

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: Personal Income During Business Cycles

Volume Author/Editor: Daniel Creamer assisted by Martin Bernstein

Volume Publisher: Greenwood Press

Volume ISBN: 0-313-24421-9

Volume URL: <http://www.nber.org/books/crea56-1>

Publication Date: 1956

Chapter Title: Cycles in Types of Nonfarm Labo Income

Chapter Author: Daniel Creamer, Martin Bernstein

Chapter URL: <http://www.nber.org/chapters/c2767>

Chapter pages in book: (p. 34 - 59)

CHAPTER 5

CYCLES IN TYPES OF NONFARM LABOR INCOME

THE importance of labor as a source of personal income—in recent decades it formed about two-thirds of the total—suggests that we cannot be content simply with analyzing the aggregate of nonfarm labor income. By analyzing its components we can see the dispersion about the average, and the pattern of dispersion may provide more illuminating insights.

Timing of Turns in Labor Income by Industrial Source before World War II

Total labor income was defined above as the sum of wages, salaries, their supplements, and transfer payments, excluding those paid by business, minus employee contributions for social insurance. However, in dealing with individual industries or industry groups, we must use figures on wages and salaries alone, since supplements and transfer payments are not available by industrial source. The monthly record of wages and salaries begins with 1929. Following the Department of Commerce in its published estimates, with minor adjustments, we distinguish four broad groups of industries. The percentages of wages and salaries paid to each during the 1929-1937 period are as follows:

Commodity-producing industries excluding agriculture (mining, manufacturing, and construction)	37 per cent
Distributive industries (transportation, public utilities, and trade)	31 per cent
Service industries (finance, insurance, real estate, and other services) ¹	17 per cent
Government, including work relief	16 per cent

PRIVATE SECTOR—WAGES AND SALARIES

Labor income in each of the three private-industry groups in the prewar decade conforms to the cycles in general business. Differences in turning points, however, appear. In the commodity-producing industries, for example, the turns coincide with the turns

¹ The monthly and even the annual estimates of payrolls in most of the service trades between 1929 and 1939 are not well grounded in statistical materials, especially in the noncensus years.

CYCLES IN NONFARM LABOR INCOME

in general business, while brief lags characterize the distributive industries, and still longer lags are found in the service industries (Chart 9 and Table 7).

While it is hazardous to base a conclusion on four observations, these differences among the three industry groups seem to be valid ones; in any case they accord with expectations. The differences may be traced in part to fluctuations in man-hours worked, since there is good reason to believe that wage rates in all industry groups typically lag behind turns in man-hours.² In many of the distributive and service trades the number employed is conditioned by the need to meet daily or weekly peak demands. Aggregate demand or activity may change moderately and yet peak demands may not be affected enough to justify altering the working force. This situation is much less common in commodity-producing industries. This factor, moreover, would be operative at both peaks and troughs. It would tend to create lags in employment and man-hours, and therefore in payrolls, since wage rates also lag.

At peaks, differences in the economic character of the output of these three groups also contribute to the differences in the observed lags. It is well known that consumers are reluctant to alter their standard of living immediately upon suffering a reduction of income.³ Therefore, industries that deal directly with final consumers are likely to react more slowly to downturns in general business than industries that deal directly with other enterprises and only indirectly with consumers. The service industries largely receive their income directly from the final consumer; this is less true of the distributive industries, and still less true of the commodity-producing industries. Hence at peaks we should expect labor income to show a longer lag in service than in distributive industries, and in distributive than in commodity-producing industries. However, the statistical findings, based on two turning points between 1929 and World War II, confirm only one of our expectations, namely, that wage and salary disbursements of the service industries lag behind the commodity-producing industries.

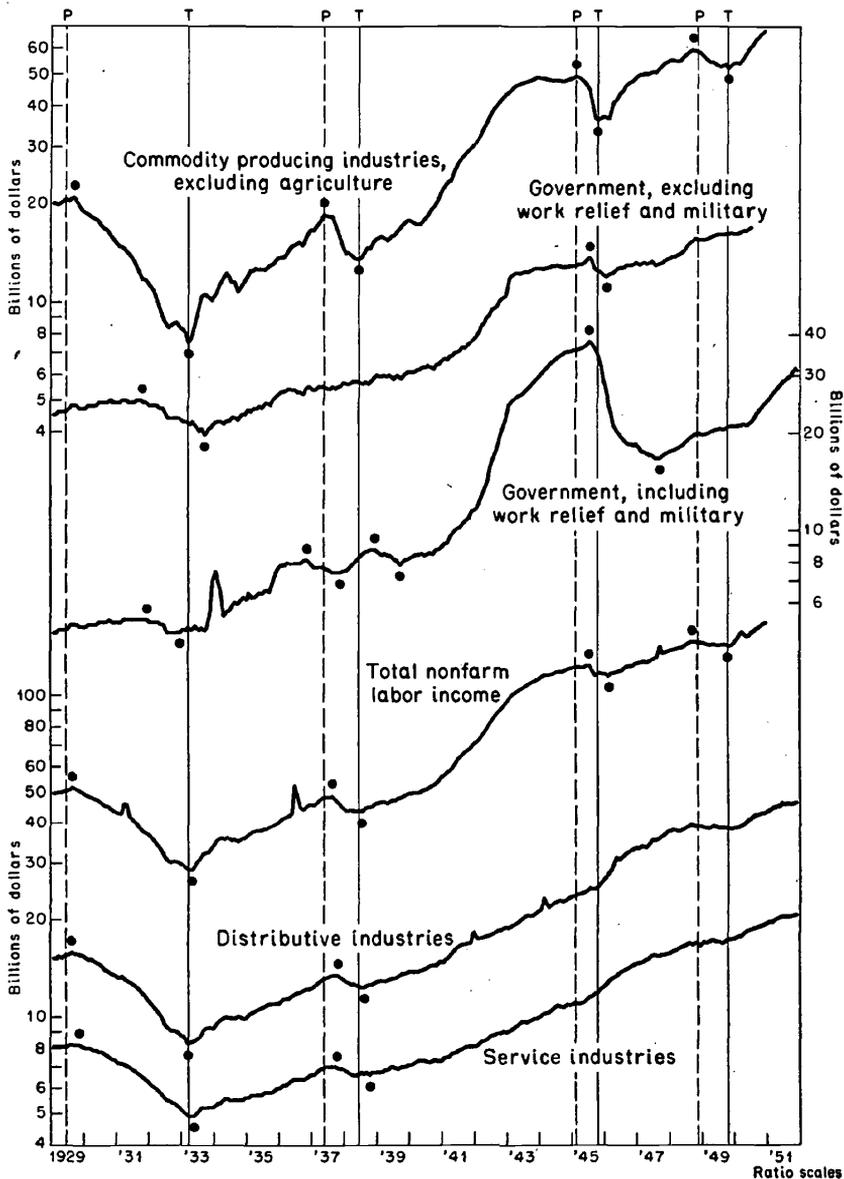
Labor income originating in the commodity-producing industries

² This was shown to be the case in manufacturing and rail transportation in Daniel Creamer's *Behavior of Wage Rates during Business Cycles* (National Bureau of Economic Research, Occasional Paper 34, 1950).

³ See the argument to this effect by Franco Modigliani in his "Fluctuations in the Saving-Income Ratio: A Problem in Economic Forecasting," in *Studies in Income and Wealth, Volume Eleven* (National Bureau of Economic Research, 1949, pp. 384-388).

CYCLES IN NONFARM LABOR INCOME

CHART 9
Nonfarm Labor Income by Major Industry Group, 1929-1951



Broken and solid vertical lines represent business cycle peaks and troughs, respectively.
Source: See note to Table 7. All data are seasonally adjusted annual rates.

