.5	82.6	77.5	73.5	57.9	54.3	52.7	52.2	55.5
Unweighted averages of industry relatives	100	88.9	85.9	83.0	80.8	68.2	64.3	64.8	63.4	65.7
Relatives of averages[a]	100	93.4	93.4	92.7	91.2	77.2	75.2	77.4	75.6	73.9
					FEMALE WORKERS					
War industries	100	76.4	90.8	95.3	101.5	92.0	83.5	86.7	86.0	87.9
Intermediate industries	100	86.3	83.6	77.7	77.6	67.1	65.9	64.8	64.0	71.1
Civilian industries	100	79.2	78.0	71.9	72.4	59.3	53.2	57.8	58.9	61.9
Unweighted average of industry relatives	100	80.6	84.1	81.6	83.8	72.8	67.5	69.8	69.6	73.6
Relatives of averages[a]	100	80.2	81.1	81.8	89.2	81.5	76.1	79.3	79.9	81.0

[a] Earnings averages equal total payroll divided by total man-days.

SOURCE: Table 49 and Appendix Table A-41.

at the close of the war, as compared with prewar levels, is given in Table 54. The highest relative standing of real earnings was registered by women in the metal industries; in September 1918 their earnings were approximately equal to prewar levels. The lowest relative standing is found for male workers in the food industry, whose real earnings in September 1918 came to only 46 percent of those prevailing in March 1914. The majority of the reported industry groups show materially reduced real earnings levels in 1918 as compared with 1914.

Quante, and later Zimmermann, summarize real wage developments during the war. They state that for all workers real earnings declined to

TABLE 54

Daily Real Earnings in 370 Establishments; Change from March 1914 to September 1918

Industry	*September 1918 in Percent of March 1914*	
	Men	*Women*
Metal	71.8	99.4
Machinery	75.2	84.4
Chemicals	71.2	85.9
Electrical	91.4	81.9
4 War industries	77.4	87.9
Stones and allied	57.7	71.2
Wood	72.4	84.0
Leather and rubber	53.1	52.5
Paper	73.6	76.7
4 Materials	64.2	71.1
Food	46.0	62.0
Textiles	54.6	57.4
Clothing	66.3	67.2
Printing	54.9	61.0
4 Civilian industries	55.5	61.9
Unweighted averages of industry relatives	65.7	73.6
Relatives of average[a]	73.9	81.0

[a] Earnings averages equal total payroll divided by total man days.
SOURCE: Appendix Tables A-37 and A-41.

mid-1917; for most workers the decline continued throughout the remaining war years; for a small proportion the war boom brought a recovery to prewar levels; for a very few it brought advantages over the prewar situation. The summary evaluation in this nonquantitative form remains substantially valid even if alternative living cost estimates are used.

Reduced food, clothing, and other rations, and decreasing per capita consumption of consumers' goods confirm the basic finding that planes of living deteriorated radically. During the last year of World War I consumers' durables were extremely scarce and of low quality. Homes were ransacked for pieces of copper or brass, stove doors, kitchen utensils, or other hardware that could be used for armaments. Coal was rationed rigidly, in quantities insufficient for human comfort. Clothing was scarce, rationed, and of very inferior quality. Meat, toward the end of the war, was rationed at 250 grams per week per person in large cities, and 100 to 150 grams in small towns. Butter and eggs, if available at all, could be had only in very small quantities. The lack of fats and proteins began to

undermine the population's health. Even potatoes and flour were scarce. Turnips became a mainstay of the diet. The inadequacy of the war diet is illustrated in the following tabulation, in which food rations valid during two selected periods are shown as percentages of prewar consumption:

	July 1916 through June 1917	*July 1918 through December 1918*
Meats	31	12
Fish	51	5
Eggs	18	13
Lard	14	7
Butter	22	28
Cheese	2	15
Vegetables	14	7
Sugar	48	82
Potatoes	71	94
Vegetable fats	39	17
Cereals	52	48

SOURCE: Zimmermann, *op. cit.*, p. 457.

Goods in excess of rations could sometimes be acquired by barter, by payment of exorbitant prices, or through personal relations. Many families received food packages sent by soldier husbands or sons from Belgium. Others got food from friends or relatives in the country. The well to do could buy in the "black market." To live on the official rations meant serious malnutrition and physical deterioration.

The war, moreover, created enormous disparities among the wage incomes of differently situated families. At one extreme were large-city families of highly skilled deferred workers with grown-up children. Such families could consist entirely of wage earners in well-paying industries. At the other extreme were families of soldiers and sailors with young children, whose mothers were at best available for part-time work. The government attempted to dampen the flagrant inequalities in family earnings by adjusting basic wage rates in accordance with marital status and number of dependent children.[26] But the supplementary payments had slight effect upon the strong basic disparities.

While some privileged groups could avoid impoverishment and actual malnutrition, a large part of the working population could not. Their situation is vividly described in a petition submitted in August 1918 to the Ministry of the Interior by the roofers' union. The petition, said to "echo over 100 letters," states in part: "It cannot go on this way. Our colleagues are being physically ruined . . .. They don't get enough money to pay black-market prices, and rationed goods don't fill their stomachs. They have nothing to wear. Each week it gets worse. Several articles have risen in price twentyfold while wage rates have gone up by only one-half. We can't keep up with it, we are finished . . .. Our closets and cupboards

[26] The family bonuses and bonuses for children constituted elements of the *Soziallohn* (social wage) principle which remained part of the German wage system after the war.

are bare, our savings are in the safes of the usurers. Our children starve . . .. It is simply beyond our strength."[27]

Wages in the Great Inflation

This section deals with the behavior of wages during the postwar period from the Armistice of November 1918 to the stabilization of the currency at the end of 1923. Previous chapters have dealt with wage behavior during the inflation as part of the description of long-term tendencies. Here we shall relate it in detail to the economic conditions of the time and observe the strange problems that arose in the race between wages and prices.[28]

MONEY WAGE LEVELS

Changes in wage levels during the inflation can be depicted by comprehensive indexes of hourly and weekly wage rates for skilled and unskilled workers in eight industries, as shown in Appendix Table A-42.[29] Taking prewar levels as the basis of comparison,[30] one might say that wage rates in marks were roughly 3 times their 1913 levels by the end of 1918; 5 times by the end of 1919; 10 times by the end of 1920; 20 times by the end of 1921. From that point on one must proceed at shorter intervals to convey the course of wage increases as measured in currency. By the middle of 1922 wage rates in marks were 50 times as high as before the war, and by the end of that year, 500 times. By the middle of 1923, they stood at ten thousand times their prewar levels and by the end of that year at a trillion times the levels of 1913.

Wage developments during the Great Inflation showed a relatively high degree of homogeneity, as can be seen in Appendix Tables A-43 and A-44, which present some of the major series of weekly money wages, available by months. That all wage rates rose phenomenally is not surprising, since the decisive determinant was the currency depreciation. If we compare

[27] Quoted in *Schriften der Gesellschaft für Soziale Reform*, Vol. 65 (Jena, 1919), p. 6 (translation ours).

[28] Wage behavior during the inflation is described by Constantino Bresciani-Turroni in "The Movement of Wages in Germany during the Depreciation of the Mark and after Stabilization," *Journal of the Royal Statistical Society*, 1929, pp. 374-427. The same author discussed wages during 1919-23 in *The Economics of Inflation* (London, 1937), pp. 300-313 and 224-427. See also Robert Kuczynski's "Postwar Labor Conditions in Germany," U.S. Bureau of Labor Statistics, *Bulletin* No. 380, 1925.

[29] The weekly data were compiled by the Statistische Reichsamt for selected months of 1922 and for all months of 1923. The International Labour Office estimated the movement of hourly wage levels by making the necessary adjustments for changes in working hours. In order to obtain, in the present study, a tolerably comprehensive index for the whole period 1919-23, the eight-industry index was interpolated and extrapolated on the basis of other available information. The procedures used are described in the note to Appendix Table A-42.

[30] Here as well as in other parts of this section, wage levels during the inflation are compared with prewar levels. This is preferable since a later base, located, for instance, at the time of the Armistice, would be statistically less certain and economically less significant.

trends in the dollar exchange rate, in domestic prices, and in wages (Appendix Tables A-41 and A-42, and Chart 28), we find that, although these measures do not exhibit identical inflationary increases, their major movements are in close correspondence—the strong rise of the series up to the spring or summer of 1920, the tendency toward flattening out or even decline until mid-1921, the accelerated increases during the subsequent year, and the hyperinflationary upsurge starting with the summer of 1922.

The inflationary advance of wages after World War I continued certain developments which had their origin in the war itself, and in its economic consequences. The extreme scarcity of goods and labor in the face of high money incomes and extensive government spending had, by the end of the war, driven prices and wages up to about two and one-half times their prewar levels. Germany's defeat, and the demobilization which swelled the ranks of the unemployed, relieved pressures on the labor market but did not alleviate the scarcity of coal, iron, machinery, and consumers' goods. Prices and wages continued to advance. From the Armistice to the end of 1919 wages about doubled and prices rose by 240 percent. The relation between currency depreciation, money wage levels, and employment from the beginning of 1920 to about mid-1922 can be observed in Chart 28. Note the inverse short-term correspondence between the price and unemployment series.[31] The explanation must be found in the stimulus which price rises and currency depreciation gave to production and trade. Buying equipment and materials at low prices and selling finished products at high prices created substantial paper profits. Rising prices served also to encourage speculative buying and padding of inventories. Unfavorable exchange rates[32] were a boon to all export industries, although they acted as a brake on imports. With all these forces in action the sudden jump of the dollar exchange rate from 15 to 24 marks at the beginning of 1920 led to a noticeable decrease of unemployment, and the subsequent fall of the dollar to 9 marks in June 1920 led to an immediate increase in unemployment—particularly in the export industries. With the further depreciation of the currency, up to about mid-1922,[33] unemployment went down again.

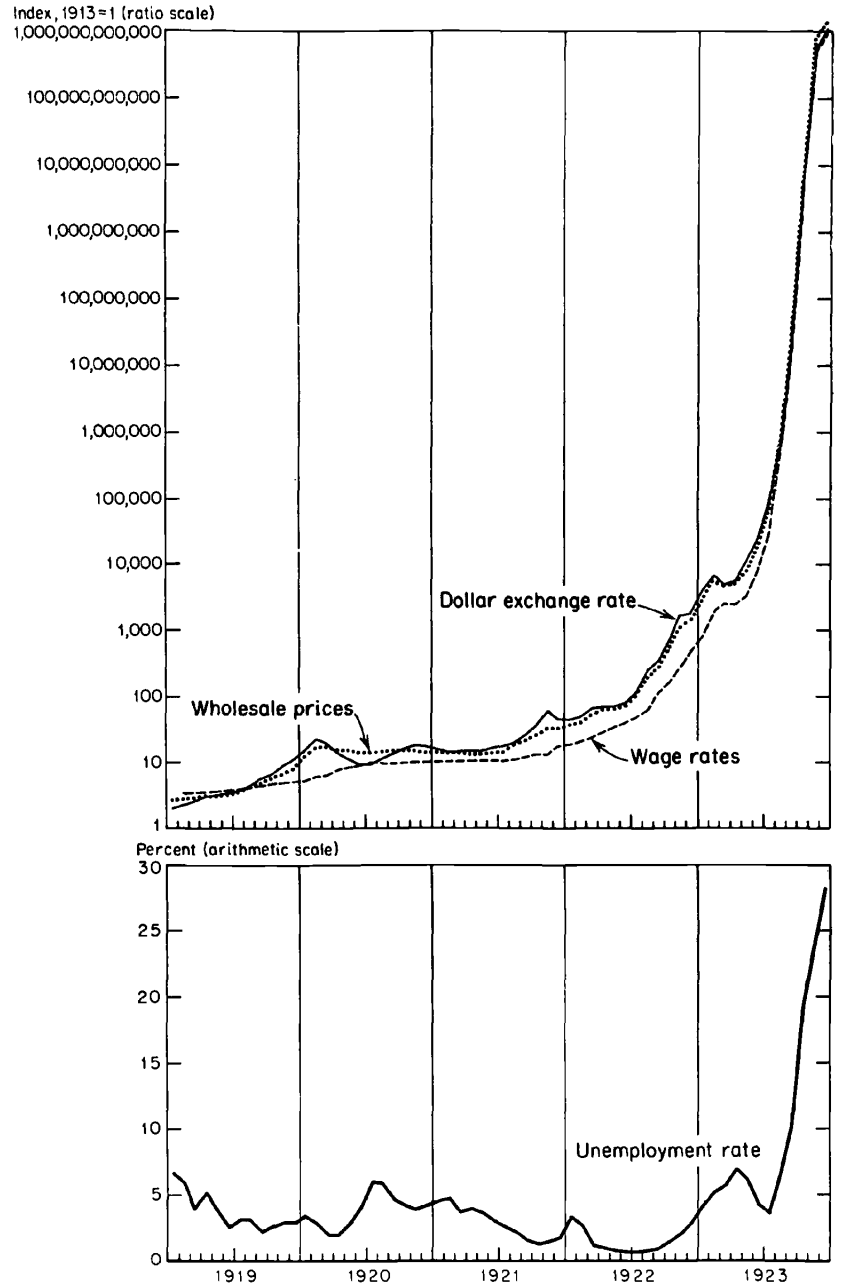
Until about that date the currency depreciation was accompanied by increases in production and employment. How did wages fare during this period? Money wage rates moved upward under the joint pressure of a depreciating currency and a tightening labor market, but they did not reflect the minor fluctuations in either. They went up by relatively small steps during 1919 and 1920, despite the hectic changes in the external and internal value of the currency. The leveling-off during the latter part of

[31] Here measured by the unemployment rate of union members.

[32] By "unfavorable" exchange rate is meant the relatively low external value of the German currency.

[33] The reference peak was in May 1922.

CHART 28
Wages, Prices, and Unemployment, 1919–1923



Source: Appendix Tables A-35, A-41, and A-42.

1920 and the first half of 1921 reflected the temporary success of the German government's stabilization efforts and took place in the face of increasing employment. During the last months of 1921 and the first half of 1922, the changes in the value of the currency and the tightening of the labor market exerted pressure in the same direction and led to a quadrupling of wages in less than ten months.

In mid-1922 the dams burst. The currency began to depreciate at an ever faster rate, inaugurating the hyperinflation. After an abortive attempt at stabilization in the spring of 1923, the period of astronomic rises set in. Hyperinflation, in the second half of 1922 and the year 1923, was accompanied by very different changes in production and employment than had occurred in the preceding milder phase of currency depreciation. Reference to Appendix Table A-35 shows that unemployment climbed fast, reaching 6 percent of union members in mid-1923 and 19 percent by October of that year. The rapid and unpredictable changes in the value of money led to a *Flucht in die Sachwerte*, a grasping for any article that was not affected by the depreciation. To keep one's assets protected was more important than paper profits and losses. Rational business calculations became increasingly difficult. Wages moved in the wake of the general currency depreciation. As previously noted, by December 1923 wages expressed in nonstabilized currency were close to one trillion times their pre-1913 levels.

Changes in wage levels during the inflation have been described without distinction between hourly and weekly wages or between wage rates and earnings. For the period 1919-23 proper, there is some justification for such neglect. During the inflation, the eight-hour day and the forty-eight-hour week prevailed as "normal" work periods, and they were rarely exceeded in practice. Hence hourly and weekly wage rates ordinarily moved together, and earnings in general reflected very little overtime or other premium payments. It is true that, particularly during the last eighteen months of hyperinflation, part-time work and shared jobs became increasingly frequent and affected average weekly earnings of many groups of workers. The available information does not, however, permit us to evaluate the course of average weekly earnings with any degree of certainty. The distinction between hourly and weekly wage rates becomes of great importance, however, if wage levels during the inflation are compared with those prevailing before the outbreak of World War I, because of the significant decreases in the length of the normal workweek. The consequent difference in the relative level of hourly and weekly rates is apparent in all the data contained in Appendix Table A-42. While weekly wage rates tended on the average to increase somewhat less than a trillion times between 1913 and the end of 1923, the increase of hourly wages exceeded the trillion mark. The actual increase varied among different skill and sex groups. These differences are the subject matter of the following section.

