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IV. AVERAGE WEEKLY HOURS IN NONMANUFACTURING INDUSTRIES

The observations on the behavior of hours made in the preceding section were based on manufacturing industries. Are the findings for manufacturing also valid for other industries? To answer this question, we shall now take a look at cyclical changes in hours for nonmanufacturing industries, using Bureau of Labor Statistics data for the thirties and for the period after World War II. For comparison, measures for manufacturing covering the same cycles will also be presented.

Let us anticipate the general results of this comparison by stating that average weekly hours in nonmanufacturing industries deviate markedly in many respects from those in manufacturing. This is true for the incidence of leads and lags, for the timing, for the dispersion of turning points and for other relevant measures. Some of these differences are reduced if the cyclical turns of hours are measured in relation to the employment turns in the same industry.

Incidence of Leads and Lags

We base our observations on 14 industries, covering two business cycle turning points (1937 and 1938) during the interwar period; and on the same number of industries covering four business cycle turns (1948, 1949, 1953, 1954) during the postwar period.[1] While this adds up to a total of 84 theoretical opportunities for timing measures, turning points could, in fact, be matched in only 64 per cent of the cases. This compares with 97 per cent matched turns for major manufacturing industries, over the same cycles. It follows that, in nonmanufacturing industries, average hours of work show decidedly lower conformity to business cycles.

How often do we find leads, lags, and coincidences at the turns we were able to match? Table 21 summarizes the relevant information: In nonmanufacturing industries, average hours lead only at a little more than half of the matchable turns, while in manufacturing, they lead in 87 per

[1] For a description of the basic data and for a list of the industries included see Appendix and Table 22.

Table 21
Weekly Hours in Nonmanufacturing Industries, 1935-1956
Number of Leads and Lags at Matched Turns

	PEAKS				TROUGHS			
	Leads	*Coinci-dences*	*Lags*	*Total*	*Leads*	*Coinci-dences*	*Lags*	*Total*
				Hours Relative to Business Cycles				
14 series, 1935-41	7	0	4	11	3	0	8	11
14 series, 1947-56	10	0	2	12	7	0	9	16
Totals:								
Nonmanufacturing	17	0	6	23	10	0	17	27
Manufacturing, comparable cycles	53	1	0	54	42	2	11	55
				Employment Relative to Business Cycles				
14 series, 1935-41	3	0	9	12	0	2	10	12
14 series, 1947-56	4	2	7	13	2	3	12	17
Totals:								
Nonmanufacturing	7	2	16	25	2	5	22	29
Manufacturing, comparable cycles	30	9	11	50	18	8	25	51
				Hours Relative to Employment				
14 series, 1935-41	9	1	1	11	5	2	3	10
14 series, 1947-56	5	1	0	6	5	0	3	8
Totals:								
Nonmanufacturing	14	2	1	17	10	2	6	18
Manufacturing, comparable cycles	35	3	9	47	44	3	3	50

	PEAKS AND TROUGHS				LEADS AS PER CENT OF TOTAL		
	Leads	*Coinci-dences*	*Lags*	*Total*	*Peaks (%)*	*Troughs (%)*	*Peaks and Troughs (%)*
				Hours Relative to Business Cycles			
14 series, 1935-41	10	0	12	22	64	27	45
14 series, 1947-56	17	0	11	28	83	44	61
Totals:							
Nonmanufacturing	27	0	23	50	74	37	54
Manufacturing, comparable cycles	95	3	11	109	98	76	87
				Employment Relative to Business Cycles			
14 series, 1935-41	3	2	19	24	25	0	12
14 series, 1947-56	6	5	19	30	31	12	20
Totals:							
Nonmanufacturing	9	7	38	54	28	7	17
Manufacturing, comparable cycles	48	17	36	101	60	35	48
				Hours Relative to Employment			
14 series, 1935-41	14	3	4	21	82	50	67
14 series, 1947-56	10	1	3	14	83	62	71
Totals:							
Nonmanufacturing	24	4	7	35	82	56	69
Manufacturing, comparable cycles	79	6	12	97	74	88	81

For a description of the basic data and for a list of the industries included see Appendix and Table 22.

cent, over the comparable cycles. The lower incidence of leads can be observed both at peaks and at troughs. Still, at peaks the leads predominate, at troughs they do not. In fact, in nonmanufacturing industries leads occur only in 37 per cent of the matchable troughs while in manufacturing they occur in three quarters of the cases. Note that a lower incidence of leads at troughs than at peaks is characteristic for both nonmanufacturing and manufacturing industries.