CYCLES IN NONFARM LABOR INCOME

TABLE 7

Lead (—) or Lag (+) of Total Nonfarm Labor Income and of Wage and Salary Disbursements by Major Industry Group at Business Cycle Turning Points, 1929-1949
(months)

	P June 1929	T Mar. 1933	P May 1937	T June 1938	P Feb. 1945	T Oct. 1945	P Nov. 1948	T Oct. 1949
Total nonfarm labor income	+2	+1	+3	-1	+5	+4	-2	0
Nonfarm wage and salary disbursements								
Nonagricultural commodity-producing industries	+3	0	0	0	0	0	-2	0
Distributive industries	+2	0	+5	+2				
Service industries	+5	+2	+5	+4				
Government								
Including work relief and military ^a	+30	-3	-6	-7	+5	+23		
Excluding work relief and military	+28	+6			+5	+3		

^a A noncorresponding cycle occurred between 1937 and 1939 due to the inclusion of work relief. The work-relief programs, started in 1930 and ended in 1942, produced an inverted response in government payrolls in the 1937-1938 contraction.

P = peak; T = trough.

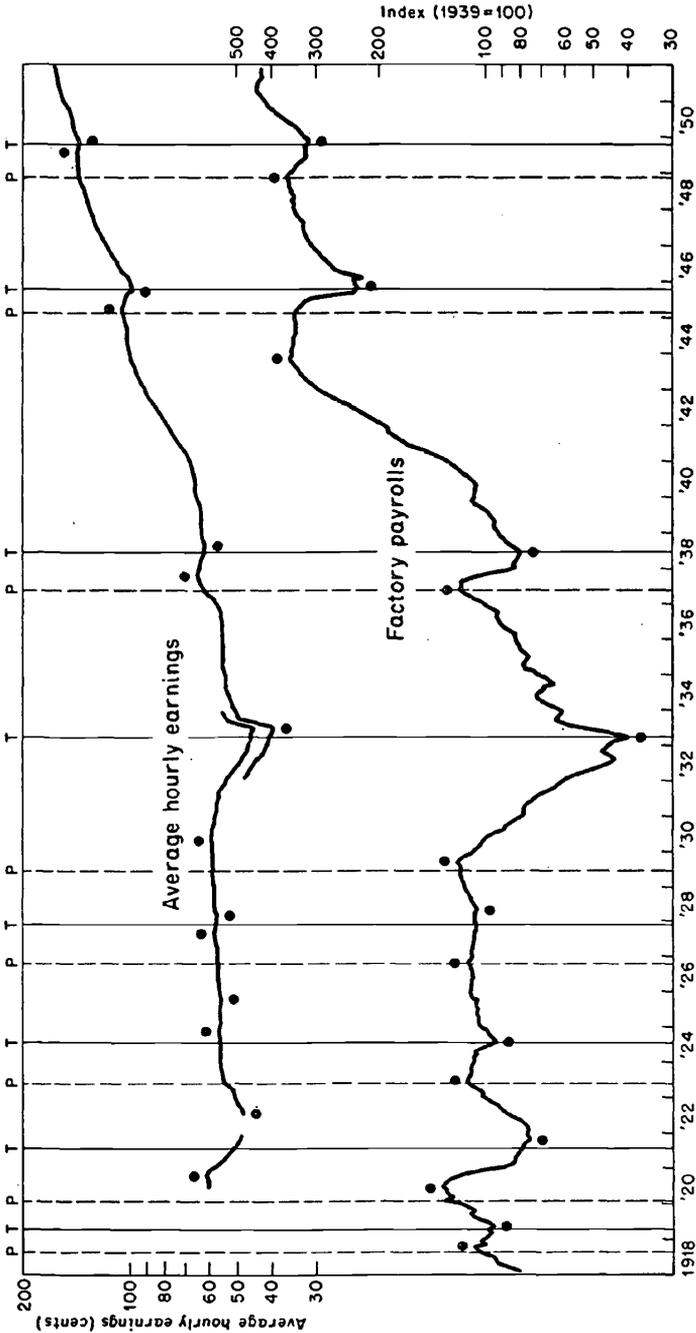
Source: Business cycle turns are those in the National Bureau of Economic Research business cycle chronology; turns in nonfarm labor income and in disbursements are based on published and unpublished estimates of the National Income Division, Department of Commerce.

(excluding agriculture) has turned at virtually the same time as general business, while labor income in the other groups has typically lagged. It therefore seems worthwhile to examine the main component of this type of income, namely, labor income in manufacturing industries, which accounted for about four-fifths of all labor income in nonfarm commodity-producing industries and for nearly one-fifth of all personal income in 1929-1937.

The monthly record for our purposes begins with 1918 and covers wages of production workers (Chart 10 and Table 8), not wages and salaries. During the subsequent two decades there were twelve turning points in general business. Factory payrolls had turning points corresponding with each of these. At five of the twelve turning points there was strict coincidence and at the others lags up to five months, but only at four turns did the lag exceed two months. Thus the typical timing pattern for factory payrolls is coincidence

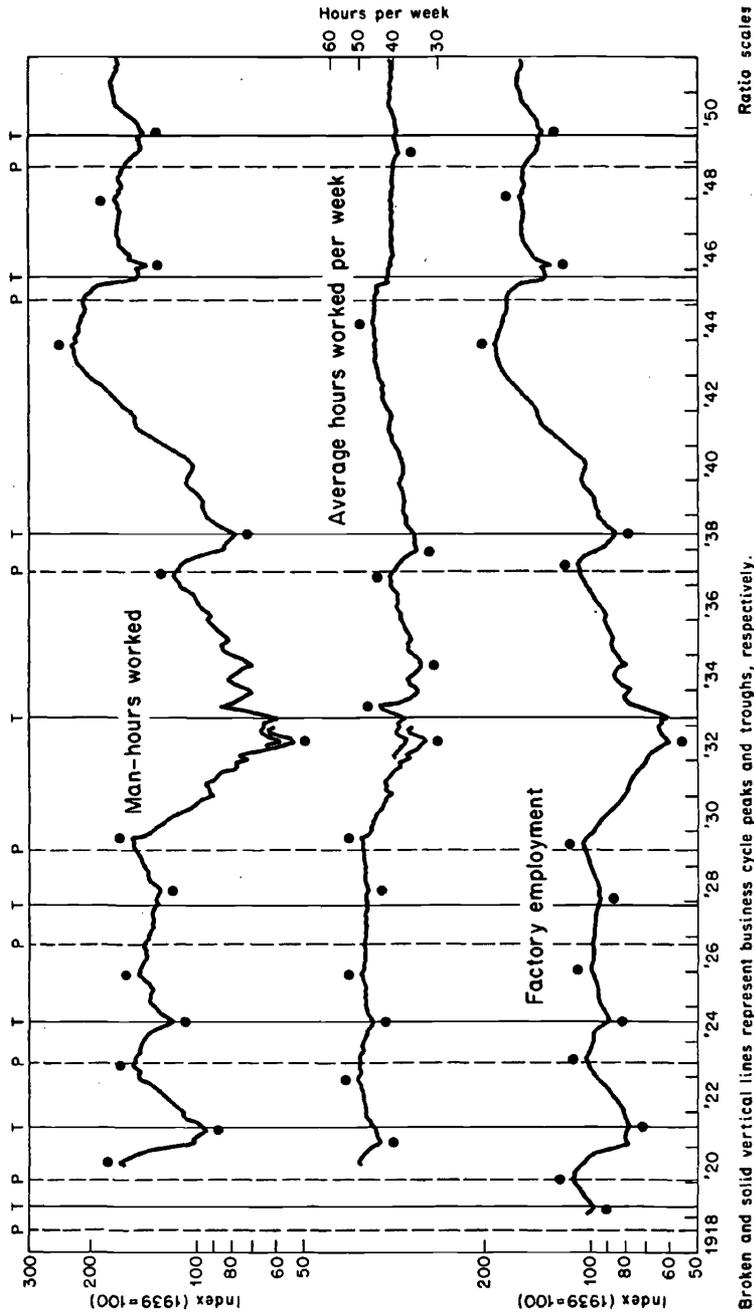
CYCLES IN NONFARM LABOR INCOME

CHART 10
 Factory Payrolls, Average Hourly Earnings, Man-Hours, and Their Components, 1918-1951



CYCLES IN NONFARM LABOR INCOME

CHART 10 (continued)



Broken and solid vertical lines represent business cycle peaks and troughs, respectively.
 Source: See note to Table 8.