TABLE 55

Skill Differentials, Based on Weekly Wage Rates, 1913, and April 1922 to December 1923
(differences between rates of skilled and rates of unskilled workers, expressed in percent of the former)

Year and Month	Coal Mining	Building	Wood	Metals	Textiles		Chemicals	Printing	Railways	Average
					Men	Women				
1913	34.0	21.8	27.5	36.1	18.3	17.2	18.9	27.3	31.4	30.6
1922 Apr.	15.7	4.2	6.1	5.4	15.0	16.5	5.5	16.9	6.1	9.8
July	13.3	4.8	10.2	6.0	10.4	14.7	6.5	14.9	6.6	8.9
Oct.	17.6	4.6	10.5	7.0	11.6	15.4	7.3	15.0	5.5	10.5
Nov.	...	4.7	...	6.9	12.4	16.5	6.6	...	5.5	10.8
Dec.	...	5.1	...	7.2	11.3	12.7	6.8	...	5.0	9.5
1923 Jan.	13.7	4.9	10.8	7.4	9.8	13.3	6.9	13.4	5.2	9.4
Feb.	14.8	4.9	9.4	7.2	10.4	14.4	6.9	11.6	5.2	10.1
Mar.	15.0	5.0	10.7	7.2	11.0	15.4	6.9	11.0	5.2	10.1
Apr.	15.0	5.1	10.7	7.4	11.0	15.6	6.9	11.0	5.2	10.1
May	15.3	5.2	10.3	7.8	10.5	15.3	7.0	10.8	5.3	10.3
June	15.4	5.8	11.0	8.3	10.6	16.7	7.9	10.6	4.8	10.6
July	15.5	5.8	10.7	8.2	10.5	15.0	8.9	10.1	5.0	10.3
Aug.	15.4	5.9	10.4	8.2	9.7	17.2	7.8	10.0	5.1	10.7
Sept.	16.1	5.9	10.0	8.4	11.0	15.1	8.5	10.2	5.5	11.2
Oct.	17.2	7.3	12.6	13.7	10.4	18.4	10.2	9.9	5.6	13.5
Nov.	16.6	10.0	11.4	13.4	11.3	20.6	9.9	14.7	12.4	14.0
Dec.	12.7	10.2	13.2	15.0	12.8	20.5	8.4	15.0	22.0	15.8

SOURCE: Computed from data given in *Wirtschaft und Statistik*, 1925, "Zahlen zur Geldentwertung in Deutschland, 1914 bis 1923," pp. 40-42; and International Labour Office, *Studies and Reports*, Series D, No. 15, pp. 148-49; see also Appendix Table A-44.

WAGE DIFFERENTIALS

The narrowing of skill and sex differentials during the inflation has been described briefly in Chapter 3. It remains now to demonstrate in some detail the extent of these and other changes in the wage structure.

From the data given in Tables 18, 55, and Appendix Table A-39, it is apparent that a narrowing of skill differentials occurred in all industries and under all types of local conditions. What we must note is the virtual disappearance of the differentials during certain months. At times the skill gap was close to 5 percent in whole industries such as building, chemicals, and railroad transportation; and under special circumstances the gap was virtually closed. Thus, for the cities of Berlin, Hamburg, and Stettin, the hourly rates of unskilled building workers are reported to have differed by 3 percent or even less from those of their skilled colleagues by the end of 1920. Toward the close of 1923 skill differentials widened somewhat. After the stabilization of the currency the differentials between wages of skilled and unskilled grew in all industries, though they never again reached the magnitudes typical of the prewar period.

For any systematic comparison of sex differentials with prewar levels we must rely on textile data. Table 20 permits us to observe the change of sex differentials from 1913 to April 1922; and from there on to December 1923. For both skilled and unskilled workers the differentials narrowed over the period as a whole; the smallest differential of rates occurred before the apogee of the inflation. Whereas before the war women employed in textiles were paid about two-thirds of men's rates, during some periods of the inflation they received as much as three-quarters of men's pay for the same work, and occasionally a little more. After the stabilization this group of women obtained roughly 70 percent of men's rates.[34]

As for industrial differentials, there is, unfortunately, little systematic information for the period of inflation. What data there are apply only to eight industries in 1913 and to selected dates from April 1922 on. Despite the basic uniformity in the behavior of wages during the inflation, dispersion measures show a greater variation of the industry averages around their grand mean during the height of the inflation than either before the war or after stabilization. For male workers, at selected dates, we have the following figures:

Average Percentage Deviation from Unweighted Mean[a], Eight Industries

	1913	*July 1922*	*July 1923*	*January 1924*
Skilled	8.2	7.0	11.2	8.7
Unskilled	7.6	8.1	10.9	9.5

[a] A simplified coefficient of variation is used, consisting of the average deviation (signs ignored) of the industry averages from their own mean, divided by the mean, multiplied by 100.

[34] Obviously one cannot draw broad conclusions from figures for the textile industry alone. The investigation of war wages in 370 establishments showed that daily earnings of female textile workers, relative to those of male workers, were higher, throughout the war, than in most of the other industries (See Table 51).

WAGES AND PRICES

Wages and Wholesale Prices. In this section the behavior of wage rates will be compared with that of prices. Wages, as an hourly measure—unaffected by changes in the length of the workweek—are used. As for prices, the dollar exchange rate was used earlier in this chapter, as an indicator of the external depreciation of the German currency. However, the loss of the currency's internal purchasing power can be measured more satisfactorily by German indexes of wholesale and retail prices.

TABLE 56

Changes in Wages and Prices, Selected Periods, 1913–1923
(percent)

Period[a]		HOURLY RATES		WEEKLY RATES		PRICES	
from	*to*	*Skilled*	*Unskilled*	*Skilled*	*Unskilled*	*Wholesale*	*Living Costs*
1913	1918 IV	+180	...	+150	...	+138	+238
1918 IV	1919 I	+18	...	+16	...	+13	+5
1919 I	1920 July	+185	...	+183	...	+409	+198
1920 July	1921 July	+12	...	+12	...	+4	+18
1921 July	1922 July	+367	...	+359	...	+604	+331
1922 July	1923 July	+59,480	+64,007	+65,808	+64,913	+74,248	+69,753
1923 July	1923 Dec.[b]	+3,231	2,822	2,958	+2,777	+1,687	3,312
1919 I	1922 July	+1,385	...	+1,355	...	+3,639	+1,414
1922 July	1923 Dec.[b]	+19,251	+18,088	+19,495	+18,054	+12,542	+23,135
1913	1919 I	+230	...	+190	...	+169	+256
1913	1920 July	+840	...	+720	...	+1,267	+960
1913	1921 July	+950	...	+820	...	+1,328	+1,150
1913	1922 July	+4,800	+6,600	+4,120	+5,340	+9,959	+5,290
1913	1923 July[c]	+2,919	+4,295	+2,781	+3,595	+7,479	+3,765
1913	1923 Dec.[d]	+94.3	+121.2	+82.3	+99.8	+126.2	+124.7

[a] Roman numerals denote quarter of year.
[b] In millions.
[c] In thousands.
[d] In trillions.
SOURCE: Appendix Tables A-41 and A-42.

The reader is reminded that the only wholesale price index available for the inflation period is the inadequate 48-product index that had to be used for World War I. It consists entirely of prices of raw materials and foods and can scarcely be regarded as more than the roughest indicator of general wholesale price trends. Wage rates and wholesale prices are listed in Appendix Tables A-41 and A-42, and comparisons of their changes during specified periods are shown in Table 56. The data suggest that between 1913 and 1919, the percentage increases of wholesale prices did not differ greatly from increases in hourly wage rates of skilled workers.

Between 1919 and mid-1922 the index of wholesale prices rose considerably faster than that of wage rates, but from mid-1922 to the close of 1923 the situation was reversed again, with wholesale prices rising 12 billion and wage rates 19 billion times.

It is possible to conclude from the above comparisons that during the earlier period of the inflation wage costs increased less than material costs and possibly less than product prices, while the reverse obtained during the hyperinflation. Bresciani-Turroni investigated the relation of wage changes, price changes, and business conditions by comparing movements in wage-price ratios with those in unemployment rates of union members, and found a high degree of correlation. While stressing that he did not attribute rising unemployment during the latter part of the inflation to disproportionately high wage levels, he did hold that changes in the wage-price ratios were closely related to fluctuations in unemployment and in general business activity. The main exhibit of Bresciani-Turroni's presentation is reproduced in Chart 29. It seems to the present writer that speculation about the functional relationship between the selected measures must not neglect the concrete circumstances of the particular inflationary phase. During the period from 1920 to mid-1922 the fall of the wage-price ratio may have helped business,[35] while during the subsequent period of hyperinflation the rise of that ratio may have added only in a small way to unemployment. For that period unemployment should probably be related to more general conditions, such as the disorganization of economic and political life in the wake of currency depreciation, the occupation of the Ruhr, and the effects of fluctuations of prices and foreign exchange rates on German industry.

Wages and Living Costs. For no period in German wage history have comparisons of wages and retail prices been more urgently needed than for the time of the Great Inflation, when changes in retail prices during one short day could wipe out a large part of a worker's earnings. For this reason defects in the cost-of-living index are of crucial importance, for they can cause an altogether biased impression of the relation between wages and retail prices. Let us consider, then, the quality of the index available for the years 1919 to 1923.

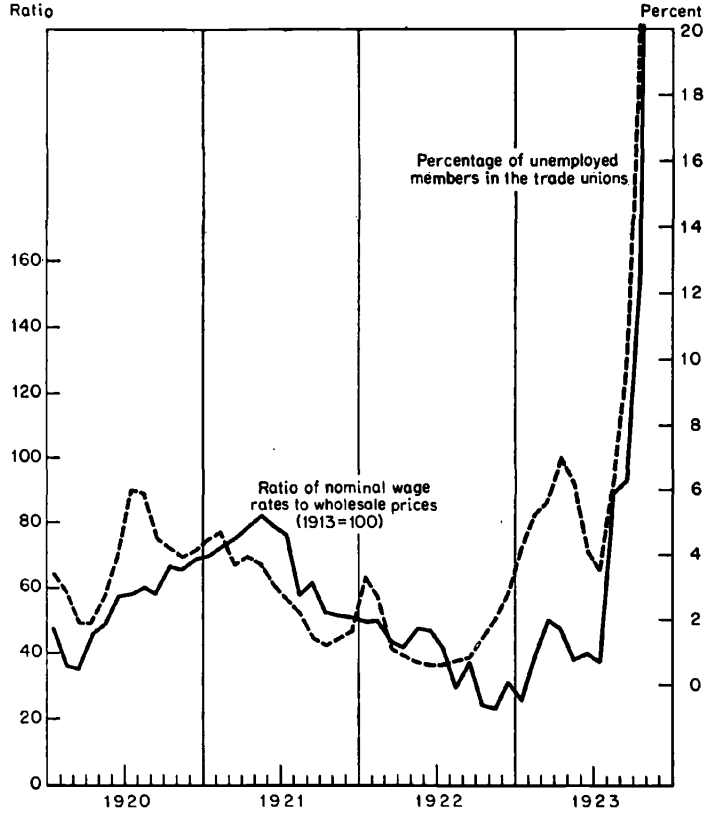
From the Armistice to the beginning of 1920 we have only the implicit annual deflation figures of the Statistische Reichsamt and the monthly food-cost index of Calwer. As can be seen from Appendix Table A-41, attempts to derive from these data a monthly measure approximating living costs during the war years were continued for the immediate postwar period. From February 1920 on, the Statistische Reichsamt compiled

[35] It should be considered, however, that additional factors—advancing prices, anticipation of the continuation of inflationary trends, the favorable relation of total production costs and finished product prices at the time of sale, the "unfavorable" rate of exchange of the German currency, and others—must have contributed to the relatively high employment levels during the early inflationary period. (See the part of this section dealing with Money Wage Levels.)

and published an official cost-of-living index based on the consumption pattern of a family of five persons and computed on a monthly basis. The Reichsamt index is reproduced in the same appendix table.

CHART 29

Wage-Price Ratios and Unemployment During the Inflation



Source: Appendix Table A-35 and Bresciani-Turroni, *The Economics of Inflation*, pp. 442 and 450.

For the inflation period, the coverage and quality of the available information on living costs is superior to that for earlier periods, for which no "authoritative" cost-of-living statistics were computed. During the first years of publication, only the food, rent, and fuel and light groups were included in the index, in 1922 a clothing group was added. (No "miscellaneous" group was included before the end of the inflation.) The composition of the standard budget was changed several times, once to allow for seasonal variations in consumption, and then to adapt the index to modifications in consumption patterns after the abolition of wartime controls.[36] The effect of these changes on the movement of the

[36] Rationing was continued in Germany until 1922.

index was, however, relatively mild.[37] In the earlier years of the period, the index was based on quotations in six hundred communities, with prices ascertained once a month during the first two years and twice a month from 1922 on. In the spring of 1923 a weekly index, called "express index," was computed, based on quotations in about seventy communities. The increased frequency of price collections was prompted, of course, by the spiraling of the inflation.

Despite attempts at systematic collection of data and the broad coverage, cost-of-living statistics are far from satisfactory for the inflation period. The original restriction of the index to three consumption groups was noted above. Furthermore, scarcities of foods and other goods, widespread black-market operations, and barter trading reduced the area of consumption to which the official index could be applied. Another reason for its inadequacy is to be found in the extent, rapidity, and diversity of the price rises themselves, which affected the purchasing habits of the people and rendered the index invalid beyond the day of the actual collection of data.

The movements of the cost-of-living index naturally reflected the consequences of the currency depreciation and thus ran roughly parallel to changes in other variables, such as wholesale prices, wage rates, dollar exchange rates, and real estate values. Closer comparison, however, brings out important distinctions of detail. As can be seen from Table 56, living costs between 1913 and the beginning of 1919 increased more than hourly and weekly wage rates of skilled workers.[38] In the early postwar phase of the inflation, wage rates and living costs tended to show similar net increases, with wages sometimes outrunning the rises in living costs. During the period of hyperinflation, however, wage rates were unable to keep pace with retail price increases. The distinction between hourly and weekly wages is important in the comparisons involving 1913, since between that date and the postwar years working time declined considerably. Living costs rose farther above prewar levels than weekly wages at all times during the years 1919-23. They also rose more than hourly wages of skilled workers and, for most of the period, more than hourly wages of unskilled. The resultant real wages will now be discussed.

REAL WAGES

Wage Determination during the Inflation. Money wages, at least in the latter part of the inflation period, were determined in close relation to the depreciation of the currency and to changes in the cost of living—that is, in terms of expected real wage levels. The increasingly rapid price changes

[37] For comparison of the various forms in which the index was published, see International Labour Office, *Studies and Reports*, Series D, No. 5, "The Workers' Standard of Life in Countries with Depreciated Currencies" (Geneva, 1925), p. 42.

[38] For unskilled workers we have no comparable information. The available evidence suggests that the rise in hourly rates of unskilled workers may at times have exceeded that in living costs.

made it necessary to renegotiate wages more and more frequently. Within a so-called *Manteltarif* (collective agreement covering working conditions other than wages), wage conventions were renegotiated on the average about every two months in 1921, every month during most of 1922, biweekly at the beginning of 1923, and weekly as the hyperinflation spiraled.

It seems that for a while negotiation of new agreements at short intervals was preferred to sliding scale arrangements. Management assumed it would derive some benefits from short-term stability of a cost element during times of rising prices for finished products. Such stability facilitated cost calculations and protected profit margins. The unions, for their part, were reluctant to perpetuate low real wages by concluding long-term sliding scale agreements, with a base line that reflected prevailing wage levels. Thus, they went along with management in negotiating short-term agreements. But the frequent bargaining over wage contracts involved unions and management in a perpetual struggle, and thus contributed heavily to the intensity of the labor strife which characterized this period of the inflation.

By mid-1923, weekly renegotiation of wage covenants failed to keep pace with the currency depreciation, and sliding scale arrangements had to be invoked. The weekly "express" index of living costs, compiled by the Statistische Reichsamt, came into general use as an adjustment factor for negotiated base wages. Even this procedure proved too slow. On the day of publication, prices usually had already exceeded those prevailing on the day of sampling, and had further opportunity to advance during the time required for payroll accounting, wage disbursement, and ultimate expenditure by wage earners. To obviate some of these delays, many firms used the dollar exchange rate as the adjustment factor, because this rate could be established in up-to-date form on the day of wage payment. This, too, had its shortcomings: the price rises between payment and expenditure could not be compensated properly, and to forestall the rapid dwindling of the purchasing power of earnings new devices were required. One practice current by the summer of 1923 was to pay wages in installments; that is, part of the earnings for a current week's work were paid on Tuesday and the remainder on Friday of that week. Later the frequency of payments was increased to three or even more times per week. By the end of August, agreements between workers' and employers' associations specified that wages should be fixed on the basis of expected prices in the expenditure period, rather than of prices prevailing on the date of wage payment. This required forecasting prices, and compensatory adjustments at the time of subsequent payments, in amounts determined by the inaccuracies of the forecasts. The administrative problems involved in such procedures were formidable. Forecasting and later adjustments added to clerical work, and the process gave rise to controversies about possible benefits accruing to employers from conservative forecasting.[39]

[39] For details see Bresciani-Turroni, *The Economics of Inflation*, pp. 202, 203, and 310.

During the last months of hyperinflation, it made a difference whether purchases were made in the morning, or in the afternoon—after the day's dollar exchange rate was out, and stores had adjusted their prices. On paydays workers had to be released early so they could spend at least part of their earnings on the same day, before the further depreciation of the morrow.

It is difficult to appreciate fully the effects of the almost continuous price revisions on purchasing power, consumer motivation, and buying patterns. An eye-witness report gives us some revealing details:

"I do not think that any statistics can give an adequate picture of reality during the period of hyperinflation. How can you measure prices which change practically every hour—as they did during the last months of the inflation? At the end of 1923, business paid wages and salaries not only twice a week, but every day. Collective bargaining negotiations were continuous.

"May I give you some recollections of my own situation at that time? As soon as I received my salary I rushed out to buy the daily necessities. My daily salary, as editor of the periodical *Soziale Praxis*, was just enough to buy one loaf of bread and either a small piece of cheese or some oatmeal. On one occasion I had to refuse to give a lecture at a Berlin city college because I could not be assured that my fee would cover the subway fare to the classroom, and it was too far to walk. On another occasion, a private lesson I gave to the wife of a farmer was paid somewhat better—by one loaf of bread for the hour.

"An acquaintance of mine, a clergyman, came to Berlin from a suburb with his monthly salary to buy a pair of shoes for his baby; he could buy only a cup of coffee. The Zeiss works in Jena, a nonprofit enterprise, calculated the gold mark equivalent of its average wage paid during a week in November 1923 and found weekly earnings to be worth four gold marks, less than a sixth of prewar levels."[40]

While the monetary depreciation progressed, certain devices introduced elements of stability into wage payments. Some companies established kitchens to feed their workers at least one square meal a day. Some firms bought coal, potatoes, meat, or other necessities and distributed them to workers as part of their remuneration. During hyperinflation, payments in kind and personal privileges such as access to food, coal, and clothing became tremendously important[41]—often exceeding the significance of cash payments. After stabilization was decided upon in principle, wages were increasingly negotiated in terms of gold marks, as in many wage agreements concluded in November, 1923, and most of those concluded in December. However, the new stabilized rentenmark currency was not yet available at that time, and actual wage payments during the last weeks

[40] Direct communication from Dr. Frieda Wunderlich, New School for Social Research, New York City.

[41] Such devices were used also to introduce stability into other business transactions, e.g. coal bonds, rye bonds, even kilowatt-hour bonds.

of 1923 were still made in depreciated marks or in one of the numerous substitute currencies.

Statistical Computation of Real Wages. Usually, real wages are computed by means of dividing money wages by cost-of-living index numbers. In this process, the choice of corresponding time periods does not, ordinarily, present a problem; money wages are related to retail prices for the same month. But for the period of the Great Inflation, the rapid changes in price levels make it desirable to juxtapose the earnings of the workweek and the prices of the related expenditure period. But what is the proper expenditure period for a given earnings series? The Statistische Reichsamt, from 1920 on, divided average earnings for the calendar month by prices for an expenditure period lagging seven days behind the work month. And in October–November 1923, to take account of intra-weekly wage installments and accelerated disbursements, the Reichsamt used a lag of five days. But it is rather doubtful whether these lags provided a realistic matching of earnings and expenditure periods. In the period of hyperinflation, workers could scarcely have spread their purchases over as many as five days after they received their wages.[42] The waiting lines at food stores on paydays were mute evidence of the workers' need to beat the price spiral even by hours. On the other hand, highly perishable goods could not be bought far in advance and larger purchases (like furniture) could not be made without some accumulation of funds. While sometimes there were complex installment arrangements, which adjusted separate payments to the then existing price levels, some loss of the purchasing power of wages through delay in shopping was unavoidable.

It is important that the reader remember, in the following discussion, that the actual expenditure period is unknown, and that even if it were known, proper adjustment would be difficult because we lack daily living-cost indexes for most of the period. Moreover, the wage installments are not separately recorded; thus, we do not know how much in a given week was paid on Tuesday and how much on Friday. If, finally, the importance of payments in kind is recalled, it will be readily apparent that the computation of real wages during the Great Inflation is a hazardous undertaking. Below, real wages are discussed as computed by the Statistische Reichsamt and other sources. The manner of deflation will be made explicit wherever possible.

The Behavior of Real Wages during the Inflation. In the earlier discussion of wage trends (Chapter 2) some important elements of real-wage behavior during the inflation were enumerated: throughout that period, real wages tended to be below prewar levels; real wages fluctuated significantly during the inflation period, showing relatively high levels in 1921 and considerably less favorable levels in 1922 and 1923. The previous discussion, however, was based on extremely limited evidence. One single wage series (weekly

[42] See Bresciani-Turroni, *The Economics of Inflation*, p. 302, and his references to Meerwarth and Mommer.

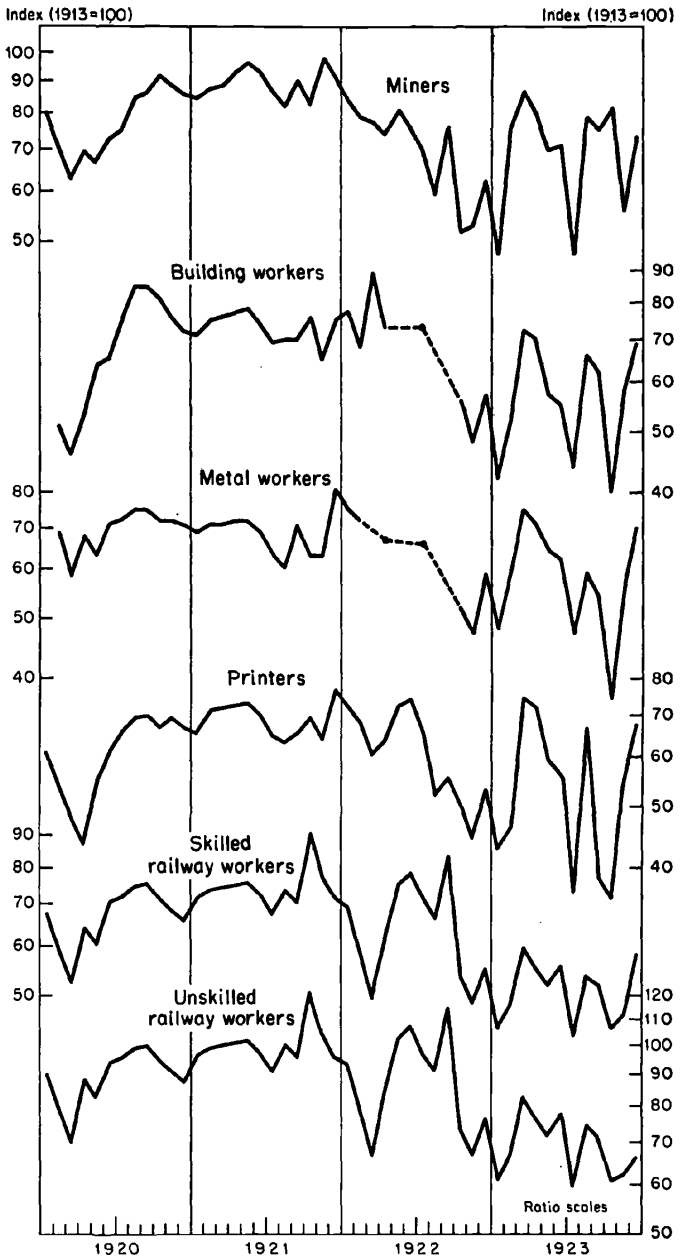
earnings of underground coal miners in the Ruhr district) given in annual form was used to describe real-wage behavior. This information will now be supplemented by series covering other occupations and industries and computed for shorter units of time.

Appendix Table A-45 presents average hourly and weekly real wage rates based on eight industries (1913 = 1). In comparison with 1913, real hourly rates show more favorable levels than weekly real rates because of the decline in working hours. Similarly, real rates of unskilled workers show more favorable relative levels than those of skilled workers because of the decline in skill differentials. Real rates of skilled workers, both hourly and weekly, were below 1913 levels throughout the period of inflation. For unskilled workers, weekly real rates were also below 1913 levels, whereas hourly real rates tended to exceed prewar levels throughout the greater part of the period 1922-23. Only in the last stages of hyperinflation did hourly real rates for unskilled workers drop below 1913 levels. In view of the 8-hour day and the sharing of jobs, it may be presumed that levels of earnings, relative to 1913, did not significantly exceed those of rates. Therefore the following comments on the relative levels of real rates may be applied also to the approximate purchasing power of employed workers' earnings.

With the exception of the dip in the spring of 1920, real wages tended to rise during 1920. For skilled workers the autumn levels of 1920 were retained through 1921. From the beginning to the end of 1922 real wages dropped precipitously; and during 1923, after a brief upsurge in the first months of the year, they returned to the low levels characteristic of the greater part of the hyperinflation. Chart 30 illustrates the increasing instability of real wage levels. While the fluctuations during the earlier years of the inflation period are not inconsiderable, they appear mild when measured against those occurring in 1922 and 1923.

For the inflation period as a whole, the highest and lowest levels of real weekly wages of skilled workers, in relation to 1913, were 102 and 51 percent respectively. The comparable values for unskilled workers, for the period covered in Appendix Table A-45, were 94 and 48. The range of fluctuation as well as the real wage levels at the lower extreme are certainly impressive. Yet they are based on averages of eight industries and are therefore apt to understate the fluctuations and the extent of the decline of real wages in less comprehensive groups. Examination of the component industry averages provides an inkling of the remarkable instability of the purchasing power of inflation wages. In the eight industry groups presented in Appendix Table A-46, the index numbers range from 116 (unskilled female textile workers, March 1923) to 25 percent (skilled woodworkers, October 1923). Even in these monthly data there is considerable averaging-out. Almost incredible variations occur in the real values of the weekly wage payments to small groups or individuals. The *Allgemeine Deutsche Gewerkschaftsbund* published weekly real earnings of a fully employed

CHART 30
Real Wages during the Inflation



Source: Appendix Tables A-43, A-46, and their sources.

married printer, week by week, during the second half of 1923. In the fifteenth pay period (October 6-12) his real earnings were given as 18.9 percent of the 1913 average.[43] Robert Kuczynski computed the real values of wage payments to Berlin chemical workers at specific dates, relating money wages to estimated index numbers of living costs for the same date. He found that on some occasions real wages thus derived were less than 10 percent of prewar levels.[44] The strong fluctuations and low levels of real wages had effects extending beyond the decline in the economic well-being of German workers; they also contributed to important changes in the composition of the national product and in labor productivity. Monetary incentives lost force with the uncertain purchasing power of earnings and with the increasing scarcity of goods. Furthermore, after the deprivations suffered during the war, the low real wages of the inflation period impaired the health of the workers and their general efficiency.

Although this study is not concerned with salary payments, it seems pertinent at this point to mention that, on the whole, salaried workers may have fared even worse during the inflation than wage earners. From the salaries of government employees reproduced in Table 57, we note that the real income of the higher-paid group declined more than that of the lower-paid. Also, in 1923 real monthly salaries of the two higher-paid employee groups constituted a smaller fraction of their prewar income than the comparable payments to wage earners constituted of theirs (see Appendix Table A-45). Prewar salaries for the higher classes of government employees were above average wage levels for industrial wage earners. Thus, both in the relation of real salaries to real wages and in the relation of high salaries to low salaries, we find a reflection of the general trend from "efficiency" toward "sufficiency" wages—the latter designed to provide socially tolerable minima rather than rewards for productive contributions.

Real Wages and Economic Activity during the Inflation. Real wages during the Great Inflation follow, in broadest outlines, the trends of general business activity, as may be observed from the following tabulation in which production and employment indicators are compared with

[43] *ADGB Jahrbuch* (Berlin, 1923), p. 80. The realism of this particular quotation seems doubtful, however. Payments on Friday were related to the cost-of-living index on the following Monday. It is not stated whether advances were made during the week, nor is there a discussion of the possibility that major purchases may have been made Friday night, Saturday, or even Monday morning before the price changes occurred which determinined that day's index.

[44] Robert Kuczynski, "Postwar Labor Conditions in Germany," pp. 132-33. The estimates are derived by linear interpolation between the official index numbers of living costs, for Mondays. The computations are free from the influence of both advanced and postponed wage payments—the latter being a far from rare occurrence during the time when the printing presses could scarcely keep pace with the demand for the steadily depreciating currency. However, linear interpolation in the case of, say, a geometric progression, might lead to overestimated living costs and underestimated real wages.

TABLE 57

Monthly Real Salaries of Government Employees, in Three Classifications, Large Cities, 1913-1923
(1913=100)

Year	*High Level*	*Intermediate Level*	*Low Level*
1913	100.0	100.0	100.0
1914	97.2	97.2	97.2
1915	77.3	77.3	77.3
1916	58.9	58.9	58.9
1917	42.9	48.6	53.6
1918	46.8	55.0	69.6
1919	40.2	54.8	89.3
1920	31.7	44.0	71.3
1921	39.3	52.2	82.3
1922	35.6	46.4	72.9
1923	38.0	49.5	69.9

SOURCE: *Wirtschaft und Statistik*, 1925, "Zahlen zur Geldentwertung in Deutschland, 1914 bis 1923," p. 43.

weekly real wages of skilled workers. The tendency of real wages to rise during the early inflation years, 1920-21, is in general correspondence with the economic improvements reflected in production and employment.

	Index of Industrial Production				
	Producers' Goods	*Consumers' Goods*	*Total*[a]	*Unemployment Ratio of Union Members* (percent)	*Weekly Real Wages* (1913 = 100)
	1913 = 100				
1919	37	–	42	3.7	85
1920	64	56	61	3.8	72
1921	74	76	73	2.0	78
1922	80	81	78	1.5	68
1923	49	63	52	9.6	80

[a] The total index in 1921 and 1922 lies below the indexes of the producers' goods and consumers' goods components. This cannot be entirely due to our adjustments to postwar territory, since the data as published by the *Institut für Konjunkturforschung* reveal a similar disparity.

SOURCE: Production *IKF Sonderheft* 31, p. 64, on base 1913 = 100 (postwar territory) and using 1913 to 1927-29 relationship, *ibid.*, p. 37. See also Table 2 above. Unemployment, computed from Appendix Table A-1. Weekly real wages, skilled workers, Appendix Table A-45.

Similarly, the low real wage levels experienced in the second half of 1922 and in 1923 correspond to the reduced increases in the annual production data for 1922 and to the sharp decline of production and employment in the following year. However, the short-term fluctuations apparent in monthly unemployment data (and presumably also in production) are not reflected in real wage changes. Conversely, the considerable short-term fluctuations of real wages do not have their counterpart in employment (or production) fluctuations. Reasons for this lack of short-term

correspondence are not hard to find. On one hand, employment fluctuations during the earlier inflation years appear to have been relatively mild, with the unemployment ratio of union members during 1919-22 rarely exceeding 5 percent. Money wage rates, on the other hand, exhibited their usual tendency to withstand short-term pressures toward downward adjustment, but were affected by the strong monetary forces making for increases during that time. The insufficiently coordinated movements of wages and living costs led to fluctuations in real wages much sharper than those shown by the comparatively smooth unemployment record.

Several of the annual real wage series record levels lower in 1920 than in 1919. This showing might be explained in part by the unreliability of living-cost computations in 1919, the strong decrease in real wages during the first few months of 1920, and the fact that after 1920 the computation of real wages was based on a cost-of-living index which lagged seven days behind the earnings month. But even after allowance for these statistical problems, real wage levels can have increased only moderately between those two years despite an apparent increase of about 45 percent in the industrial production index.

The peculiar conditions of economic reconstruction during the immediate postwar years may shed some light on this seeming inconsistency. The year 1919, as compared with the preceding war year, witnessed a strong reduction of producers' goods output and a relatively fast recovery of consumers' goods. This was a consequence of economic demobilization and of the pressing need to feed, clothe, and warm the war-weary defeated population. In the following year there was a sharp change in emphasis; reconstruction of productive resources was now the immediate goal. The index of producers' goods output rose from 37 to 64 in 1920. Although the output recovery of the goods included in the index might have been faster than of producers' goods at large, there can be no doubt that during its prosperous phase the inflation was a producers' goods rather than a consumers' goods boom. Emphasis on producers' goods output was stimulated in part by the need to replace the destroyed, outworn, or ceded capital equipment. It was enhanced also by the government's activity in road and canal building, electrification, and other projects designed to reduce demobilization unemployment and to help in reconstruction.