CYCLES IN NONFARM LABOR INCOME

TABLE 8.

Lead (-) or Lag (+) of Factory Payrolls, Average Hourly Earnings, and Man-Hours, and of Their Components, at Business Cycle Turning Points, 1919-1949 (months)

	Business Cycle Turn	Factory Payrolls (1)	Average Hourly Earnings (2)	Man-Hours (3)	Number Employed (4)	Average Hours Worked per Week ^a (5)
P	Aug. 1918	+2				
T	Apr. 1919	+1				
P	Jan. 1920	+5				
T	July 1921	+3	+12	-1	0	-5
P	May 1923	+1	+18	-1	+1	-6
T	July 1924	0	+14	0	0	0
P	Oct. 1926	0	+10	-11	-9	-11
T	Nov. 1927	+5	+3	+5	+2	+5
P	June 1929	+3	+10	+4	+2	+4
T	Mar. 1933	0	+3	-8	-8	-7
P	May 1937	0	+5	-1	+2	-2
T	June 1938	0	+2	0	0	-6
P	Feb. 1945	-15	+1	-15	-15	-8
T	Oct. 1945	+4	-1	+4	+4	
P	Nov. 1948	0	+8	-11	-10	
T	Oct. 1949	+1	+1	+1	+1	
Average						
Aug. 1918-June 1938						
	P	+1.8				
	T	+1.5				
July 1921-June 1938						
	P	+1.0	+10.8	-2.2	-1.0	-3.8
	T	+1.6	+6.8	-8	-1.2	-2.6
July 1921-Oct. 1949						
	P	-1.8	+8.7	-5.8	-4.8	
	T	+1.9	+4.9	+1	-1	

^a A noncorresponding peak occurred in July 1933 and a noncorresponding trough in September 1934.

P = peak; T = trough.

Source: Business cycle turns are those in the National Bureau of Economic Research business cycle chronology. Data for all series except factory payrolls and employment begin in 1920, but the first full cycle begins in 1921. Columns 1 and 4—Bureau of Labor Statistics; columns 2 and 5—National Industrial Conference Board for 1920-1933, BLS from 1932; column 3—NICB for 1920-1933, from 1932 derived by multiplying average hours worked per week by number employed.

CYCLES IN NONFARM LABOR INCOME

with, or brief lags behind, turns in general business⁴—on the average a lag of 1.5 months at the troughs and 1.8 at the peaks. It is significant that there was not a single instance where turns in aggregate factory payrolls led turns in general business during the two decades before World War II.

It is possible to show how this average timing pattern for factory payrolls results from the timing patterns of labor input and unit labor returns. Here also the analysis is restricted to the years between the two World Wars. Labor input is measured by man-hours worked (number employed multiplied by average hours worked per week) and unit labor returns by average hourly earnings. Unit labor returns lag consistently and by a number of months behind turns in business activity—a half year at the troughs and more than ten months at the peaks, on the average.⁵ Labor input (man-hours), however, typically coincides with or briefly leads the turns in business activity. Thus wage income turns up or down with, or shortly behind, business activity because the prompt changes in labor input just about offset the lagging changes in unit labor returns.

The timing pattern of labor input can be explained by examining the turns in its two constituent elements—number employed and average hours worked per week. The latter typically lead at both troughs and peaks, while the number employed tends to coincide with business activity at upturns and to lag a few months at downturns. As the low point is approached, part-time employment is reduced before larger numbers are employed; and overtime work is curtailed before the peak is reached and before wage earners are laid off.

PRIVATE SECTOR—SALARY DISBURSEMENTS

Wages disbursed to production workers obviously are not the whole of labor income in manufacturing. The salaries of nonproduction workers also must be taken into account. According to census surveys of 1929 and 1939, these have formed about a fourth of total labor income in manufacturing; they have amounted to about a third of factory wages.

Salaried personnel in manufacturing enterprises perform functions that are best described as overhead operations. Hence, the number

⁴ Two of the longer lags are associated with the rapid and substantial changes in wage rates in 1919-1921, which tend to reverse direction only after a considerable lag, and another with the unusually mild business contraction in 1926-1927.

⁵ For a fuller discussion see Creamer, *op. cit.*

CYCLES IN NONFARM LABOR INCOME

so employed may be expected not to vary with minor changes in production. Moreover, fluctuations in the employment of salaried personnel, when they do occur, may be expected to lag behind corresponding movements in production or factory employment, and to have a smaller amplitude. The available data, though fragmentary, support these expectations, but perhaps not in the degree expected.

To our knowledge there are only three statistical fragments on a monthly basis pertaining to the interwar decades. The longest statistical record relates to the number of salaried personnel (bookkeepers, stenographers, office clerks, and salespeople, excluding traveling salesmen) employed in Ohio manufacturing industries. This source, however, does not provide information on salary payments. Only for Wisconsin manufacturing industries do we have monthly series on salaried and wage-earner employment and payrolls. These cover a shorter period than the Ohio series and are less well grounded. Moreover, the series for Wisconsin salaried personnel have several gaps, one of which occurs at months critical for establishing a turning point. Nonetheless, these data serve to point up the essential differences in the cyclical pattern of wages and salaries.

Employment of factory wage earners and salaried personnel in Ohio manufacturing industries, 1919-1939, and United States factory employment, 1919-1939, are plotted in Chart 11. The similarity of the cyclical movements of factory employment in Ohio and in the United States, as measured by turning points and by amplitude, suggests that the cyclical movements in Ohio salaried personnel are a reasonably good approximation to the cyclical movements of salaried employees in all United States manufacturing for 1919-1939.

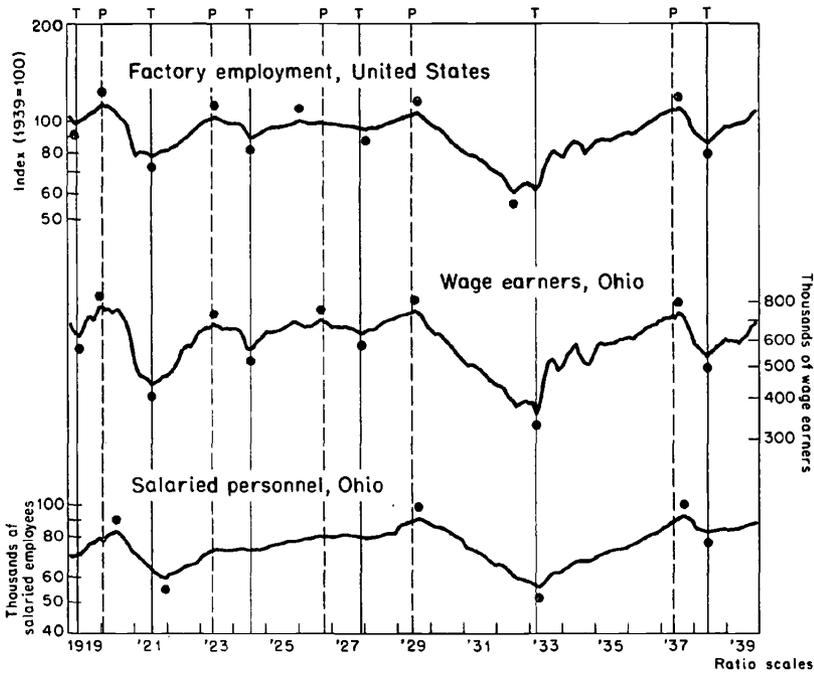
These series support the proposition that mild fluctuations in the employment of wage earners do not have a counterpart in the employment of salaried workers. Thus the moderate decline in 1923-1924 and the still more moderate recession of 1926-1927 in wage-earner employment do not appear in the curve for salaried personnel except as a slowing in the rate of growth.⁶ On the other hand, the pronounced turns in 1920, 1921, 1929, 1933, 1937, and 1938 are clearly marked in the employment of salaried workers. While wage-earner employment went through five cycles in the three decades,

⁶ There is some evidence of an absolute contraction between June 1927 and January 1928. The decline is so slight, however, that it does not qualify as a specific cycle according to National Bureau criteria.