Most important, perhaps, were the effects of the inflation itself. The huge profits accruing from sales at ever-increasing price levels, a tax system not adapted to claim any substantial share of these profits, and the urge to protect cash assets against depreciation led businessmen to augment their properties. Companies built factories, replaced their war-worn equipment, even bought more than they could expect to use. In a curious mixture of aggressive and defensive speculation, producers acquired raw materials, piled up semifinished goods, and held on to finished inventories. They were motivated not only by the wish to assure "profits" from the rising price level; they saw also in the accumulation of producers'

goods one of the few available means of protecting their assets.[45] The emphasis on producers' goods dovetailed effectively with the lag of money wages behind wholesale and retail prices, which tended to reduce labor costs and to decrease the share of the national product available to consumers. Note also that agricultural output destined primarily for domestic consumption was especially low during the first postwar years, that some part of the national product went into reparations, and that unfavorable exchange rates stimulated exports. These factors kept business activity in high gear during the early postwar years, while consumers' goods production and real wages hovered about relatively low levels. Indeed, in those years the beneficial aspects of inflation seemed so obvious to some of Germany's outstanding businessmen that they regarded efforts aimed at stabilizing or raising the value of the currency as an invitation to catastrophe.[46] This attitude was perhaps encouraged by a Reichsbank credit policy which permitted expansion of corporations, acquisition of competing enterprises, and retirement of industrial bonds at practically no cost—since loans could be repaid in depreciated currency.

From the autumn of 1922 to the end of 1923 real wages changed in conformity with deteriorating general economic conditions. The high replacement costs of merchandise sold led to a gradual decrease, and in some cases a virtual disappearance, of inventories. Declining productivity impaired the favorable export position of German manufacturers. As wage rates caught up with wholesale prices the much-touted cost-price advantages of the early inflation vanished. Producers now frequently found themselves in possession of capital equipment which increased their obligations without contributing either to production or to increased productivity. In the face of declining production, growing unemployment, and vacant shelves in the food stores, wages lost more and more ground in their race with living costs. Both consumers' goods and producers' goods output declined materially from 1922 to 1923, and with them real wages and the standard of living. According to some sources, conditions were as bad or worse than during the preceding war. The cities were in an extremely precarious situation regarding food supply, since farmers refused to deliver produce except in exchange for goods. And again, as during the last years of the war, access to friends or relatives in the country was more important for survival than money or real wages.

Because of the unsatisfactory nature of the data on money wages and living costs for the period of hyperinflation, it is desirable to check the major results of the computation of real wages against other evidence. Information on per capita consumption provides some such measures (see Table 58). The sharply reduced consumption of important commodities is noteworthy, whether consumption during the entire inflation is compared

[45] See *IKF Sonderheft* 31, pp. 25 ff.; and Bresciani-Turroni, *The Economics of Inflation*, pp. 196-97.

[46] Bresciani-Turroni, *ibid.*, p. 191.

TABLE 58

Per Capita Consumption of Selected Goods, 1913 and 1920-1923
(1913=100)

	1913	*1920*	*1921*	*1922*	*1923*
Potatoes	100[a]	...	47[a]	80[a]	62[a]
Rice	100	81	132[b]	66	69
Meat	100	...	...	61	54
Herring	100	223	75[b]	60	91
Imported fruit	100	29	21[b]	19	16
Sugar	100[c]	72[c]	88[c]	109[c]	103[c]
Salt	100	121	117	163	122
Cocoa	100	96	161[b]	177	104
Coffee	100	27	50[b]	24	25
Beer	100	37	53	50	44
Distilled spirits	100	25	36	71	43
Cotton	100	37	53[b]	59	41

[a] Fiscal year, starting July 1.
[b] May-December 1921.
[c] Fiscal year, ending August 31.
SOURCE: *IKF Sonderheft* 31, p. 27; and *Jahrbuch* 1924-25, pp. 306 ff., and 1930, pp.400 ff.

with that of 1913, or consumption of 1923 is compared with that of earlier inflation years. It is likely, of course, that some of the figures, particularly those for domestic goods, may understate true consumption. Barter arrangements and distribution by private channels may have caused many a head of cattle or sack of potatoes to escape the statistical enumerator. But the information on consumption of beer and cotton goods is less likely to be distorted, and these data show similarly low levels. All in all, it can be said that both the index numbers of industrial production and the scattered data on per capita consumption tend to corroborate the broad findings on real wage levels during the inflation. These levels were substantially below, and during the last phases of the crisis pitifully below, the real wages that prevailed before the outbreak of World War I.

Wages under National Socialism[47]

GENERAL

Labor Market Changes. This section treats the last of the unusual episodes in the Reich's history—the period of National Socialism, lasting

[47] For the material in this section the author is indebted to prior studies of German wage conditions. Especially instructive are three articles by René Livchen in *International Labour Review*, August 1942, December 1943, and July 1944; John P. Umbach's article on "Labor Conditions in Germany," *Monthly Labor Review*, U.S. Bureau of Labor Statistics, March 1945; Jürgen Kuczynski's *Germany under Fascism, 1933 to the Present Day*, Vol. III, Part 2 of *A Short History of Labour Conditions under Industrial Capitalism* (London, 1944); and Otto Nathan's *The Nazi Economic System; Germany's Mobilization*

from 1933 to 1945. The advent of National Socialism wrought dramatic changes in the political and economic structure of Germany. During most of the period there was an expansion of business activity. But since the social product, particularly in the war phases of the expansion, consisted increasingly of arms, supplies for the armed forces, and the means of producing and transporting such material, the customary benefits of accelerated business activity and high employment accrued to the German people only to a very limited degree.

The labor policy of the National Socialist regime and the principal measures of wage control have been outlined previously,[48] though scant attention has been paid to the enormous changes in the composition of the work force. During the early years of National Socialism, when the creation of jobs for heads of families was a primary concern of the regime, the most important changes in the composition of the work force were probably an increase in the proportion of unskilled workers and a decrease in the proportion of employed women. Later, the armament drive augmented the relative importance of producers' goods industries. The aim of economic self-sufficiency also affected the industrial distribution of the work force. And finally, when war increasingly drew Germany's manpower into the armed services, the ranks of the employed were replenished by more extensive use of female workers, by recruitment of youths, the aged, the handicapped, and by employment of voluntary or impressed foreign workers and prisoners of war. The labor supply was stretched further by compulsory service of civilians at military constructions, the "Farm Year" for German girls, furloughs to military men for industrial or agricultural employment, increased part-time work by mothers, and by similar arrangements.

The net effect of the wartime labor recruitment measures was merely to maintain the level of the civilian labor force in the face of the heavy military draft. At the same time, the skill, age, sex, regional, industrial, and ethnic composition of the employed population changed drastically. Despite the extreme needs for manpower during the war, the number of native Germans in the total labor force (civilian and armed services) barely increased after 1939. The native civilian labor force shrank, of course, but this was at least partly compensated by a large influx of foreigners. The result was an over-all decline of the total civilian labor

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for War (Duke University Press, 1944), Chapters 7, 8, and 10. These authors studied labor market and wage control (Livchen, Nathan), actual wage behavior (Livchen, Umbach, Kuczynski) and labor conditions other than wages (Kuczynski, Nathan). Within the limited scope of the present section their findings will be reported to the extent necessary for an understanding of the atypical behavior of wages under National Socialism. Readers interested in the problems of totalitarian labor market administration or in the working and living conditions of industrial labor during the Third Reich should consult these studies directly.

[48] See Chapter 1, last pages of the section on Determination of Wages and Working Conditions.

force (natives and foreigners) from 39.4 million in 1939 to 36.1 million in 1945.[49]

Wage and Labor Allocation Policies. The policies of National Socialism on wages and the labor market[50] were subordinate to its major economic program, designed to bring the national product to a maximum, and within that product the portion devoted to military needs. A corollary of the emphasis on military needs was the reduction of civilian consumption to a minimum compatible with social acceptance—a policy described by the slogan, "guns before butter." Labor recruitment plus a combination of low basic rates and an efficiency wage system were to swell the national product. The shift toward "essential" output was furthered by material allocation, increasingly stringent employment controls, and greater earnings opportunities in war industries. Limitation of civilian consumption was brought about by wage-rate stabilization, taxes, quasi-compulsory contributions, and forced savings. Most of the labor market and wage-control measures, developed during the prewar years, were tightened during the war period. The differences between the labor and wage policies of the two world wars are striking: the earlier improvised, barely coordinated, and poorly implemented regulations were replaced by a preparedness policy and an administrative control apparatus developed for about six years before actual military operations began.

Wage rates were virtually stabilized by the regime at the lowest levels struck in the course of the Great Depression. While these were minimum rates and theoretically could be exceeded, during the first years of National Socialism unemployment was still substantial, acting as a brake on excess payments. Furthermore, the expressed policy was not to increase rates until all unemployment had been absorbed. Later, when improving employment conditions tended to exert upward pressure on wage rates, the restraining actions of the labor trustees prevented more than nominal advances. Even under war conditions the rigid control of wage rates was relaxed only to permit adjustments of the most glaring inequities. From 1938 on, when payments above the minima became more frequent, the labor trustees were empowered to fix maximum wages in certain industries.[51] And after the launching of the war the trustees were actually required to set compulsory wage maxima.[52]

The National Socialist regime could not rest satisfied with controlling wage rates. There was the economic necessity for wages to maintain or increase their incentive function, for more hours to be worked, and at

[49] For statistical details and interpretation of these changes see Clarence D. Long, *The Labor Force in War and Transition, Four Countries*, Occasional Paper 36, (National Bureau of Economic Research, 1952), pp. 17 ff. and 37 ff.

[50] See also Chapter 1, last pages of the section on Determination of Wages and Working Conditions.

[51] Decree of June 25, 1938.

[52] War Economy Order of September 4, 1939.

the same time, for wage earners' income to be prevented from rising unduly. The very rigidity of rates, in the face of rising prices, naturally strengthened the incentive to earn more. Increasing use was made of piece work in order to relate wage payments more closely to output and thus to induce greater exertion. Redetermination of piece rates in cases of "excessive" earnings, and a tough policy of establishing low basic efficiency rates, where there were new products or changed specifications, served to maintain earnings incentives. The workers found that they had to work longer hours and produce more goods if they were to maintain or to raise their plane of living.

At the same time the regime had to limit civilian claims on consumers' goods—the increase of earnings had to be kept under control. Since the drive for large total output implied high levels of employment and hours, the control had to be applied to the manageable factors making for the excess of hourly earnings over rates.[53] Such factors included voluntary overpayments, circumvention of wage stabilization orders by spurious promotions, gratuitous premium payments, special bonuses, paid vacations, payments into savings funds, payments of insurance or tax contributions by the employer, and so forth. In addition, there were, of course, bona fide promotions to higher paying jobs, increased incidence of work at premium rates, and establishment of favorable base rates in work remunerated on an output basis. In practically all these areas the government intervened to limit increases in earnings.

As previously noted, voluntary payments above minimum rates were prohibited. Circumvention of rate regulations was countered by an order requiring specific permission before revision of wage schedules, reclassification of occupations, or changes in the terms of employment.[54] Unwarranted payment of special premiums was made a punishable offense. Bona fide promotions were not discouraged, but improvement of a worker's earnings position simply by transferring him into a better-paying establishment or industry was curtailed; such changes were made subject to the approval of the employment exchanges.[55] The authorities tried first to abolish, and later to modify, premium payments for overtime, night and holiday work, but in order to maintain morale they finally had to reinstitute these payments on their old scale.[56] Also for newly created occupations, or employment of a new type of worker in an

[53] The shift from low-paying consumers' goods industries to higher-paying producers' goods industries, for instance, was not suitable for intervention within the framework of basic policies. However, even in that case, the wage rate stabilization prevented the development of extreme wage disparities and thus helped to curb the effects of inter-industry shifts.

[54] Decree of June 25, 1938. The decree was not very successful, according to Livchen, *op. cit.*, Aug. 1942, p. 139. An order of April 25, 1941 required consent of the labor trustees before a worker could be promoted.

[55] Orders of December 29, 1934; February 11, 1937; September 1, 1939.

[56] Orders of September 4, 1939; November 16, 1939; November 17, 1939; December 12, 1939; September 3, 1940.

established occupation, the government saw to it that wages were kept at what it considered "economic" levels. Women replacing men received 80 percent of men's rates on time, but the same rates on piece work.[57] And in the employment of "substandard" labor, undercutting of normal rates was permitted.[58] Foreigners, prisoners of war, and other irregulars were remunerated at special reduced rates. In order to limit earnings derived from piece work, the government introduced in some industries an interesting system of efficiency wages, whereby average earnings levels could be held fairly constant.[59] Throughout the war period the government insisted on frequent redetermination of basic piece rates. This was done, not only to curtail purchasing power, but also to maintain the incentive function of the piece rates in cases of rising output per man. Physical scarcities of consumers' goods deprived "extra" money earnings of much of their practical value. Prompt adjustment of piece rates forced workers to exert themselves in order to make ends meet.

The requirement that workers must obtain permission for job changes has been mentioned. There was indeed a close interrelation between wage and mobility controls. If wages were to be stabilized or nearly stabilized it was necessary (1) to remove the pressures on wage levels set up by any spontaneous movement of workers to higher-paying industries, occupations, localities, and so on, and (2) to set up alternative allocating mechanisms to shift labor to places where workers were needed. Thus wage stabilization required both a restrictive and an affirmative control of mobility. Conversely, to support a system of labor allocation, it was necessary to limit wage inducements leading to undesired mobility. The National Socialist government developed wage and mobility controls in close correspondence. A decree of August 1934 and an Act of November 1935 gave to the Reich Institute of Employment Services exclusive power over work placement, vocational guidance, and assignment of apprentices. Under a law of February 1935, all important categories of workers[60] received workbooks for recording their training, work history, and other pertinent facts. These workbooks became a most important tool of labor allocation. Even before the outbreak of the war, hiring and firing in certain industries were subject to the consent of the employment office. After September 1939 the administration of labor allocation was tightened. A change of job before permission was granted became a criminal act. The right to control job changes and conscript labor gave the authorities complete power to freeze or shift labor at will. They used these powers extensively.[61]

[57] *Reichsarbeitsblatt* 1940, p. 301; circular to labor trustees.

[58] Decree of October 15, 1935. See also Nathan, *op. cit.*, p. 186.

[59] The efficiency ratings controlled the distribution of earnings rather than their average levels. See Umbach, *op. cit.*, p. 511.

[60] By 1939 about 36 million workers were covered.

[61] Umbach, *op. cit.*, pp. 123-27.

CHANGES IN MONEY WAGE LEVELS

Wage Rates. Wage rates had decreased by 21 percent from their high prosperity plateau to the trough in general business conditions reached in August 1932. Although business activity and labor market conditions started to improve from that time on, wage rates continued to decline through October 1932, and experienced another small downward adjustment from February to March 1933. It was at this level that the National Socialist regime introduced its stabilization program.[62] The virtual

[62] During 1933 wage rates were kept stable by administrative measures. The labor act of January 20, 1934 gave to the labor trustees formal sanction to regulate wages in their districts.

stability of money wage rates during the subsequent six years is without parallel in German wage history. Up to 1933 wage rates had increased in all expansions and in most of the milder contractions. During 1933-39 they rose less than 1 percent despite a spectacular spurt in production and employment, and in the face of a tightening labor market. The following tabulation compares employment and wage-rate changes between selected years from 1929 to 1944.

Year	*Employment* (1932 = 100)	*Wage Rates* (1932 = 100)
1929	143	123
1932	100	100
1933	104	97
1939	162	98
1944	160	100

SOURCE: Appendix Tables A-1 and A-2.

Up to 1937, the wage administration merely perpetuated the level and structure of wages as they had developed in the course of the collective bargaining efforts, arbitration awards, and emergency decrees of the Weimar Republic. Later the labor trustees began to make minor adjustments where special inducements were needed or where major inequities existed. Before the outbreak of World War II wage rates of building, mining, textile, and farm workers were increased slightly, and some regional differentials, which had created difficulties in connection with the allocation of workers to plants in eastern Germany, were reduced. Altogether, the adjustments made before World War II led to a rise of less than 1 percent in the wage-rate index. Even under the pressures of the war in progress the stability of wage rates was largely preserved; between 1939 and 1944 a further rise in wage rates amounted to only 2 percent.