CYCLES IN NONFARM LABOR INCOME

CHART 11

United States Factory Employment and Wage Earners and Salaried Personnel Employed in Ohio Manufacturing Industries, 1919-1939



Broken and solid vertical lines represent business cycle peaks and troughs, respectively. Source: Ohio data from Appendix Table C-1; index of United States factory employment published by Bureau of Labor Statistics.

employment of salaried workers traced only two complete cycles and the contraction phase of a third.

With rare exceptions, the turning points in Ohio wage-earner employment coincide, either precisely or roughly, with the turning points in general business. Employment of salaried personnel tends to lag behind wage-earner employment at the turns, and thus behind general business (Table 9). But in Ohio this lag was substantial at only two of the six corresponding turning points from 1919 to 1938; at the four remaining turns there was one coincidence and three lags not exceeding two months.

These findings are supported by the data on employment in Wisconsin manufacturing industries. The mild contractions in factory employment of wage earners in the mid-1920's, for example, appear in the employment of salaried workers as a slowing up in the rate

CYCLES IN NONFARM LABOR INCOME

TABLE 9

Lead (—) of Salaried Personnel over, or Lag (+) behind, Wage Earners at Turning Points in Employment (Ohio and Wisconsin) and in Payrolls (Wisconsin), Manufacturing Industries, 1920-1938 (months)

CORRESPONDING BUSINESS CYCLE TURN		EMPLOYMENT		PAYROLLS
		Ohio	Wisconsin	Wisconsin
P	Jan. 1920	+6	a	a
T	July 1921	+5	a	a
P	May 1923			
T	July 1924			
P	Oct. 1926		+22	
T	Nov. 1927		+2	
P	June 1929	+1	+7	+11
T	Mar. 1933	+1	0	+1
P	May 1937	+2	a	a
T	June 1938	0	a	a

^a No data available for salaried employment and payrolls for these years.

P = peak; T = trough.

Source: Business cycle turns are those in the National Bureau of Economic Research business cycle chronology; other turns are based on data in Tables C-1 and C-2.

of growth (Chart 12). Moreover, at the corresponding turning points, of which there were only four, employment of salaried workers lagged behind the employment of wage earners at three and coincided at the fourth. The two long lags occurred at the two peaks, while at the two troughs there was no lag at all or a short one.

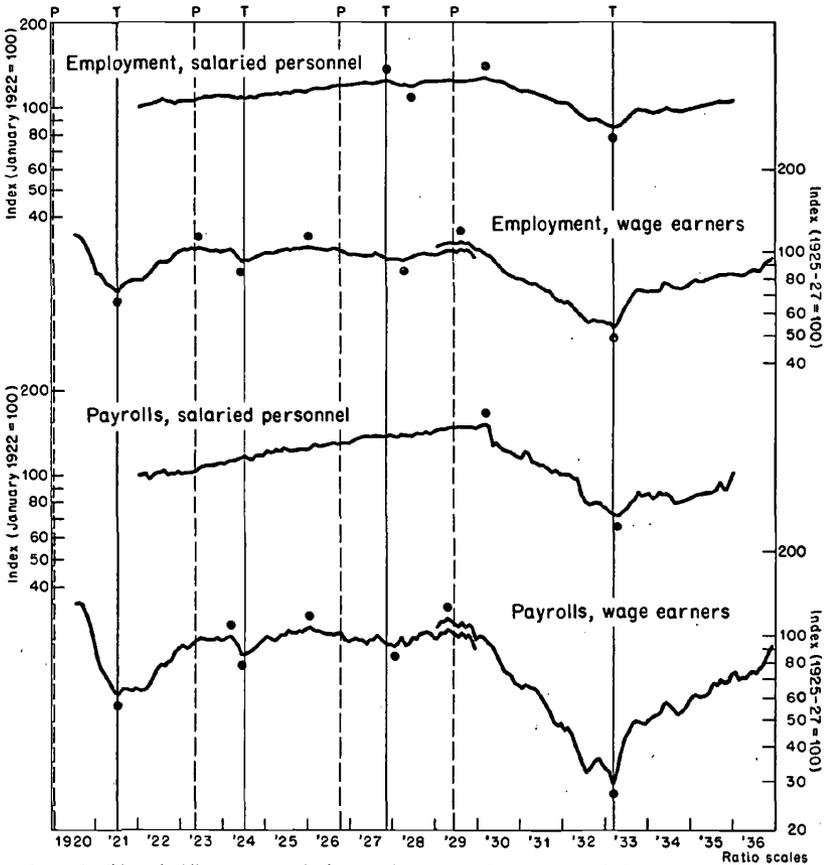
Can these findings on employment be translated into the cyclical movements of salary payments? If salary scales were unaltered during a business cycle, and if we make the further assumption that part-time or overtime employment is a negligible consideration for this group, then total salary payments would obviously have the same configuration as employment of salaried workers. It follows that the turning points in salary disbursements would also lag behind the reversals in general business. However, a more realistic assumption would be that salary scales probably do change during business cycles of at least moderate amplitude and duration, and that the lag in the reversals of salary rates has probably been at least as long as the lag in the reversals of wage rates, which we know is substantial.⁷ Even this assumption makes it likely that salary payments lag behind wage payments at cyclical turning points.

⁷ See Creamer, *op. cit.*

CYCLES IN NONFARM LABOR INCOME

The Wisconsin monthly index of salary payments supports this expectation (Chart 12). During the mild business recession of 1926-1927 there was no recession in the payrolls of salaried employees, despite a slight recession in their employment. The turning points

CHART 12
Employment and Payrolls of Wage Earners and Salaried Personnel,
Wisconsin Manufacturing Industries, 1920-1936



in employment of and total payments to salaried personnel were identical at the single corresponding peak in the two series and virtually so at the single corresponding trough. However, total salaries lagged behind factory wages by eleven months at the 1929 peak and by one month at the end of the Great Depression.

CYCLES IN NONFARM LABOR INCOME

GOVERNMENT SECTOR

Labor income originating in government followed a cyclical course during the 1930's different from that of labor income originating in the private sector. The onset of the Great Depression had no immediate effect on government payrolls; indeed, carried forward by the secular growth in governmental functions, they continued to increase for another thirty months.⁸ However, as the depression deepened, the tax base also contracted and the resulting financial stringency caused temporary reductions in salary scales and minor curtailment in the number employed. As severe depression continued, another factor appeared: relief of the unemployed by work programs. The wages disbursed under these programs are included in government payrolls, and the cyclical variations in this segment of government labor income are reflected in total government payrolls (Chart 9 and Table 7). Work-relief wages also explain the fact that turns in government payrolls led the three turning points in general business activity after the initial long lag. Work-relief wages, like unemployment, trace an inverted cycle, but the turns lag behind those in general business because of administrative delays. As the business contraction deepened, a work-relief program was instituted which boosted government payrolls just before the upturn in general business. Late in 1936, when expansion was well advanced, the work-relief program was curtailed, causing the government payroll to turn down before the 1937 downturn in general business.

This was the sequence during the 1933-1937 expansion and the subsequent contraction: The peak in work-relief wages was reached in September 1936, eight months before the peak in business activity, and work-relief wages did not begin to rise again until December 1937, seven months after the business contraction started and six months before it ended. That is, inverted turns that lag appear as positive turns that lead. In a period of full employment, work-relief programs would not be in operation and government payrolls would probably turn down later than general business.