Between 1933 and 1944 the total rate increase came to less than 3 percent. In evaluating this finding we must, however, keep some qualifications in mind. First, the reported rates were minimum rates and were on occasion exceeded before the outbreak of the war. Second, the index is standardized

with regard to the relation between time rates and piece rates; in fact, however, piece rates—usually about 15 percent higher than time rates—gained in importance. Third, the index is standardized with regard to sex, age, skill, and industrial composition and does not reflect any shifts among these categories. Fourth, despite the regime's attempts to prevent circumvention of the wage stabilization measures, there was a good deal of wage adjustment by subterfuge.

Earnings. The stabilization of wage rates dampened, but by no means prevented, fluctuations in earnings. Table 59 compares the movements of

TABLE 59

Average Hourly Wage Rates, and Average Hourly and Weekly Earnings, 1932-1944

Year	*Hourly Rates*	*Hourly Earnings*	*Weekly Earnings*
		1932 = 100	
1929	122.4	132.7	149.4
1932	100.0	100.0	100.0
1933	97.0	96.9	102.2
1934	96.8	99.3	109.7
1935	96.8	100.8	122.3
1936	96.8	102.5	116.6
1937	97.0	104.6	120.6
1938	97.4	108.2	126.5
1939	97.9	111.3	131.3
1940	97.9	113.9	135.2
1941	98.8	119.2	144.0
1942	99.4	121.1	144.9
1943	99.6	122.0	145.5
1944	99.6	121.8	143.8
		1939 = 100	
1929	125.0	119.2	113.8
1939	100.0	100.0	100.0
1940	100.0	102.4	103.0
1941	101.0	107.1	109.7
1942	101.6	108.8	110.4
1943	101.8	109.6	110.9
1944	101.8	109.5	109.6

SOURCE: Based on data in *Wirtschaft und Statistik, passim; Jahrbuch, passim; Handbuch* 1928-44, *passim.* For details see source to Appendix Table A-2.

hourly rates, hourly earnings, and weekly earnings. By 1944 hourly wage rates had just about regained 1932 levels, hourly earnings were 22 percent above 1932, and weekly earnings 44 percent. In both hourly and weekly earnings the rate of increase slowed down appreciably after 1941. Between 1943 and 1944 there were actual declines. This behavior reflects the major

military and economic experiences of the war—the two initial years of economic and military successes; the subsequent period of all-out war, beginning with the Russian campaign and ending with the major reverses in North Africa and Russia; and the final years of retreat and defeat. During the early war years hourly and weekly earnings rose. Their subsequent leveling-out is to be explained largely by the fact that by 1941 working hours had been expanded close to socially tolerable limits. Furthermore, raw materials shortages, air raid warnings, and bomb damage began to cut into operations, and the more extensive use of substandard labor (such as juveniles, invalids, elderly people) also affected the averages. Thus from 1943 onward, these factors led to actual declines in hourly as well as in weekly earnings.

The behavior of earnings under National Socialism can be traced in greater detail on the basis of quarterly measures. Index numbers of average hourly and average weekly earnings for all industry are available from the third quarter of 1933, and presented in Table 60. From December 1935 on, the quarterly data on earnings distinguish hourly and weekly earnings, earnings for men and women, earnings for skilled and unskilled, and earnings for producers' and consumers' goods industries (Table 61). The quarterly data in general show a relatively smooth progression, particularly in the hourly-wages series. Weekly earnings reveal more conspicuous short-term fluctuations, both seasonal and nonseasonal.

Occasionally we are able to gauge the effect of statistical standardization on the earnings measures. The official earnings index is standardized for skill, age, sex, and industrial composition.[63] While in its standardized form the hourly index increased by about 23 percent between 1933 and 1941, the same measure with currently changing industry weights would show a rise of about 33 percent. The difference provides some indication of the effect of shifts of wage earners toward higher-paying industries. Average earnings for all wage earners in a sample of large enterprises exhibit trends basically similar to those traced by the highly standardized earnings indexes previously described. And the same is true for averages computed from income distributions in certain insurance statistics.[64] Obviously, the standardizations employed in the official index affect that index in different directions. While standardization of industrial composition, for instance, dampens the rise of the measure, standardization of sex composition tends to boost it. Our comparison of the various measures suggests that the official index, apart from fulfilling its specific function, also provides a fair indication of approximate changes in the unweighted average of earnings for all German wage earners.

Wage Changes and Wage Control. The unusual degree of wage stability in the face of rapidly rising employment has been mentioned previously.

[63] For details on the construction of the index see *Wirtschaft und Statistik*, 1936, pp. 283-286.

[64] See Livchen, *op. cit.*, December 1943, p. 725, for data and more detailed discussion.

TABLE 60

Average Hourly and Average Weekly Earnings, All Industry, 1933-1943
(1936 = 100)

Year and Month	EARNINGS	
	Hourly	*Weekly*
1933 Sept.	94.7	87.8
Dec.	95.8	91.5
1934 Mar.	96.4	93.0
June	96.4	93.4
Sept.	97.1	93.4
Dec.	98.0	96.5
1935 Mar.	98.2	95.1
June	98.2	96.2
Sept.	98.2	96.9
Dec.	98.9	97.5
1936 Mar.	99.3	97.5
June	99.7	99.5
Sept.	100.2	100.6
Dec.	100.6	102.4
1937 Mar.	101.3	102.1
June	101.4	102.8
Sept.	102.4	103.7
Dec.	103.2	105.5
1938 Mar.	103.6	105.2
June	104.4	105.6
Sept.	106.5	110.7
Dec.	107.8	112.4
1939 Mar.	108.1	111.1
June	109.7	114.5
Sept.	107.3	110.6
Dec.	109.2	114.0
1940 Mar.	110.0	112.8
June	...	...
Sept.	112.4	119.1
Dec.	114.5	120.8
1941 Mar.	115.5	122.2
June	...	...
Sept.	117.3	125.0
Dec.	117.8	124.3
1942 Mar.	117.5	123.6
June	...	...
Sept.	118.9	125.0
Dec.	119.5	126.4
1943 Mar.	119.3	126.5

SOURCE: *Wirtschaft und Statistik*, 1938, p. 159; 1939, p. 520; and 1943, p. 279.

TABLE

Average Hourly and Weekly Earnings, Major Classifications, (December

Year and Month	HOURLY EARNINGS						
				Men		*Women*	
	All Industries	*Producers' Goods*	*Consumers' Goods*	*Skilled, Semiskilled*	*Unskilled*	*Skilled, Semiskilled*	*Unskilled*
1935 Dec.	100	100	100	100	100	100	100
1936 Mar.	100.4	100.4	100.5	100.4	100.3	100.7	100.3
June	100.8	100.9	100.4	101.0	100.4	100.5	100.2
Sept.	101.3	101.4	100.9	101.5	100.6	101.1	100.9
Dec.	101.7	101.9	100.8	102.0	101.1	101.2	101.7
1937 Mar.	102.4	102.6	101.6	102.6	101.5	102.3	102.3
June	102.5	102.7	101.3	102.9	101.5	101.8	101.5
Sept.	103.5	103.8	101.8	104.0	102.6	102.1	102.8
Dec.	104.3	104.8	101.7	104.9	103.3	101.7	103.9
1938 Mar.	104.7	105.1	102.7	105.5	103.6	102.5	104.3
June	105.3	105.9	103.3	106.1	104.9	103.1	104.3
Sept.	107.7	108.2	105.1	108.4	107.2	105.1	106.9
Dec.[a]	109.0	109.5	106.2	109.8	107.8	106.0	108.8
1939 Mar.	109.3	109.7	106.9	110.0	108.1	107.0	109.1
June	110.9	111.3	108.3	111.7	109.9	108.2	110.2
Sept.	108.5	108.6	107.2	109.4	106.6	107.3	109.8
Dec.	110.5	110.7	108.5	111.0	109.6	108.5	110.0
1940 Mar.	111.2	111.3	109.8	111.8	109.4	110.1	111.9
June	...	...	...	...	...	...	...
Sept.	113.6	113.7	112.8	114.6	111.6	114.0	113.7
Dec.	115.8	115.9	114.5	116.7	113.8	115.1	115.4
1941 Mar.	116.8	116.8	116.7	117.8	114.1	117.9	117.0
June	...	...	...	...	...	...	...
Sept.	118.7	118.6	119.0	119.6	116.2	120.6	119.3
Dec.[b]	119.3	119.3	119.5	120.2	116.8	120.8	120.0
1942 Mar.	118.9	118.9	119.7	120.1	115.4	121.4	119.9
June	...	...	...	...	...	...	...
Sept.	120.3	120.3	121.3	121.9	116.2	122.9	119.9
Dec.	120.9	120.9	121.7	122.4	116.9	123.0	120.7
1943 Mar.	120.7	120.7	122.5	122.1	117.1	123.6	119.4

[a] Beginning December 1938, including Austria.

[b] Beginning December 1941, including Sudetenland and eastern territories incorporated into the Reich.

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Quarterly, December 1935 to March 1943
1935 = 100)

Year and Month	WEEKLY EARNINGS						
				Men		Women	
	All Industries	Producers' Goods	Consumers' Goods	Skilled, Semiskilled	Unskilled	Skilled, Semiskilled	Unskilled
1935 Dec.	100	100	100	100	100	100	100
1936 Mar.	99.9	99.4	102.1	99.9	99.7	102.6	98.6
June	102.0	101.7	103.4	102.1	101.9	102.1	99.6
Sept.	103.1	102.7	105.2	103.2	102.6	104.6	99.9
Dec.	105.0	104.5	106.5	105.6	102.9	107.0	103.9
1937 Mar.	104.7	104.3	106.1	105.2	102.6	106.4	103.1
June	105.4	105.1	106.3	105.8	104.5	105.0	101.7
Sept.	106.3	105.9	108.2	106.5	105.9	106.6	102.7
Dec.	108.1	107.6	110.6	108.9	105.2	109.4	105.9
1938 Mar.	107.8	107.3	110.2	108.9	105.5	108.7	103.8
June	108.2	107.7	110.6	109.1	106.7	107.7	103.5
Sept.	113.5	112.9	116.4	114.3	113.3	114.2	107.4
Dec.[a]	115.2	114.4	119.8	116.5	111.9	118.2	111.5
1939 Mar.	113.9	113.1	118.6	115.3	110.6	116.7	109.2
June	117.4	116.8	120.7	118.8	116.4	116.9	109.6
Sept.	113.4	113.4	112.7	115.1	112.0	107.1	106.5
Dec.	116.9	117.1	114.2	118.7	116.5	108.6	107.2
1940 Mar.	115.7	115.4	116.3	117.7	112.3	111.2	106.4
June	...	...	...	...	...	...	...
Sept.	122.2	121.5	125.1	124.8	119.0	121.0	108.8
Dec.	123.9	123.1	128.6	126.4	119.8	123.8	111.7
1941 Mar.	125.4	124.7	129.1	128.3	121.1	123.7	112.0
June	...	...	...	...	...	...	...
Sept.	128.3	127.6	131.8	131.3	125.1	126.2	113.6
Dec.[b]	127.5	126.7	131.5	130.5	122.3	125.6	113.9
1942 Mar.	126.7	126.1	130.2	130.4	120.0	124.3	111.7
June	...	...	...	...	...	...	...
Sept.	128.1	127.5	131.4	132.0	122.8	123.3	109.7
Dec.	129.5	129.0	132.2	133.6	124.2	124.4	110.0
1943 Mar.	129.6	128.9	134.0	134.1	123.9	125.8	107.3

SOURCE: *Wirtschaft und Statistik*, 1937, p. 515; 1938, pp. 691, 1011; 1939, p. 235; 1941, p. 121; and 1943, p. 280.

TABLE 62

Skill Differentials, Average Hourly and Weekly Earnings, by Industry, Selected Years, 1936-1944
(differences between earnings of skilled and earnings of unskilled workers, expressed in percent of the former)

	HOURLY				WEEKLY			
	1936	*1938*	*1939*	*March 1944*	*1936*	*1938*	*1939*	*March 1944*
Male Workers								
Mining	19.7	20.4	20.9	...	17.3	20.1	19.6	...
Hard coal	24.1	26.2	27.9	...	19.4	23.3	25.8	...
Iron ore	20.9	21.4	22.3	...	17.8	18.4	17.6	...
Iron and steel[a]	17.9	19.4	19.6	22.0	20.7	25.9	24.4	26.6
Nonferrous metals	...	14.1	14.9	23.2	...	19.1	19.7	28.9
Foundries	...	23.6	24.3	31.1	...	23.2	24.4	33.9
Metalworking	31.9	32.0	31.2	34.3	33.1	34.4	33.5	37.4
Machinery	31.7	33.4	32.7	37.0	33.0	35.4	33.5	39.5
Electrical goods	29.8	32.1	31.9	34.9	31.6	34.5	34.0	38.4
Instruments	31.8	34.4	33.1	33.5	32.7	35.5	34.7	34.7
Chemicals[b]	...	23.2	23.0	...	...	26.2	27.7	...
Rubber and products	...	17.3	18.3	...	...	24.1	25.1	...
Stone and clay	15.1[c]	22.4	21.7	24.1	16.2[c]	24.9	24.9	28.4
Pottery[c]	...	22.1	21.9	26.6	...	21.0	19.8	29.1
Glass	17.2[c]	28.6	26.7	31.6	23.8[c]	29.4	27.0	33.7
Building[d]	18.1	19.2	20.1	13.7	19.7	22.7	23.2	11.5
Woodworking	12.6	15.3	14.9	9.9	14.7	17.9	18.4	24.0
Papermaking[c]	8.7	8.0	7.6	10.8	11.2	11.2	12.0	17.9
Book printing[e]	17.6	16.2	16.6	16.3	16.0	14.3	13.4	15.3
Textiles	22.6	20.7	20.0	22.8	21.3	19.2	18.2	23.7
Baking	22.0	16.6	20.9	21.0	21.4	23.0	22.8	23.1
Brewing[c]	12.7	12.4	12.4	12.6	13.0	12.9	12.3	17.6
Female Workers								
Pottery	8.5	13.7	13.7	15.1	7.3	13.7	13.5	17.5
Glass[f]	...	11.6	10.0	9.9	...	10.9	9.9	17.1
Textiles	22.9	21.7	20.2	17.4	22.6	21.6	19.3	19.7
Baking	11.7	11.8	10.9	14.3	10.7	12.5	13.4	25.3

[a] Helpers vs. first man.
[b] Unskilled vs. foremen.
[c] Helpers vs. skilled and semiskilled combined.
[d] Helpers vs. carpenters.
[e] Semiskilled vs. skilled.
[f] Helpers vs. semiskilled.
SOURCE: Appendix Table A-47.

We can best observe the results of wage-rate stabilization by a comparison of conditions in the two world wars. During World War I wage rates about doubled; during World War II they rose by only 2 percent, a sharp contrast, indeed. The success of the National Socialist regime in keeping money wage rates close to their depression levels cannot be gainsaid, though it appears to have surprised some of the wage administrators themselves![65]

The effects of controls on the course of earnings are brought out in a comparison of earnings and employment between 1929 and 1939. Though employment in 1939 was considerably above its previous prosperity levels, hourly as well as weekly earnings were materially lower. These comparisons do not indicate the separate effect of wage controls, since price levels in 1939 also were below those of 1929 (see Appendix Tables A-1 and A-2). The effectiveness of controls upon earnings during the war is illustrated by comparison of the records of the two world wars; during World War I earnings increased 120 to 150 percent, during World War II about 10 percent.

Some of the control measures are reflected directly in the short-term movements of the quarterly wage record. For example, the fluctuations observed shortly after the outbreak of World War II must be interpreted in terms of the war emergency decree and its later modifications. Both hourly and weekly earnings were temporarily reduced upon the abolition of premium payments.[66] However, the principal result of the Nazi control measures lies in their gradual, cumulative effects on earnings levels—in keeping with the over-all objectives of the regime's economic policy.

WAGE DIFFERENTIALS[67]

Skill Differentials. As a result of the wage-rate stabilization program, changes in the rate structure were few and of minor importance. Thus, any analysis of skill differentials under National Socialism must be based on earnings.

Table 61 shows that both hourly and weekly earnings of skilled workers rose faster than those of unskilled workers. The deviations became more pronounced after the beginning of World War II. The data imply a widening of skill differentials during both the prewar and the war period, thus reversing the long-term tendencies which prevailed in prior decades.