If we exclude work-relief wage disbursements from the government total, we find that government labor income lagged more than two years behind the 1929 peak and six months behind the 1933 trough. For the rest of the decade, government labor income increased more or less continually.

⁸ For an extended account of this growth see Solomon Fabricant's *The Trend of Government Activity in the United States since 1900* (National Bureau of Economic Research, 1952).

CYCLES IN NONFARM LABOR INCOME

*Amplitude of Wage and Salary Cycles in Private Sector
before World War II*

Some of the reasons adduced to explain the differences in the timing of turning points in labor income according to industrial source also help to explain differences in amplitude. For example, one would expect the industries most directly dependent on final consumers to show the least severe fluctuations during a given cyclical phase. The amplitude measurements in Table 10 conform

TABLE 10
Amplitude of Specific Cycles in Personal and Nonfarm Labor Income
and in Wage and Salary Disbursements by Major Industry Group,
1929-1938
(based on cycle relatives)

BUSINESS CYCLE Phase	Period	PERSONAL INCOME	NONFARM LABOR INCOME	WAGE AND SALARY DISBURSEMENTS		
				Commodity- Producing ^a	Distribu- tive	Service
Contraction	June 1929- Mar. 1933	-69.9	-57.7	-98.2	-63.4	-51.9
Expansion	Mar. 1933- May 1937	+53.2	+49.2	+79.2	+44.9	+33.5
Contraction	May 1937- June 1938	-14.6	-11.3	-35.4	-8.6	-5.0

^a Excluding agriculture.

Source: Business cycle phases are those in the National Bureau of Economic Research business cycle chronology; amplitudes are estimated from published and unpublished data of the National Income Division, Department of Commerce.

to this expectation: in the expansion and the contractions the smallest amplitudes are found in the service industries and the largest in the commodity-producing group. The differences, moreover, are substantial.

Fluctuations in factory payrolls, much the most important component of wages of the commodity-producing industries, have been traced in greater detail. We can measure, for example, the cyclical amplitudes in labor input (man-hours) and in unit labor returns (average hourly earnings). Since the product of the two equals payrolls of production workers, we can determine the relative importance of each in accounting for fluctuations in labor income in manufacturing industries.

In Chart 10 (see above) and Table 11 we compare the amplitudes of man-hours, average hourly earnings, and factory payrolls during

CYCLES IN NONFARM LABOR INCOME

the course of four business cycles from 1921 to 1938. Man-hours worked show deeper swings than the other components of the wage bill, and these differences were substantial during business cycle expansions and even more pronounced during contractions. The differences occurred not only on the average but in each phase.

TABLE 11
Amplitude of Factory Payrolls, Average Hourly Earnings, and Man-Hours,
and of Their Components, during Business Cycles, 1921-1949
(based on cycle relatives)

Phase	BUSINESS CYCLE		FACTORY PAYROLLS (1)	AVERAGE HOURLY EARNINGS		NUMBER EMPLOYED (4)	AVERAGE HOURS WORKED (5)
	Period	Man-Hours (3)					
Expansion	July 1921–May 1923	+36.0	+8.0	+31.1	+24.9	+6.5	
Contraction	May 1923–July 1924	-17.2	+3.5	-21.8	-13.5	-8.2	
Full cycle		+53.2	+4.5	+52.9	+38.4	+14.7	
Expansion	July 1924–Oct. 1926	+15.2	+2.1	+14.5	+9.3	+5.5	
Contraction	Oct. 1926–Nov. 1927	-3.8	+6	-6.1	-4.3	-1.8	
Full cycle		+19.0	+1.5	+20.6	+13.6	+7.3	
Expansion	Nov. 1927–June 1929	+12.7	+2.5	+15.5	+11.1	+2.6	
Contraction	June 1929–Mar. 1933	-88.4	-23.1	-82.4	-49.8	-35.4	
Full cycle		+101.1	+25.6	+97.9	+60.9	+38.0	
Expansion	Mar. 1933–May 1937	+92.7	+39.1	+59.4	+51.4	+18.8	
Contraction	May 1937–June 1938	-47.1	-.1	-41.5	-25.7	-20.3	
Full cycle		+139.8	+39.2	+100.9	+77.1	+39.1	
Expansion	June 1938–Feb. 1945	+123.3	+51.7	+83.5	+61.6	+25.7	
Contraction	Feb. 1945–Oct. 1945	-53.5	-7.6	-40.3	-28.6	-9.4	
Full cycle		+176.8	+59.3	+123.8	+90.2	+35.1	
Expansion	Oct. 1945–Nov. 1948	+40.2	+31.3	+9.5	+13.2	-4.0	
Contraction	Nov. 1948–Oct. 1949	-12.7	+2	-11.4	-10.7	-.8	
Full cycle		+52.9	+31.1	+20.9	+23.9	-3.2	
Average							
July 1921–June 1938							
Expansion		+39.2	+12.9	+30.1	+24.2	+8.4	
Contraction		-39.1	-4.8	-38.0	-23.3	-16.4	
Full cycle		+78.3	+17.7	+68.1	+47.5	+24.8	
June 1938–Oct. 1949							
Expansion		+81.8	+41.5	+46.5	+37.4	+10.8	
Contraction		-33.1	-3.7	-25.8	-19.6	-5.1	
Full cycle		+114.9	+45.2	+72.3	+57.0	+15.9	

Source: Business cycle phases are those in the National Bureau of Economic Research business cycle chronology. Data for all series except factory payrolls and employment begin in 1920, but the first full cycle begins in 1921. Columns 1 and 4—Bureau of Labor Statistics; columns 2 and 5—National Industrial Conference Board for 1920-1933, BLS from 1932; column 3—derived by multiplying the cycle relatives of average hours worked per week by those of number employed.

CYCLES IN NONFARM LABOR INCOME

Labor input, or man-hours worked, is a product of the number employed and the average number of hours worked per week. Here again we can see which of the two is the more important determinant. It is clear that the number employed fluctuates much more widely than the average hours worked per week, both on the average during upswings and downswings and during each phase of these four business cycles. Thus we find that the most important single cause of cycles in labor income, in manufacturing industries at least, has been cycles in employment. In business cycle expansions, changes in hourly earnings have on the average been more important than changes in hours worked per week; during contractions the relative importance of these two factors has been reversed.

Our presumption (see pages 41-42) that the cyclical fluctuations of salaried employment would be less than those of wage-earner employment finds support in the Ohio data (Table 12). There are four corresponding phases in the employment of production and of non-production workers, three contractions and one expansion. In the contractions the average amplitude of the declines was -48.4 for wage earners and -29.3 for salaried personnel. In the one expansion the amplitude of the rise was +59.9 for wage earners and +48.4

TABLE 12
Amplitude of Specific Cycles in Employment of Wage Earners and of
Salaried Personnel, Ohio Manufacturing Industries, 1919-1938
(based on cycle relatives)

<i>Phase</i>	<i>Period</i>	WAGE EARNERS	SALARIED PERSONNEL ^a
Expansion	Apr. 1919-Jan. 1920	+20.5	b
Contraction	Jan. 1920-July 1921	-48.6	-30.0
Expansion	July 1921-May 1923	+37.8	
Contraction	May 1923-July 1924	-17.0	
Expansion	July 1924-Oct. 1926	+18.6	
Contraction	Oct. 1926-Nov. 1927	-8.9	
Expansion	Nov. 1927-June 1929	+19.6	
Contraction	June 1929-Mar. 1933	-65.0	-46.1
Expansion	Mar. 1933-May 1937	+59.9	+48.4
Contraction	May 1937-June 1938	-31.7	-11.9

^a There was a continuous expansion in employment of salaried personnel from December 1921 to August 1929.

^b Data insufficient for measuring amplitude of this phase.

Source: Business cycle phases are those in the National Bureau of Economic Research business cycle chronology; amplitudes are estimated from data in Appendix C.

CYCLES IN NONFARM LABOR INCOME

for salaried personnel. Much the same amplitude differences appear in the Wisconsin data, as far as they go. In terms of man-hours the differences would be even more striking. Since wage earners may be retained on a workweek varying from part-time to overtime, man-hours worked fluctuate more sharply than number employed. For salaried personnel, on the other hand, deviations from the standard workweek are exceptional, which means that there would be little difference between the fluctuations of hours worked and those of number employed. Thus salary payments, compared with factory payrolls, would show smaller amplitudes over the cycle, even if the fluctuation in salary rates were as large as that in wage rates, which is probably not the case.

Salary payments fluctuate more sharply than employment of salaried personnel, to judge by the Wisconsin data. A comparison is possible for only one phase, the Great Depression, when employment declined 32 per cent from peak to trough and salary payments 51 per cent. This was caused by cyclical changes in basic salary rates and probably also by the shifting importance of subgroups of industries. The Wisconsin data suggest also a wide disparity in amplitude between salary payments and wage payments. At the 1933 trough, salary payments had declined by 51 per cent from the preceding peak while wage payments had declined by 72 per cent. The difference in the relative recoveries by January 1936, when our index of salaries ends, is even larger than the differences in the relative declines of the Great Depression.

Aggregate salary disbursements may well be too broad a category, for among salaried personnel there are much wider differences in the terms of employment and compensation than among factory wage earners. The difference between what a clerk and a highly paid executive earn annually is many times greater than the difference between the annual earnings of a common laborer and a skilled mechanic. It is desirable therefore to analyze the salaries of executives separately. Some annual data for the executive group can be brought to bear by assuming that the movements in salary payments to corporate officers are representative of the fluctuations in salary receipts of all senior executives and professional personnel.

Statistics of Income gives the annual compensation of corporate officers in manufacturing industries for all years from 1919 to 1938, except 1925-1927, when this item was not reported separately. This series has been compared with salaries, other than those of corporate officers, in manufacturing and with the Bureau of Labor Statistics

CYCLES IN NONFARM LABOR INCOME

index of wage payments to factory workers (Chart 13 and Table 13). These annual data on salaries and wages confirm our findings based on monthly data for Ohio and Wisconsin. Salary payments, unlike wage payments, did not trace the mild cycles of the middle 1920's, and salary payments, whether expanding or contracting, usually fluctuated much less than wage payments. When we look only at salaried personnel, however, we find that from 1920 to 1937 the earnings of corporate officers, and therefore of senior executives and professional personnel, typically fluctuated considerably less than the earnings of other salaried employees. But from 1937 to 1938 the earnings of corporate officers contracted more than those of other salaried employees.

Frequently a substantial fraction of a corporate officer's compensation takes the form of a bonus that varies with profits or sales, and in family-owned corporations profits are often distributed in the form of salaries to officers. Since profits fluctuate more sharply than general salaries during cycles in business activity, we might expect the *per capita* annual compensation of corporate officers to trace, on the average, larger cyclical amplitudes than do *per capita* annual salaries of other salaried employees. There are, however, no statistics with which to test this inference. The smaller amplitudes noted in *total* compensation of corporate officers compared with *total* salaries of other salaried employees are probably due to the steadier employment of the former. On this latter point John C. Baker reached the same conclusion in his analysis of sample corporations: "After a study of what happened to executive employment and aggregate compensation among a group of 100 industrial companies from 1928 to 1932, the following points stand out clearly: (a) an amazing steadiness in the employment of executives; (b) an equally amazing steadiness in their salary; . . . (d) wide fluctuation in bonus payments. . . ."⁹

Labor Income during and after World War II

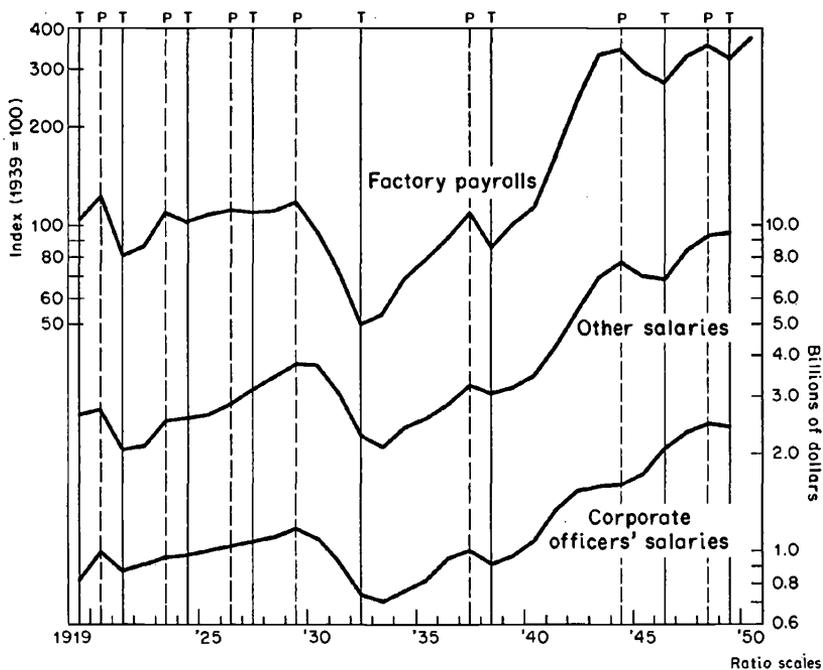
Nonfarm labor income during the 1930's, as we have noted, conformed perfectly to cycles in general business, and this was true also

⁹ John C. Baker, *Executive Salaries and Bonus Plans*, McGraw-Hill, 1938, p. 27. Mr. Baker reports the following figures (in thousands) for all executives in the 100 industrial companies (p. 20):

	1928	1929	1930	1931	1932
Salaries	\$22,650	\$24,495	\$25,837	\$24,598	\$22,102
Bonuses	13,313	17,815	14,639	7,325	3,124
Total compensation	35,963	42,310	40,476	31,923	25,225

CYCLES IN NONFARM LABOR INCOME

CHART 13
Factory Payrolls, and Salaries of Corporate Officers and of
Other Salaried Personnel, Manufacturing Industries,
1919-1950



Broken and solid vertical lines represent business cycle peaks and troughs, respectively.
 Source: See note to Table 13.

of labor income in each of the major industrial groupings in the private sector of the economy. During and after World War II the components of nonfarm labor income did not conform perfectly to cycles in general business. With the two business cycles between 1938 and 1949 can be matched two cycles in total nonfarm labor income and two in wage and salary disbursements by nonfarm commodity-producing industries. There have been, however, no cycles—indeed, not a single cyclical turning point—since 1938 in wage and salary disbursements by the distributive and service industries (Chart 9 and Table 7).

In the 1940's the turning points in total nonfarm labor income continued to coincide roughly with, or lag slightly behind, the corresponding turns in business cycles. In nonfarm commodity-producing industries the turns in labor income coincided perfectly or roughly, as in the prewar decade. Cycles in factory wages again

CYCLES IN NONFARM LABOR INCOME

TABLE 13

Amplitude of Compensation of Corporate Officers, of Other Salaried Personnel, and of Factory Workers, Manufacturing Industries, during Personal Income Cycles, 1920-1938
(based on cycle relatives)

PERSONAL INCOME CYCLE		CORPORATE OFFICERS	OTHER SALARIED PERSONNEL	FACTORY WORKERS
Phase	Period			
Contraction ^a	1920-1921	-11.8	-23.6	-42.4
Expansion	1921-1929	+29.8	+60.4	+39.0
Contraction	1929-1933	-47.4	-59.8	-67.8
Expansion	1933-1937	+34.4	+42.1	+67.1
Contraction	1937-1938	-10.6	-6.2	-29.1

^a Computed on base of inverted cycle in personal income, 1920-1921-1929.