Skill differentials in percentage form can be derived on an industry-by-industry basis from the breakdown of hourly and weekly earnings statistics by industry, skill, and sex. The basic data are found in Appendix Table A-47 and the differentials in Table 62. The skill differentials range from as

[65] Nathan, *op. cit.*, p. 185.

[66] See Chapter 1, last pages of the section on Determination of Wages and Working Conditions. Part of the drop might also have been due to indirect effects of restrictions on use of raw materials in consumers' industries.

[67] As elsewhere in this study, differentials represent differences between wages of higher-paid and lower-paid workers, expressed in percent of the former.

much as 40 percent in the case of weekly earnings in the machinery industry in March 1944, to a mere 7 percent in the case of weekly earnings of women in the pottery industry in 1936. In the great majority of industries, skill differentials conformed to the trend of the aggregate measure—that is, they widened between 1936 and 1939 as well as during the war itself. This behavior presumably reflects the greater relative scarcity of skilled labor, particularly in armament industries.

The scarcity of information on skill differentials for the period of World War I makes it impossible to carry out any quantitative comparison of their behavior in the two conflicts. We have noted that, in general, skill differentials in war industries tended to widen during the first war, while those in civilian industries more frequently narrowed. The situation was similar during the second war. However, the changes in differentials observable for World War I were more drastic than those for World War II (see Tables 50 and 62), as would be expected in view of the controls, which dampened all changes in wage levels and in the wage structure during the twelve years of National Socialism.

Sex Differentials. When the National Socialists took power they regarded most industrial employment of women with disapproval. This was in keeping with their *Herrenmenschen* ideology, which emphasized the domestic functions of the German woman; more important, it was a correlative of their employment policy, which aimed above all to create industrial jobs for family supporters. Although in the course of the subsequent expansion the employment of women increased, the regime concentrated its initial employment program on male workers. Between 1932 and 1937, employed male membership in sickness insurance funds (in the Reich territory of 1937) rose from 8.2 million to 13.0 million, but female membership only from 4.8 to 5.9 million—with a reduction of women's share in total employment from 37 percent to 31 percent. With the approach of high employment levels and the drafting of men into the armed forces, the regime began to take a more kindly view of the industrial employment of women. From 1937 on, the number and share of women in total employment grew rapidly, from 5.9 million in 1937, to 6.9 million in 1939, and to more than 9.0 million in 1944—a rise from 31 to 33, and finally to 44 percent in the three respective years.[68] The final desperate attempts of the Nazi rulers to ward off defeat in the war relied heavily on the last remaining human resource—female labor. The total mobilization measures following the attempt on Hitler's life in July 1944 included compulsory registration of women up to the age of 50 for war-work. A decree of February 1945 ordered conscription of all women between 16 and 60 years old for auxiliary work with the *Volkssturm*,

[68] See *Handbuch* 1928-44, p. 478. The basic data exclude armed services and war prisoners, but include foreign workers. For a discussion of the relatively small additions of native German women to the labor force see Long, *The Labor Force in War and Transition, Four Countries* (Occasional Paper 36, National Bureau of Economic Research, 1952), p. 37 ff.

but empowered local leaders to assign the women to other types of work where needed.[69] In view of these extreme measures to recruit women workers it is remarkable that the statistics do not seem to indicate any substantial rise in the percentage of women in the native labor force.[70]

The mounting necessity of putting women to work in manufacturing gave rise to many changes. It required technical adjustment of machinery and jobs to female aptitudes and physical strength. It also furthered shifts on the ideological "front"—the emphasis on woman's role in the home gave way to a demand that she fufill her responsibility to the nation.[71] Finally it caused adaptation of wage policies to the new employment needs. What, then, was the effect of these revised policies upon wage behavior as reflected in sex differentials?

The relative stability of wage rates during World War II precluded any significant changes in sex differentials. More interesting is the behavior of sex differentials in earnings. For hourly earnings, changes in sex differentials from December 1935 to the end of the war were rather small. In weekly earnings, men experienced substantially larger wage increases than women. As the labor market tightened men worked longer hours than women; and part-time work, which reduces the statistical average of weekly earnings, became more prevalent for women than for men. (See Table 61.) Sex differentials did not necessarily change in the same direction for skilled and unskilled workers. Note for instance, that during the war, hourly and even weekly earnings of skilled and semiskilled women increased faster than those of men, but the earnings of unskilled women rose more slowly. The difference is not difficult to explain. With the relentless recruitment of men into the armed services, women began to invade occupations and to shoulder responsibilities previously denied to them. Such opening of new earnings opportunities was more conspicuous in the skilled than in the unskilled trades.[72]

Sex differentials can be computed in percentage form, by industry, for 1936 and subsequent years. They are presented in Table 63. For average weekly earnings, the trend is almost without exception toward a slight widening of the differentials, which must be traced to the fact that the increase in hours was more pronounced for male than for female workers.

[69] Umbach, *op. cit.* p. 502.

[70] For statistical support and discussion of this thesis, see Long, *The Labor Force in War and Transition, Four Countries*, pp. 37 and 40-45.

[71] In their attempts to reconcile the new policies with their basic ideology the leaders of National Socialist women's organizations may well have established a record in free interpretation of terms. They had previously declared that woman's place was in the home, but now women were needed in industry. Hence "home" was redefined as whatever can be "encompassed by the spirit of motherhood," and thus they could state that "our home is Germany, wherever she may need us." See Ruth Köhler-Irrgang, *Die Sendung der Frau in der Deutschen Geschichte* (Leipzig, 1940), p. 235.

[72] As a corollary to this situation, the growth in earnings of skilled women exceeded that of unskilled women substantially more than the growth in earnings of skilled men exceeded that of unskilled men.

TABLE 63

Sex Differentials, Average Hourly and Weekly Earnings, by Industry, Selected Years, 1936-1944
(differences between earnings of male and earnings of female workers, expressed in percent of the former, for skill groups indicated)

	HOURLY				WEEKLY			
	1936	*1938*	*1939*	*March 1944*	*1936*	*1938*	*1939*	*March 1944*
Nonferrous metals								
Female vs. male unskilled	...	35.6	35.0	32.3	...	38.7	41.1	47.0
Foundries								
Female vs. male unskilled	...	27.0	27.3	30.5	...	33.6	35.4	46.4
Metalworking								
Female vs. male unskilled	23.1	23.1	24.1	26.8	26.0	27.1	29.7	43.6
Machinery								
Female vs. male unskilled	24.8	21.6	22.7	25.5	27.9	27.8	29.7	44.5
Electrical goods								
Female vs. male unskilled	24.7	21.5	21.5	23.9	27.0	25.1	27.0	40.3
Instruments								
Female vs. male unskilled	26.7	24.7	25.7	28.8	29.7	28.7	29.8	47.6
Chemicals								
Female vs. male unskilled	...	34.4	34.0	...	...	38.5	40.3	...
Rubber and products								
Female vs. male unskilled	...	38.4	36.8	...	...	41.1	41.4	...
Stone and clay								
Female vs. male unskilled	35.3	34.1	32.3	34.5	36.7	37.7	36.4	44.2
Pottery								
Female skilled vs. male skilled	...	45.8	44.7	42.5	...	48.6	48.1	53.8
Female unskilled vs. male unskilled	...	39.9	39.0	33.6	...	43.9	44.0	46.3
Glass								
Female semiskilled vs. male semiskilled	...	53.6	52.5	48.6	...	54.3	54.2	57.8
Female unskilled vs. male unskilled	...	43.2	41.5	35.9	...	45.0	44.5	50.7
Papermaking								
Female vs. male unskilled	34.9	35.7	33.9	30.0	39.2	40.8	40.5	46.2
Book printing								
Female vs. male semiskilled	48.9	49.7	48.9	48.8	50.0	51.1	51.8	55.3
Textiles								
Female vs. male skilled	29.1	29.9	29.5	28.5	30.0	32.6	33.7	39.5
Female vs. male unskilled	29.4	30.8	29.7	23.5	31.2	34.7	34.7	36.4
Clothing								
Female vs. male semiskilled	43.0	42.9	42.5	38.1	44.3	45.0	45.4	51.0
Boots and shoes								
Female vs. male production worker	34.5	33.8	33.3	34.9	33.8	33.7	35.0	44.7
Baking								
Female skilled vs. male skilled	42.9	42.6	42.6	38.7	45.8	45.8	46.3	49.4
Female unskilled vs. male unskilled	35.4	39.3	35.4	33.5	38.4	38.4	39.8	50.9

SOURCE: Appendix Table A-47.

For hourly earnings a widening of sex differentials predominates in heavy armament and some other war materials industries, while a narrowing is observable in several consumers' goods industries.

Industrial Differentials. In the course of a normal cyclical expansion the output of durable goods tends to rise more rapidly than that of nondurables. Similarly, producers' goods output tends to gain more than consumers' goods. This relation is accentuated during rearmament and war cycles, when producers' goods industries have to satisfy the demand for weapons, for ammunition, war vehicles, and the like in addition to supplying essential replacement and investment demands. So, under the National Socialist regime, the more rapidly expanding industries experienced the most acute labor shortages after they had depleted the pool of unemployed workers attached to them. Such pressures were conducive to offers of higher wages, to longer hours, and to a greater relative importance of premium payments. What we must now seek to determine is whether and to what extent the differential expansion of industries, or groups of industries, was in fact reflected in the changing wage structure. As in the case of other differentials, any conclusions must be based on earnings data.

Table 61 shows hourly and weekly earnings in producers' as well as consumers' goods industries with December 1935 as the base. A rather unexpected feature of this exhibit is that, except for a brief period in 1939, weekly earnings rose more, relative to December 1935, in consumers' than in producers' goods industries. A similar situation obtained during the war in the case of hourly earnings.[73]

Since information on earnings is available by industry from 1936 on, we are able to investigate the differences among earnings for various industries. Actual average hourly and weekly earnings as well as percentage changes between the years 1936 and 1939, and March 1944, are presented in Table 64 for nineteen industries. For hourly earnings, one would seek in vain for a clear-cut differential development of earnings in typical war and typical civilian industries. For instance, the metalworking industries registered a relatively small earnings increase, whereas there was a large increase in boot and shoe manufacture. We can, however, observe a rather forceful tendency on the part of hourly earnings in low-wage industries to increase faster than those in high-wage industries. Weekly earnings present a different picture: there is little evidence of a systematic

[73] German statisticians have been puzzled by this behavior and have advanced several explanations: consumption goods experienced a seasonal low in the base quarter; the textile industry in the base quarter suffered from raw material shortages and therefore worked short time in 1935-36; in the producers' goods industries there occurred a relatively greater dilution of skills; the employment of women changed the composition of the work force more in producers' than in consumers' goods; after combing consumers' goods industries for dispensable manpower, the remaining workers had to perform more overtime work at premium rates. The factors cited are probably contributory rather than alternative.

relation between earnings levels and earnings increases; and, in war industries, weekly earnings tended to advance faster than in civilian industries.

These tendencies are reflected in the following dispersion measures based on nineteen industry averages:

	Hourly Earnings[a]	*Weekly Earnings*[a]
1936	20.0	22.1
1939	19.0	22.0
1944 (March)	16.3	22.6

[a] A simplified coefficient of variation is used, consisting of the average deviation (signs ignored) of the industry averages from their own mean, divided by the mean, multiplied by 100.

For hourly earnings we find that industry averages tended to move together. The dispersion measures for weekly earnings do not show significant changes. This means that the tendency toward more equal hourly

TABLE 64

Average Hourly and Weekly Earnings, Nineteen Industries, 1936, 1939, and March 1944

	HOURLY EARNINGS					
	AMOUNT (pfennigs)			PERCENTAGE CHANGE		
	1936	*1939*	*1944*	*1936-39*	*1939-44*	*1936-44*
Industry[a]						
1 Book printing	106.4	107.0	114.2	+.6	+6.7	+7.3
2 Brewing	100.9	101.9	101.5	+1.0	−.4	+.6
3 Electrical goods[b]	92.3	99.8	107.0	+8.1	+7.2	+15.9
4 Iron and steel	88.2	96.5	103.6	+9.4	+7.4	+17.5
5 Instruments[b]	87.4	95.2	102.5	+8.9	+7.7	+17.3
6 Machinery[b]	87.3	94.7	101.1	+8.5	+6.8	+15.8
7 Metalworking	85.7	92.2	96.5	+7.6	+4.7	+12.6
8 Foundries	81.4	92.9	100.0	+14.1	+7.6	+22.9
9 Mining	76.1	83.2	92.4	+9.3	+11.1	+21.4
10 Building	71.6	76.8	82.3	+7.3	+7.2	+14.9
11 Stone and clay	65.0	75.2	80.3	+15.7	+6.8	+23.5
12 Papermaking	63.6	66.8	73.6	+5.0	+10.2	+15.7
13 Boots and shoes	63.2	68.5	80.8	+8.4	+18.0	+27.8
14 Glass	61.7	68.2	85.2	+10.5	+24.9	+38.1
15 Pottery	58.0	63.9	71.9	+10.2	+12.5	+24.0
16 Textiles	54.9	58.0	62.8	+5.6	+8.3	+14.4
17 Clothing	54.6	60.4	66.4	+10.6	+9.9	+21.6
18 Sawmills	54.6	63.6	71.8	+16.5	+12.9	+31.5
19 Baking	50.6	53.3	61.8	+5.3	+15.9	+22.1
Average	73.9	79.9	87.1	+8.1	+9.0	+17.9

(*continued on next page*)

TABLE 64, *continued*

	WEEKLY EARNINGS					
	AMOUNT (marks)			PERCENTAGE CHANGE		
	1936	*1939*	*1944*	*1936-39*	*1939-44*	*1936-44*
Industry[a]						
1 Book printing	50.49	52.73	56.06	+4.4	+6.3	+11.0
2 Electrical goods[b]	45.34	50.55	52.72	+11.5	+4.3	+16.3
3 Iron and steel	45.53	50.71	65.00	+11.4	+28.2	+42.8
4 Machinery[b]	44.17	48.97	53.29	+10.9	+8.8	+20.6
5 Brewing	43.69	51.97	52.37	+19.0	+.8	+19.9
6 Instruments[b]	42.89	49.18	52.27	+14.7	+6.3	+21.9
7 Metalworking	42.27	46.24	46.48	+9.4	+.5	+10.0
8 Foundries	40.29	47.00	52.05	+16.7	+10.7	+29.2
9 Mining	33.73	39.77	47.46	+17.9	+19.3	+40.7
10 Building	32.97	37.31	38.27	+13.2	+2.6	+16.1
11 Papermaking	31.29	34.13	36.91	+9.1	+8.1	+18.0
12 Stone and clay	30.52	36.49	38.59	+19.6	+5.8	+26.4
13 Glass	30.13	33.16	40.47	+10.1	+22.0	+34.3
14 Pottery	27.83	30.51	32.58	+9.6	+6.8	+17.1
15 Boots and shoes	27.64	30.55	35.51	+10.5	+16.2	+28.5
16 Sawmills	26.28	31.06	35.32	+18.2	+13.7	+34.4
17 Clothing	25.36	28.03	26.54	+10.5	−5.3	+4.7
18 Baking	23.76	24.66	25.01	+3.8	+1.4	+5.3
19 Textiles	23.20	26.04	27.17	+12.2	+4.3	+17.1
Average	35.13	39.42	42.85	+12.2	+8.7	+22.0

[a] Ranked by earnings levels, 1936.
[b] Semiskilled male workers only.
SOURCE: *Handbuch* 1928-44, pp. 470-71. Data for 1944 available only for March.

earnings must have been counterbalanced by the greater expansion of hours in the high-wage war industries.

Comparison with World War I can be carried through only in general terms, since industry averages for the earlier period are available for only a limited number of industries and are based on relatively small samples of companies. Earnings averages for the first war period are available only in daily form; since they reflect changes in hours, they are more comparable to the weekly than to the hourly earnings of the second war. The averages for World War I indicated a marked trend toward industrial inequality. The National Socialists, with their effective wage controls, obviously were able to avoid an extreme industrial differentiation of wage incomes.

Irregular and Regular Work Force. Under the National Socialist regime, and particularly during the war years, the services of supplementary labor became so important that a brief description of the wages of such workers seems pertinent to the present discussion. The government mobilized some of the auxiliary workers at wages sharply differentiated from those paid to regular workers. This introduced an element of wage differentiation which remained largely unreflected in the official statistics of rates and earnings.

In its efforts to mobilize all available labor resources, the government introduced compulsory service for young men and women, who were summoned to serve a year at agricultural work. There were also a number of so-called "voluntary" services, such as the agricultural year for younger boys and girls, and the domestic year for girl members of the Nazi youth organization. During the war, school children were mobilized to help at harvest time and to perform other essential services—all at nominal remuneration.

Quantitatively more important than auxiliary labor service in its various forms was the regular employment of foreign workers. The following tabulation indicates the increase in their numbers:

	October 1940	*January 1944*
	(millions)	
Civilian Workers	1.1	6.4
War Prisoners	1.1	2.2
Total	2.2	8.6

SOURCE: E. M. Kulischer, "The Displacement of Population in Europe," International Labour Office, *Studies and Reports*, Series 0, No. 8 (Montreal, 1943); and "The Mobilisation of Foreign Labour by Germany," *International Labour Review*, Oct. 1944.

In 1944, about every fourth worker in Germany was a foreigner. Among the foreign civilian workers a sharp distinction must be drawn between eastern and western workers. The latter, at least theoretically, received the same basic wages as German workers, while the eastern workers were paid considerably lower rates.[74] Within the group of eastern workers a further distinction was made between three subgroups. The most favored subgroup consisted of workers from the Baltic countries. They usually were given inferior jobs, received no premium pay for night and holiday work, and paid a special tax of 15 percent on earnings above 9 marks "in order that their previous standard of living not be exceeded." Considerably worse treatment was accorded to Polish workers; a special regulation provided that they were to be employed at the lowest existing rate for each occupation[75] and age, and stipulated that the rules on minimum piece rates would not apply to them. The maximum rates for the Poles were to be 70 percent of the rates received by Germans, and they were to get no family allowances, birth and marriage subsidies, bonuses at Christmas or other times. The third group, the Russians, were in the worst position. Their basic rates were the same as those for German workers, but in accordance with a special decree concerning the remuneration of labor from the newly acquired eastern territories,[76] all employers of Russian workers had to deduct a steeply progressive tax which left such

[74] The sole exceptions are the so-called *Volksdeutsche* (members of the German ethnic group) who were paid German wages.

[75] It appears that the remuneration of Polish skilled workers was at the rates of unskilled Germans.

[76] *Reichsgesetzblatt*, Part I, p. 41, January 20, 1942.

workers a maximum weekly wage of 17 marks, out of which they had to pay 1.50 marks a day for board and lodging. The charge for living expenses could be reduced only if the deductions left a hapless Russian with less than 40 pfennigs a day.[77]

In the drive to stimulate output, special premiums were introduced in August 1943 for efficient Russian workers with satisfactory records of conduct. They were promised a premium of 20 percent after one year of loyal service, 30 percent after two years, and 50 percent after three years. They were not, however, to receive premium pay for overtime, night, or Sunday work. Here is an approximate comparison of wages for German and eastern workers, as of April 1943:

	Unskilled	*Skilled*
	(marks)	
German workers' weekly wages	24.50	42.35
Minus eastern workers' tax	−5.25	−16.80
Equals gross wage, eastern workers	19.25	25.55
Minus deductions for board and lodging	−10.50	−10.50
Amount paid out to eastern workers	8.75	15.05

In addition, some part of the final cash payment was made in scrip which theoretically could be cashed, but only in occupied Russian territory.

As for western foreign workers, although their basic rates were the same as those of German workers, their wages were in fact reduced in several ways. There were, for instance, compulsory deductions for support of the workers' dependents in their home country. Furthermore, the resultant payments to the dependents were made in the currencies of the workers' countries. Having introduced artificial exchange rates which favored the German currency, the Third Reich obtained the services of these foreign workers at still lower cost than appeared on the books.[78]

Yet to be described are the rates paid to prisoners of war. These were nominal. In 1944, Russian prisoners received 40 pfennigs per day, Polish prisoners 70 pfennigs, and prisoners of all other nationalities 90 pfennigs. If the work consisted of emergency repairs after air raids, the rates paid the unfavored nationals were still lower, for Russians 30 pfennigs and for Poles 60 pfennigs, while other nationalities obtained the normal rate of 90 pfennigs. These rates were of course supplementary to the lodging and food provided in the prisoner-of-war camps. If private employers used gangs of prisoners they had to pay the fixed wages, provide the prisoners with board and lodging, and make compensation to their camps. Since war prisoners must be fed, clothed, and housed whether

[77] Yet this was an improvement over original arrangements. Before September 1943, reductions in the charge for board and lodging for Russian workers were permitted only if they retained less than 20 pfennigs a day.

[78] See Umbach, *op. cit.*, p. 513.

they worked or not, their impressment at nominal wages constituted an important net advantage to the German economy.

Finally, let us look at the employment situation of Jewish workers. From 1933 onward, Jews had been gradually deprived of all opportunities for work. With the emergency requirements of 1939, there was a slight reversal of policy, and a small number of physically fit Jews were put to work. A special decree covering their employment[79] specified that they had to accept any work, were debarred from benefit of protective regulations, were to be paid subsistence wages only, and were preferably to be assigned to menial tasks in strict separation from other workers. Severe punishment was threatened if anyone, including employers, violated these rules.[80] The period of legalized employment of Jewish workers was relatively brief. When the turn of military events drove the regime to ever more desperate measures, the gain to be derived from the employment of some Jewish workers was subordinated to a more effective prosecution of the regime's extermination policies.

WAGES AND PRICES

Wage Rates and Wholesale Prices. Prices were strictly controlled during the period of National Socialism.[81] The effectiveness of such controls can be gauged by the fact that price levels in all major categories remained materially below their previous prosperity levels, although from 1939 on the level of general business activity was higher and the scarcity of goods more pronounced than in 1928-29 (see Table 65 and Appendix Table A-1). Even in the course of World War II, wholesale and retail prices did not increase by much more than 10 percent, compared with the doubling or trebling of price levels in the course of World War I.

Controls were most effective in two "price" areas—labor and producers' goods. As noted previously, wage rates under National Socialism did not increase more than 3 percent, and prices of producers' goods were, by the end of World War II, on a par with or slightly below their 1933 position. The stability in these two areas is the more noteworthy since general wholesale price levels from 1933 to 1944 increased by about a quarter and prices in some commodity groups went up more than a third. Thus, the high degree of stability of wage rates was a cyclical abnormality in relation not only to general business activity but also to the substantial changes in wholesale price levels.

The special position of producers' goods in these comparisons is not fortuitous. In the past, cartels had been more effective in the producers' goods than in the consumers' goods area. The prevention of major downward adjustments during the Great Depression left producers' goods

[79] October 3, 1941, with executive orders of October 31, 1941.

[80] Livchen, "Wartime Developments in German Wage Policy," *International Labour Review*, August 1942, p. 163.

[81] The first control measures were issued as early as the fall of 1933. See L. Hamburger, *How Nazi Germany Controlled Business* (Brookings Institution, 1943), p. 47.

TABLE 65

Wage Rate and Prices, 1929-1944

Year	Average Hourly Wage Rates (1)	Cost of Living (2)	WHOLESALE PRICES					
			All Commodities (3)	Manufactures, Finished Raw and Semi-finished (4)	Manufactures, Finished Manufactures (5)	Producers' Goods (6)	Consumers' Goods (7)	Sensitive Prices (8)
			(1932 = 100)					
1928	116	126	145	151	135	116	149	277
1929	122	128	142	149	134	117	146	247
1930	124	123	129	135	127	116	136	194
1931	118	113	115	116	116	111	119	132
1932	100	100	100	100	100	100	100	100
1933	97	98	97	100	96	96	95	114
1934	97	100	102	103	98	96	100	126
1935	97	102	105	103	101	96	106	138
1936	97	103	108	106	103	95	108	149
1937	97	104	110	108	106	96	113	157
1938	97	104	110	106	107	95	115	147
1939	98	105	111	107	107	95	116	149[a]
1940	98	108	114	111	110	95	121	...
1941	99	110	116	113	112	96	125	...
1942	99	113	119	115	113	96	126	...
1943	100	115	120	115	115	96	129	...
1944	100[b]	117	122	116	116	96	130	...
			(1939 = 100)					
1939	100	100	100	100	100	100	100	...
1940	100	103	103	104	103	100	104	...
1941	101	106	105	106	105	101	108	...
1942	101	108	107	108	106	101	109	...
1943	102	110	109	108	107	101	111	...
1944	102[b]	112	110	108	108	101	113	...

[a] First four months only. [b] Assumed to equal 1943.

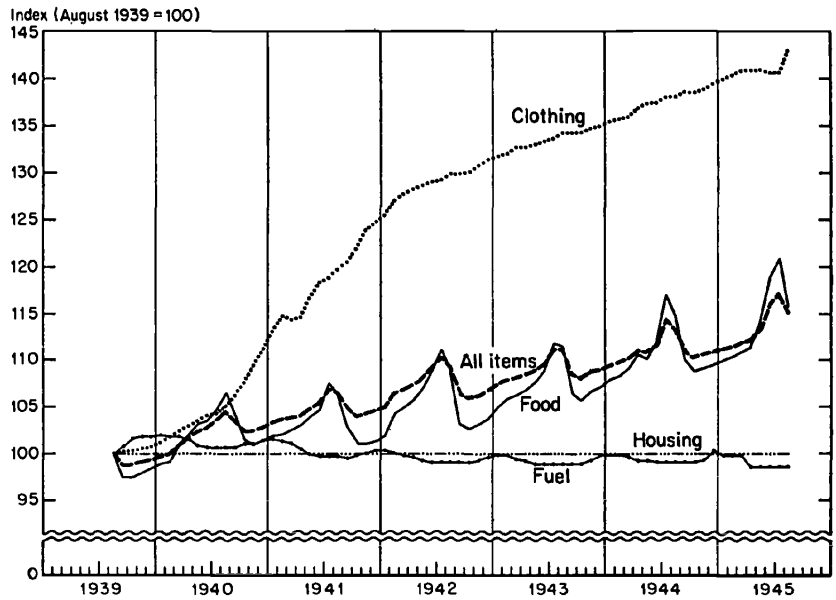
SOURCE: Wage rates, see sources for col. 1, Part III, Appendix Table A-2. Cost of living, Appendix Table A-33. Wholesale prices, *Handbuch* 1928-44, p. 460; *IKF Handbuch* 1936, pp. 99 ff; *Statistik des In- und Auslands*, 1939-1940, *passim*.

in a relatively strong price position. This fact, together with the rapid expansion of production and sales, assured increased profits to manufacturers of producers' goods despite the fairly strict control of their sales prices and the price increases in raw materials and semimanufactured items. The price control by cartels during the Great Depression and the price control by government during National Socialism led to a situation in which producers' goods prices throughout 1924-45 fluctuated less than consumers' goods prices or any other major price category.

The less rigid control of consumers' goods prices was deliberate, and played a most important role in the economic policies of National Socialism. It was an intrinsic part of the price and wage control system designed to allocate national income in keeping with the over-all objectives of the regime. Controlled increases in prices of consumers' goods at wholesale formed the basis of similarly controlled increases in consumers' goods prices at retail.

CHART 31

Cost of Living, by Major Components, 1939–1945



Source: Appendix Table A-33 (base shifted).

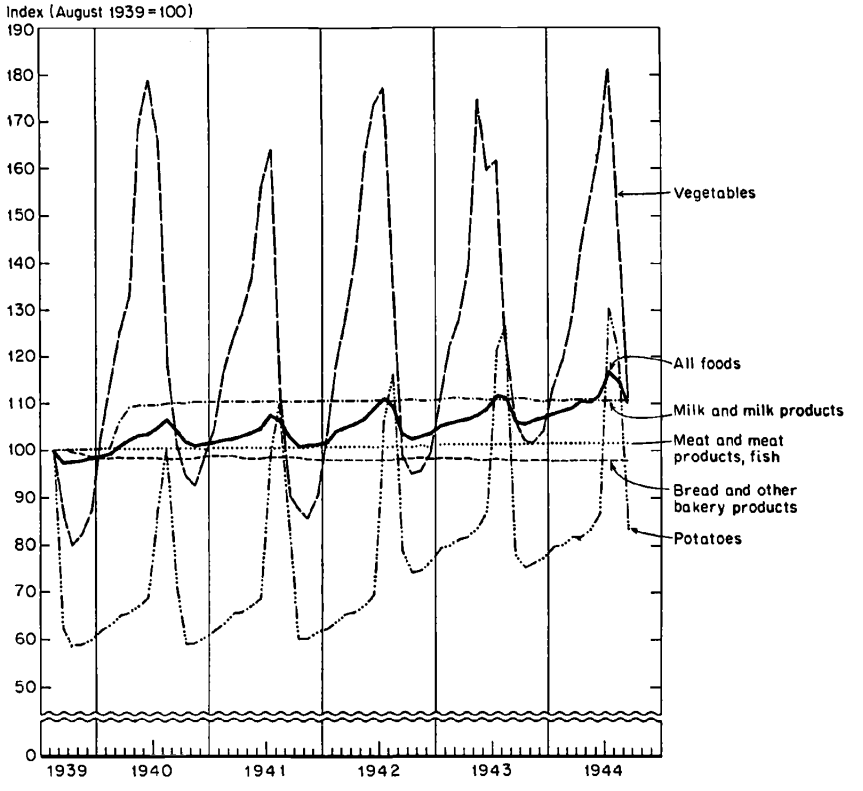
Cost of Living. The official cost-of-living index for the years of National Socialism shows an increase of about 20 percent compared with a wage-rate rise of 3 percent, a fact worth emphasis, since in the preceding expansion the increase in wage rates had tended to outpace the rise in cost-of-living. It is probable, however, that also in some pre-1913 reference expansions as well as during World War I there was a rise of living costs in excess of that in wage rates.[82] Characteristically, the greater increase of living costs as compared with wage rates can be found throughout the period of National Socialism.

Examination of the index reveals that the increases are concentrated in a few of its segments (see Appendix A-33 and Chart 31). Through the years 1933-45, the rent index remained entirely stable, the miscellaneous index rose by less than 10 percent, and the fuel and light index actually

[82] See Chart 6 and the section of this chapter on Wages in World War I.

dropped by a few percent. Substantial increases were registered only in the food segment (up about 30 percent) and in the clothing segment (up about 80 percent). These two segments, however, account for two-thirds of the total index, and could thus impart considerable fluctuation to the index as a whole.[83]

CHART 32
Cost of Foods, 1939–1943



Source: Table 66.

Food prices are responsible for most of the seasonality of the total index. Table 66 and Chart 32 present some selected food prices. We note that meat and bakery products were kept at a virtually stable level from the beginning of the war. Prices of milk products were raised in April of 1940 but were rigidly controlled thereafter. Prices for vegetables and potatoes fluctuated seasonally within their historical range; the trend level of these prices was permitted to move upward gradually. With this

[83] The composition of the index is based on an inquiry into consumption habits undertaken in 1927-28. The segments of the index and their relative weights are as follows: food, 55.4 percent; rent, 13.1 percent; fuel and light, 4.7 percent; clothing, 12.9 percent; miscellaneous (including furniture), 13.9 percent.