Source: Phases of personal income in current prices are based on data in Table A-1. Compensation of corporate officers is reported in *Statistics of Income* (Bureau of Internal Revenue) except for 1925-1927; a straight-line interpolation was used to obtain estimates for these missing years. Compensation of other salaried personnel was derived by subtracting compensation of corporate officers from compensation of all salaried personnel. Estimates of the latter for 1919-1929 are from Simon Kuznets, *National Income and Its Composition, 1919-1938* (National Bureau of Economic Research, 1941, Table M-7, p. 582); for all other years from unpublished estimates of the National Income Division, Department of Commerce. The Bureau of Labor Statistics index of factory payrolls was used for compensation of factory workers.

paralleled those in labor income in the nonfarm commodity-producing group, except in the case of the long lead before the wartime peak (Table 8).

The cyclical movements of salaried income during these years are based on data for all United States manufacturing industries (Chart 14 and Table 14). Both employment and payrolls of salaried workers lagged behind those of wage earners only at the peaks, while at the two troughs they led them briefly.¹⁰

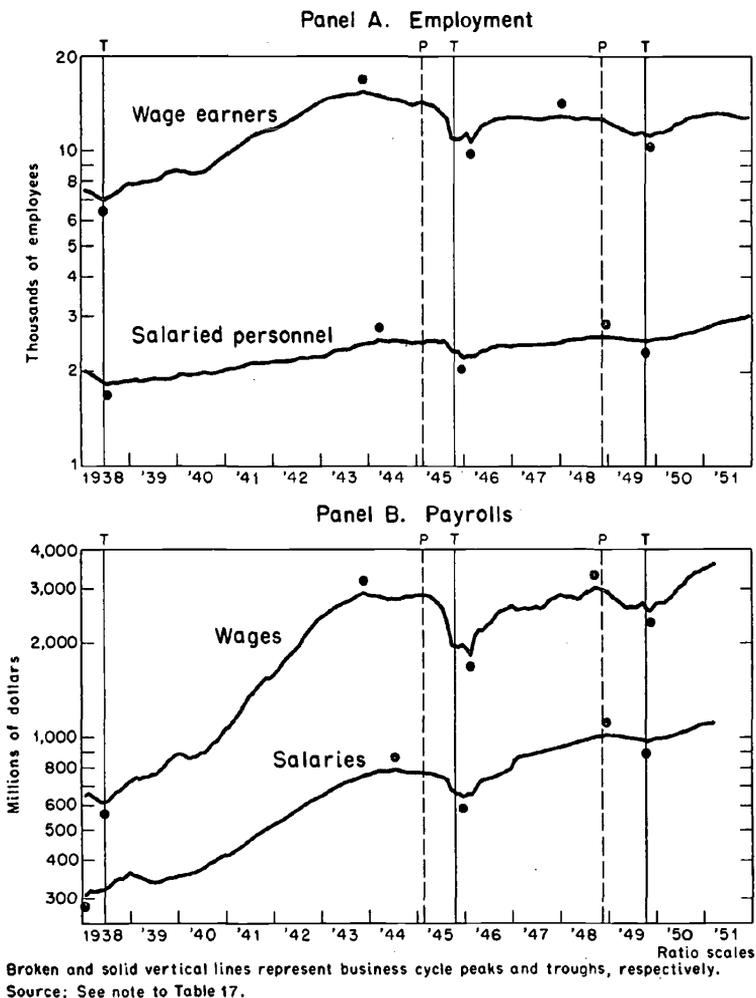
For the prewar decade we found it helpful to separate the work-relief payroll from the regular government payroll; for the war and postwar decade we need to separate military from civilian payrolls. The payroll of the armed services continued to rise until V-J Day in the third quarter of 1945. The subsequent decline was precipitous, coming to a halt in the first quarter of 1948; the following rise was at a moderate rate until the Korean War, when it accelerated greatly.

¹⁰ There was some growth during the war and postwar years, as indicated by the fact that salaried personnel as a percentage of all employees increased from 16.0 in 1939 to 16.5 in 1947. See *Census of Manufactures, 1947*, Bureau of the Census, Volume I, p. 69.

CYCLES IN NONFARM LABOR INCOME

CHART 14

Employment and Payrolls of Wage Earners and Salaried Personnel,
Manufacturing Industries, 1938-1951



The salaries disbursed to the civilian branch of government also continued to expand from a trough in 1933 until July 1945, virtually the end of World War II. The ensuing contraction was reversed after six months by upward adjustments in salary scales.¹¹ Thereafter,

¹¹ According to the seasonally adjusted series in a Federal Reserve Board release of October 1950, the number of civilian employees in government declined from December 1944 to September 1947. The changes in federal

CYCLES IN NONFARM LABOR INCOME

TABLE 14

Lead (—) of Salaried Personnel over, or Lag (+) behind, Wage Earners
at Turning Points in Employment and Payrolls,
Manufacturing Industries, 1945-1949
(months)

Corresponding Business Cycle Turn		Employment	Payrolls
P	Feb. 1945	+4	+8
T	Oct. 1945	-2	-2
P	Nov. 1945	+11	+3
T	Oct. 1949	-1	-1

P = peak; T = trough.

Source: Business cycle turns are those in the National Bureau of Economic Research business cycle chronology. Employment of salaried personnel is the difference between Bureau of Labor Statistics estimates of all employees in manufacturing industries and BLS estimates of production workers. Salaried payrolls and payrolls of wage earners are unpublished estimates of the National Income Division, Department of Commerce.

civilian government payrolls continued to rise through 1949, reflecting the 1948-1949 contraction in general business only by a slackening of the rate of increase. These payrolls showed the same limited conformity to business cycles in the prewar decade.

The order of amplitudes of labor income according to industrial sources found in the 1930's was repeated to a certain extent during the war and postwar cycles. Since no specific cycles were traced by wages and salaries in the distributive and service industries, it is impossible to compare specific cycle amplitudes. It is possible, however, to get some idea of the relative movements by measuring the amplitude of fluctuations during the cycles in general business (Table 15). In the private sector, much the largest rise during the war expansion occurred in the nonfarm commodity-producing industries, for the obvious reason that economic incentives were used to obtain a rapid and vast production of war goods. The smallest rise was in the service industries, and this was also true in the 1930's. In the 1945 contraction, wage and salary disbursements declined substantially in the commodity-producing industries but continued to expand in the other two groups. In the first postwar cycle, while wages and salaries in the nonfarm commodity-producing industries

government salary scales during this period are given in "Federal Classified Employees: Salary Trends, 1939-1950," in the *Monthly Labor Review* (Bureau of Labor Statistics, May 1951, pp. 537-540).

CYCLES IN NONFARM LABOR INCOME

TABLE 15

Amplitude of Personal and Nonfarm Labor Income and of Wages and Salaries by Major Industry Group during Business Cycles, 1938-1949
(based on cycle relatives)

BUSINESS CYCLE Phase Period		WAGES AND SALARIES					
		PERSONAL INCOME	NONFARM LABOR INCOME	Private			Govern- ment ^b
				Commodity- Producing ^a	Distribu- tive	Service	
Expansion	June 1938- Feb. 1945	+91.5	+98.8	+109.3	+64.3	+51.0	+149.2
Contraction	Feb. 1945- Oct. 1945	-6.1	-8.7	-38.2	+8.0	+10.9	-8.9
Expansion	Oct. 1945- Nov. 1948	+23.6	+22.4	+43.7	+39.5	+31.4	-73.9
Contraction	Nov. 1948- Oct. 1949	-5.1	-2.3	-11.8	-1.5	+3.6	+5.1

^a Excluding agriculture.

^b Including work relief and military.

Source: Business cycle phases are those in the National Bureau of Economic Research business cycle chronology; amplitudes are estimated from published and unpublished data of the National Income Division, Department of Commerce.

again had the largest amplitudes and those in the service industries the smallest, the excess of the rise and fall in commodity-producing industries over the rise and fall in the other two groups was much less than before the war.

When we consider labor input and unit labor returns (Table 11), we find that in the war and postwar years man-hours on the average fluctuated more than hourly earnings, repeating the prewar pattern. There is a single deviation from the average pattern that is especially interesting: in the first postwar expansion the rise in average hourly earnings was more than three times the rise in man-hours. Fluctuations in employment continued to be a more important determinant of fluctuations in labor input than changes in average hours worked per week.

A break with the past, however, is evident when we view the war and postwar changes against the background of the preceding two decades: in 1948, peak man-hours were up only 12 per cent from what they were in the 1920's, but real wages (discounting for the price rise) had more than doubled. This can be seen in Table 16, where we set out indexes of factory payrolls for production workers,

CYCLES IN NONFARM LABOR INCOME

their labor input, and unit returns, at peaks in business cycles, using as the index base the average standing at the cyclical peaks in 1923, 1926, and 1929. The 12 per cent rise in labor input (man-hours) shown in this table is the result of a 50 per cent rise in number employed and a 25 per cent *decline* in average hours worked per week. By contrast, unit labor returns (average hourly earnings) in 1948 were two and two-thirds times as large as in the 1920's and real hourly earnings were nearly double.

This comparison leaves no doubt that the prime cause of the long-term rise in factory labor income was the rise in average hourly earnings. While the above illustration is drawn from manufacturing industries, there is a strong presumption that in other sectors of the economy labor input and unit returns have played the same role, both in cyclical movements and in long-term fluctuations, that they have in manufacturing.

The prewar relationship between amplitudes of change in wages and in salaries in manufacturing industries was repeated during the war cycle, but not during the first postwar cycle (Chart 14 and Table 17). The rise in salaries during the war expansion was only about two-thirds of the rise in wages, while the following contraction in salaries was less than half of the fall in wages. In the next expansion phase, however, the rises were virtually the same despite

TABLE 16

Changes in Components of Input and of Returns (in Current and in Constant Dollars) of Factory Labor at Business Peaks in 1937, 1945, and 1948 Relative to 1923, 1926, and 1929 Peaks (index numbers)

BUSINESS PEAK	AVERAGE HOURS			AVERAGE HOURLY EARNINGS IN:		PAYROLLS IN:	
	NUMBER EMPLOYED (1)	WORKED PER WEEK (2)	MAN- HOURS (3)	Current Dollars (4)	Constant Dollars (5)	Current Dollars (6)	Constant Dollars (7)
May 1923 } Oct. 1926 } June 1929 }	100.0	100.0	100.0	100.0	100.0	100.0	100.0
May 1937	106.2	74.5	79.1	122.8	147.4	102.8	123.4
Feb. 1945	171.1	84.2	144.1	205.9	199.3	302.5	292.8
Nov. 1948	151.0	74.0	111.7	269.7	191.5	312.7	222.1

Source: See note to Table 8. Constant-dollar hourly earnings and payrolls were obtained by deflating current-dollar series by Bureau of Labor Statistics Consumers Price Index. The product of the index of man-hours and the index of hourly earnings does not equal the index of factory wages because each is derived from a different sample.

CYCLES IN NONFARM LABOR INCOME

TABLE 17

Amplitude of Specific Cycles in Employment and in Earnings
of Wage Earners and of Salaried Personnel,
Manufacturing Industries, 1938-1949
(based on cycle relatives)

BUSINESS CYCLE		WAGE EARNERS		SALARIED PERSONNEL	
Phase	Period	Employ- ment	Wages	Employ- ment	Salaries
Expansion	June 1938-Feb. 1945	+70.7	+127.1	+31.1	+87.1
Contraction	Feb. 1945-Oct. 1945	-36.8	-52.1	-10.6	-23.9
Expansion	Oct. 1945-Nov. 1948	+15.1	+39.4	+12.5	+40.5
Contraction	Nov. 1948-Oct. 1949	-13.4	-14.3	-2.8	-4.5

Source: Business cycle phases are those in the National Bureau of Economic Research business cycle chronology. Salaried personnel were derived as the difference between all employees and production workers (wage earners), both estimated by the Bureau of Labor Statistics and seasonally adjusted by the Division of Research and Statistics, Board of Governors of the Federal Reserve System. Wages and salaries are from unpublished tables of the National Income Division, Department of Commerce.

the fact that the increase in employment of salaried personnel was only 80 per cent of the increase in wage-earner employment. This suggests that during a period of sustained full employment, salaried personnel were able to make up for the partial suppression of salary raises during the war. Thus from the June 1938 trough to the February 1945 peak in business activity, wages per production worker increased by 130 per cent and salaries per nonproduction worker by 76 per cent. However, between the February 1945 and November 1948 peaks the respective percentage gains were 18 and 27. During the 1948-1949 contraction the decline in salaries was only a third of the fall in wages, and the fall in salaried employment was about a fifth of that for wage earners. Over the whole postwar cycle the net gain in salaries exceeded the net gain in wages by more than two-fifths.¹² If we use a prewar base, however, we find that the rise in average salary was still lagging behind the rise in average wage—the latter having increased by 165 per cent between June 1938 and October 1949 and the former by 121 per cent.

When we distinguish executive and professional salaries, i.e. compensation of corporate officers, from other salaries, we find much the same difference in amplitude as between salaries and wages (Table 18). During the war the amplitude of the rise in executive salaries was 44 per cent less than in other salaries. (The amplitude

¹² It is the force of this expansion in salaries that explains the timing of the turning points vis-à-vis wages noted above.

CYCLES IN NONFARM LABOR INCOME

TABLE 18

Amplitude of Compensation of Corporate Officers and of Other Salaried Personnel, Manufacturing Industries, during Business Cycles, 1938-1949

(based on cycle relatives)

BUSINESS CYCLE		CORPORATE OFFICERS	OTHER SALARIED PERSONNEL
Phase	Period		
Expansion	1938-1944	+48.5	+86.6
Contraction	1944-1946	+33.5	-16.8
Full cycle		+15.0	+103.4
Net change over cycle		+82.0	+69.8
Expansion	1946-1948	+16.9	+28.2
Contraction	1948-1949	-2.0	+2.9
Full cycle		+18.9	+25.3
Net change over cycle		+14.9	+31.1
Addenda: Percentage change,			
1938-1949		+165.7	+209.7

Source: Business cycle phases are those in the National Bureau of Economic Research business cycle chronology. Compensation of corporate officers is reported in *Statistics of Income* (Bureau of Internal Revenue) for appropriate years; compensation of other salaried personnel was derived by subtracting compensation of corporate officers from compensation of all salaried personnel as given in unpublished tables of the National Income Division, Department of Commerce.

of the rise in all salaries was 31 percent less than the amplitude of the rise in wages, shown in Table 17 above.) In the transition to peace, a period of contraction, unemployment among the lower-salaried personnel led to a fall in other salaries, while the removal of controls opened the way for such a rapid expansion in the compensation of corporate officers that the net gain in their compensation over the cycle exceeded that for other salaried employees by 17 per cent. In the next expansion, however, the relative rise in other salary payments far outstripped the relative rise in compensation of officers, and in the 1948-1949 contraction other salaries continued to rise slightly while compensation of corporate officers declined slightly. Between 1938 and 1949 compensation of corporate officers increased by 166 per cent and other salaries by 210 per cent. This suggests that during World War II and the early postwar years the larger relative gains in labor income were received by wage earners and salaried employees below the executive level.¹³

¹³ This agrees with our findings on secular changes; compare Chapter 1. Compensation of corporate officers includes cash bonuses but excludes bonuses in the form of stock or stock options and company contributions to pension and retirement funds established for corporate officers. We do not know of any estimate of their quantitative importance, but we can be sure that it has increased.