TABLE 66

Food Costs, by Months, 1939-1943
(August 1939 = 100)

Year and Month	*Bakery Products*	*Potatoes*	*Vegetables*	*Meats and Fish*	*Milk and Products*	*All Foods*[a]
1939						
Aug.	100.0	100.0	100.0	100.0	100.0	100.0
Sept.	100.0	62.4	85.9	100.1	100.0	97.6
Oct.	99.4	58.7	79.9	100.1	100.1	97.6
Nov.	99.3	58.7	82.1	100.1	100.1	97.9
Dec.	98.8	59.7	87.2	100.1	100.1	98.3
1940						
Jan.	98.4	61.9	102.5	100.3	100.2	98.9
Feb.	98.4	62.9	114.4	100.3	100.4	99.0
Mar.	98.5	65.1	125.6	100.4	106.0	101.0
Apr.	98.5	65.6	133.6	100.3	109.3	102.1
May	98.5	66.9	168.6	100.3	109.4	103.3
June	98.5	68.9	178.7	100.3	109.6	103.4
July	98.5	87.2	165.9	100.4	109.6	104.7
Aug.	98.4	100.2	118.2	100.4	110.0	106.6
Sept.	98.4	71.0	101.4	100.4	110.1	104.0
Oct.	98.4	59.5	94.8	100.4	110.1	101.5
Nov.	98.5	59.5	92.8	100.4	110.3	101.0
Dec.	98.6	60.8	98.7	100.3	110.3	101.5
1941						
Jan.	98.8	61.9	104.3	100.5	110.3	101.8
Feb.	98.9	63.4	116.8	100.5	110.3	102.1
Mar.	98.9	65.6	123.5	100.5	110.4	102.5
Apr.	98.5	65.9	129.1	100.5	110.5	103.0
May	98.3	67.3	137.2	100.5	110.5	103.9
June	98.4	68.9	156.0	100.7	110.5	104.6
July	98.5	99.0	164.1	100.5	110.5	107.5
Aug.	98.5	110.3	110.8	100.5	110.5	106.6
Sept.	98.5	82.5	90.6	100.5	110.5	102.8
Oct.	98.5	60.2	87.5	100.7	110.5	101.0
Nov.	98.1	60.2	85.7	100.7	110.5	101.1
Dec.	98.0	61.9	90.8	100.8	110.7	101.1

(*continued on next page*)

TABLE 66, *continued*

Food Costs, by Months, 1939-1943
(August 1939 = 100)

Year and Month	*Bakery Products*	*Potatoes*	*Vegetables*	*Meats and Fish*	*Milk and Products*	*All Foods*[a]
1942						
Jan.	98.0	62.4	103.8	100.9	110.7	101.7
Feb.	98.0	63.8	118.6	100.9	110.8	104.1
Mar.	98.0	65.6	128.7	100.9	110.8	105.0
Apr.	98.0	66.0	142.1	100.9	110.8	105.6
May	98.0	67.3	163.0	100.9	110.8	106.9
June	98.0	69.7	173.8	100.9	110.8	109.0
July	98.0	106.1	177.4	100.9	110.8	111.2
Aug.	98.0	116.1	131.2	100.9	110.7	109.3
Sept.	98.1	78.8	98.7	100.9	110.8	103.2
Oct.	98.2	74.3	95.1	100.9	110.9	102.7
Nov.	98.4	74.5	95.5	101.1	110.8	103.0
Dec.	98.3	76.7	99.6	100.9	110.8	103.6
1943						
Jan.	98.4	79.4	111.2	101.1	110.9	105.1
Feb.	98.4	79.9	122.4	101.3	111.2	105.9
Mar.	98.3	81.3	128.0	101.3	111.2	106.2
Apr.	98.4	81.8	139.9	101.3	111.0	106.8
May	98.0	83.8	174.9	101.3	111.0	107.5
June	98.0	87.2	159.6	101.3	110.9	108.9
July	98.1	121.4	161.5	101.3	111.0	111.9
Aug.	98.0	126.8	125.3	101.3	110.9	111.7
Sept.	98.0	78.0	106.3	101.3	111.1	106.3
Oct.	98.0	75.1	102.2	101.7	111.1	105.7
Nov.	98.0	76.1	101.8	101.7	110.9	106.5
Dec.	98.0	77.4	104.0	101.6	110.8	107.0
1944						
Jan.	98.0	79.9	113.4	101.7	110.9	108.0
Feb.	98.0	80.0	119.0	101.7	110.8	108.4
Mar.	98.0	81.9	127.6	101.7	110.9	109.0
Apr.	98.0	81.9	142.8	101.7	110.9	110.7
May	98.0	83.3	153.6	101.7	110.9	110.2
June	98.0	87.0	164.1	101.7	110.8	111.7
July	98.0	130.4	181.2	101.7	110.8	117.0
Aug.	98.0	121.0	145.1	101.7	110.8	114.9
Sept.	98.0	83.5	111.2	101.7	110.8	110.1

[a] Total food group of cost-of-living index for 72 cities.

SOURCE: *Wirtschaft und Statistik, passim.* Base shifted to August 1939 = 100.

highly individualized system of controlling small groups or even separate items, food prices and living costs in general could be forced into conformity with the basic economic policies of the regime.

The above observations concern the actual behavior of the cost-of-living index, as published. For the purposes of the present inquiry it is necessary to comment on the quality of the index. In 1933 the published cost-of-living index was based on an obsolete consumption scheme which had originated in 1907 and had been modified only slightly to allow for obvious changes in consumption up to the mid-1920's. The inadequacies of the index were generally recognized and led to an official budget inquiry in 1927-28. Preparation of a new cost-of-living index, based on the results of the more recent inquiry, was started during the time of the Weimar Republic, but actual revision and publication of the new index were undertaken only in 1934. Despite the major increases in the number of commodities included and the changes in the weights of the commodity groups, the unrevised and revised measure agreed surprisingly well—at least in the behavior of the aggregate index.[84] The revision did not entirely silence criticism of the cost-of-living index. The average income of the sample used in the budget inquiry was said to deviate substantially from that of the working class as a whole; the preponderance of large families in the sample was said to lead to a disproportionately low share of rental expenses; and the expenditures for tobacco and alcoholic beverages were held to be seriously underestimated.[85] However it was conceded by some critics that, up to about 1936, the new index might have been a tolerably faithful indicator of changes in the living costs of German workers.

The Nazi trend toward autarchy, the reservation of major consumption items for military purposes, and the widespread use of substitutes changed consumption patterns and impaired the value of the fixed-weight index. It was hinted, even by National Socialist officials, that the index might not mirror satisfactorily the actual increases in expenditures necessary to maintain a given level of economic well-being. In fact some rough estimates of the bias were made. Between 1933 and 1937 actual living costs were said to have risen by 7 to 15 percent instead of the 6 percent indicated by the official index.[86]

[84] The new index is presented and discussed in "Neuberechnung der Reichsindexziffer für die Lebenshaltungskosten," *Wirtschaft und Statistik*, 1934, pp. 626-31. A discussion of the principles underlying the revision can be found in "Die Messung der Lebenshaltungskosten," *Vierteljahrshefte zur Statistik des Deutschen Reichs*, 1937, I, pp. 149-165. The results of the budget inquiry of 1927-28, basic to the revision, are contained in "Die Lebenshaltung von 2,000 Arbeiter-, Angestellten- und Beamtenhaushaltungen," *Einzelschriften zur Statistik des Deutschen Reichs* (No. 22, Berlin, 1932).

[85] W. Woytinsky, "Statistik der Arbeit," in *Internationales Handwörterbuch des Gewerkschaftswesens* (Berlin, 1932), pp. 1585-1586.

[86] See *Die Wirtschaftskurve*, August 1938, pp. 301 ff. Jürgen Kuczynski makes some adjustments of the official index which imply a rise of at least 9 percent between 1933 and 1937 (his explicit adjustments are for the increase from 1932 to 1937). See his "Germany under Fascism, 1933 to the Present Day," pp. 105-6.

The real difficulties started in 1939, when the war accentuated the changes in consumption patterns caused by more acute shortages and by the introduction of rationing. The Statistische Reichsamt revised the character of the index to make allowance for its changing composition.[87] The new one is a chain index based on monthly link relatives which describe, as well as possible, price changes of identical goods. This was not always feasible, however. Where there were substitutions of rations, the price of the substitute could be inserted without the use of links. We find that "fat consumption was cheapened because more margarine was allotted instead of other edible fats,"[88] or in the case of vegetables, the prices for the three vegetables in most ample supply at any time were used for the computation of the index.[89] By such treatment the value of the index as an indicator of price changes is certainly impaired. Furthermore, the more permanent substitutions of goods in the index were made without proper regard to quality. Fats, for instance, could be replaced by jams and jellies. It is clear that, with such substitutions, the quality of the priced consumers' goods could deteriorate without any fixed lower limit. Eventually a diet of turnips and ersatz-coffee might be priced instead of a high protein diet. And while the prices of the original consumption might have skyrocketed, the index may show moderate increases only. The authorities recognized that, as the war proceeded, the cost-of-living index was regarded with extreme skepticism by those members of the public who cared to follow it. But the authorities insisted staunchly that basic foods did not cost much more in 1942 than they had in 1938, and added: "If this result seems to be contradicted by the experience of daily life, this is due to attempts on the part of consumers to supplement their nutrition (beyond the basic needs covered by rationed foods) by buying unrationed food and luxuries (e.g., restaurant fare) or buying more expensive qualities than in peacetime."[90]

In view of the actual shortages, the widespread network of black markets, the deteriorations in quality, the changes in consumption patterns, and the leeway granted to the compilers, the cost-of-living index for the period of World War II must be regarded as an unreliable measure. One is safe, however, in assuming that the official measure did not overstate the rise of living costs.

REAL WAGES

Wage Rates. The policy of stabilizing wage rates but permitting rises in living costs led to a gradual decline in real hourly wage rates of roughly

[87] For a description of the major changes see *Wirtschaft und Statistik*, November 1939, p. 717; and October 1942, p. 343.

[88] *Ibid.*, October 1942, p. 347.

[89] *Ibid.*, May 1942, p. 141; June 1943, p. 166.

[90] *Wirtschaft und Statistik*, quoted by H. W. Singer, *London and Cambridge Economic Service*, January 1943, p. 22.

13 percent between 1932 and 1943 (see Table 67).[91] The significance of this decline has been commented upon previously. Briefly, the drop in real hourly rates was expected to serve as a spur to production and at the same time to limit consumers' demand on the national product. The close control over wages and prices permitted a gradual decline of real wage rates, timed to correspond with increases in hours. The decrease in real wage rates was concentrated during World War II. Whereas the decline from 1932 to 1939 amounted to only 6 percent, it was about 9 percent from 1939 to 1944.

TABLE 67

Average Real Wage Rates and Earnings, All Industry, 1932-1944
(1932 = 100)

Year	*Hourly Rates*	*Hourly Earnings*	*Weekly Earnings*
1932	100.0	100.0	100.0
1933	99.4	99.4	104.8
1934	96.8	99.4	109.6
1935	95.2	99.2	110.5
1936	94.5	100.0	113.7
1937	93.9	101.2	116.8
1938	93.6	103.8	121.4
1939	94.0	106.9	126.0
1940	91.1	106.0	125.8
1941	89.9	108.5	131.1
1942	87.9	107.0	128.0
1943	87.4	107.0	127.7
1944	85.5[a]	104.6	123.5

[a] Assumes stability of money rates, 1943 to 1944.

SOURCE: Money wages, see sources to Appendix Table A-2. Cost of living, Appendix Table A-33, base shifted to 1932 = 100.

Decreases of real wage rates occurred during both world wars, though the situations differed in several respects. First, the real rate decline during World War I started from cyclical peak levels (1913), that during World War II from trough levels (1932). Second, wage rates, cost of living, and therefore real wage changes were uncontrolled during the first war but controlled during the second. Finally, in contrast to wage behavior during World War I, the deterioration of real wage rates during the more recent conflict was uniform, and avoided extreme differences between favored and unfavored groups of workers. The differences in wage behavior as

[91] In view of the minimum character of money wage rates during the Weimar Republic, it should be noted that under the National Socialist regime minimum rates and effectively paid rates were rather close. This was brought about by fixing wages at depression levels. Real wage rates, as described above, are based on the official cost-of-living index. If the adjusted cost-of-living index given in column 5 of Table 68 is used as a deflator, the total decline between the years mentioned would amount to 17 percent.

between the two wars can be observed from Table 52 and 67.[92] Real wage rates during World War II, as derived from official wage and living-cost data, declined uniformly by about 7 to 9 percent. The few rate series available for World War I illustrate the larger decline as well as the wider differences in the development of real rates. Between 1913 and 1918 the decline ranged from 0.2 percent (unskilled railway workers) to 46 percent (printers and compositors). The relative position of the reported series in 1917 is even worse than in 1918, bearing witness to the extreme fluctuations of real wages during the first war.[93]

Earnings. Real rates and real earnings under National Socialism can be compared in Table 67. While real rates decreased throughout the Nazi period, average hourly real earnings at first maintained their level (1932-36), then rose gradually by a little more than 8 percent (1936-41), decreased by about 1 percent (to 1943), and then by another 2 percent (to 1944).[94] This behavior is closely related to the economic and political fortunes of the regime. During the early period when the creation of jobs was the major objective (1932-36), rises in earnings just about compensated for increased living costs. During the period of active war preparation and the initial war expansion (1936-41), there were material increases of hourly real earnings. The period of all-out war and military reversals brought about the reduction of hourly real earnings.

If official real wage measures are used as a guide, hourly real earnings were significantly (more than 5 percent) above depression levels only in five out of the almost thirteen years of National Socialism. And if some account is taken of the admitted defects of the official cost-of-living index, the number of "favorable" years would be further reduced.

Weekly real earnings increased considerably more than hourly real earnings, corresponding to the relation of weekly and hourly money earnings. According to official data, weekly real earnings increased by 31 percent from 1932 to 1941. They dropped in subsequent years, but in 1944 were still 24 percent above depression levels and even 6 percent above 1929 levels. The record appears less impressive if adjustments are made for increased deductions and for the inadequacies of the cost-of-living index—at least to the extent admitted by contemporary German publications. Comparisons of unadjusted and adjusted weekly real earnings levels in 1929 and from 1932 to 1944 are presented in Table 68. The table shows that after these adjustments weekly real earnings at their peak in 1941 were only 21 percent above depression levels and in 1944 only 14 percent above, compared with the 1929 position of 18 percent above 1932. But even after

[92] See also Table 79 and Chart 33.

[93] These comparisons are rough. Adjustment for price changes during World War I was carried out on the basis of rather crude estimates of living costs, but during World War II on the basis of the official index described in the previous section.

[94] The downward bias of living costs, as previously discussed, probably led to an overstatement of the rise in real earnings after 1936 and to an understatement of their eventual decline.

TABLE 68

Weekly Real Earnings, Adjusted, 1929 and 1932-1944
(1932 = 100)

Year	WEEKLY REAL EARNINGS			COST-OF-LIVING INDEXES	
	Official Index (1)	*After Deductions* (2)	*After Deductions and Living Cost Adjustment* (3)	*Official Index* (4)	*Adjusted Index* (5)
1929	117	118	118	127.7	127.7
1932	100	100	100	100.0	100.0
1933	105	104	104	97.8	97.8
1934	110	109	109	100.4	100.4
1935	111	110	110	102.0	102.0
1936	114	112	112	103.2	103.2
1937	117	115	110	103.7	108.6
1938	121	119	114	104.1	109.0
1939	126	123	118	104.6	109.5
1940	126	122	116	107.9	113.0
1941	131	127	121	110.4	115.6
1942	128	124	119	113.3	118.6
1943	128	123	118	114.8	120.2
1944	124	119	114	117.2	122.7

SOURCE, by column:
(1) Appendix Table A-2, adjusted by col. 4 of this table.
(2) Table 16, col. 6, adjusted by col. 4 of this table.
(3) Table 16, col. 6, adjusted by col. 5 of this table.
(4) Appendix Table A-33.
(5) Official cost-of-living index used for 1929 and 1932-36. For 1937, assumed to be 11 percent over 1933 on the basis of estimate in *Die Wirtschaftskurve* which states the rise in living costs between 1933 and 1937 to be 7 to 15 percent (Vol. 17, pp. 301 ff.). For 1938-44, revised by ratio of adjusted to official index in 1937. This adjustment assumes no increase in the bias ratio—a conservative assumption. See Hilde Oppenheimer-Bluhm, *The Standard of Living of German Labor under Nazi Rule*, Supplement v, *Social Research*, 1943, p. 39.

these adjustments the real earnings data are of limited significance. Whether qualities were kept up or deteriorated, whether workers had relatives on farms, whether they were friends with the butcher, whether they had access to the black market, whether they obtained gifts from soldiers, whether their places of employment provided one square meal—these factors more than others determined the workers' economic well-being and the amount of goods they could purchase with their wages. It is such considerations that led some authors to believe that for the war years real wages should not be computed at all.[95] Without prejudice to the limited use made of

[95] For an eloquent defense of this view see Jürgen Kuczynski, *Germany under Fascism, 1933 to the Present Day*, pp. 175-76. Kuczynski, though continuing to report money wages and cost-of-living data, stops computing real wages with 1938.

the real wage measure in the preceding pages, it can be readily agreed that, in the course of the war, real wages—however measured—became a less and less important indicator of economic well-being. The reduced rations, the scarcities, the deterioration of goods in general, the increase in hours and intensity of work, the tightening restrictions on mobility, the cutting of holidays and vacations, and the exhaustion induced by air raids and air-raid alarms—none of these factors is reflected in real wage measures.

During World War II real wages deteriorated more tardily and probably less than during World War I. This was because of exploitation of occupied territories, more systematic use of domestic and foreign labor reserves, productivity increases since the previous war, and the system of control measures. These factors permitted the provision of a substantial amount of consumers' goods despite the devotion of all major resources to actual war purposes. Thus weekly real earnings as measured by the official index began to sink only in 1941. The food situation did not become really serious until 1944, when bombing raids disorganized normal household routine to such an extent that more than twenty-six million people could be fed only in communal centers. Things went from bad to worse, until the final defeat. In fact, it was only years after the termination of hostilities that real wages and consumption began to recover.