Is the lower incidence of leads a characteristic of average weekly hours in nonmanufacturing industries or does it rather reflect a greater independence of economic activity in these industries from the ups and downs in business conditions at large? To answer this question, let us look at the evidence on employment.

Table 21 contains, in the middle panel, a summary of timing relationships of employment series, corresponding to those of average weekly hours. The last three columns indicate that the incidence of leads in nonmanufacturing employment, over comparable cycles, is considerably smaller than that in manufacturing. The third panel of the table shows that even if hours turns are related to corresponding turns in employment, a lower incidence of leads in nonmanufacturing industries remains, at least on the average. However, since this relationship holds for troughs but not for peaks, the general validity of this finding is doubtful.

It is instructive to look at the timing relationships, focusing on the lags. Table 21 shows that almost one half of the turns of weekly hours in nonmanufacturing lag business cycle turns (compared with about 10 per cent in manufacturing). The lags are less numerous than leads at peaks, but outnumber the leads at troughs. Inspection of the middle panel reveals that employment turns in nonmanufacturing industries lag business cycle turns both at peaks and troughs, overwhelmingly so at troughs. Thus when turns in hours are directly related to turns in employment, the number of lags is substantially reduced. This is the result of both the prevalence of lags in employment and the lower number of matchable observations, as will be apparent in the industry by industry analysis.

Table 22 contains the relevant information. Note the small number of turns covered and the frequent lack of comparability between turns. Of the industries permitting comparison of turns, about one-third show a predominance of lags when hours turns are compared with business cycle dates. If the timing of hours is measured against employment turns, two things happen: the number of industries with comparable turns is further reduced; and the number of industries with predominant lags shrinks to one. This is another aspect of the finding previously stated:

the deviant timing behavior of hours in nonmanufacturing can be largely explained by the characteristics of the corresponding employment series.

Average Length of Leads and Lags

With regard to the duration of leads also, the nonmanufacturing industries show a picture different from that encountered in manufacturing. This appears clearly from Table 23. On the average, hours in nonmanufacturing lead by 1.7 months during the periods 1935-41 and 1947-56; the lead in manufacturing industries, over comparable cycles, exceeds 5 months. The stronger lead of hours in manufacturing industries can be observed in the interwar as well as in the postwar period. During the interwar period, hours in nonmanufacturing industries do, on the average, coincide.

In nonmanufacturing as well as in manufacturing industries, hours tend to lead more strongly at peaks than at troughs. This again can be observed in both periods under observations. The interwar cycle shows, indeed, an average lag of almost two months at the 1938 trough, which explains the small average lag for "troughs" in the combined sample.

To what extent can the shorter average lead of weekly hours in nonmanufacturing be traced to differential behavior in the corresponding employment series? The second panel of Table 23 shows employment turns in nonmanufacturing industries lagging, on the average, both at peaks and troughs (at the peaks after World War II, they virtually coincide); thus the behavior of employment may be an explanation of the smaller average lead of weekly hours in nonmanufacturing over business cycle turns.

The last panel of Table 23 supports this explanation. Comparing the last two lines of the table we find that in relation to employment, the average lead in weekly hours for all turns is very similar in manufacturing and nonmanufacturing industries. However, in nonmanufacturing the lead in hours, relative to employment changes, is longer at peaks than at troughs, although for this particular selection of turns the situation is reversed for manufacturing industries.

Let us again peruse the evidence, industry by industry, on the basis of Table 22. There are seven industries in the interwar, and there is one industry in the postwar collection, showing average lags of hours behind business cycle turns. In view of the small number of observations per industry, it is difficult to attach systematic importance to these findings for any particular industry—although the findings maintain significance for the group of nonmanufacturing as compared with manufacturing industries. When turns in hours are related to turns in employment, the average lags disappear for all but one industry—and in that industry

Table 22

Weekly Hours in Nonmanufacturing Industries
Incidence and Timing of Turning Points, by Industry

(a) BLS, 1935-1941

Industries	TIMING RELATIVE TO BUSINESS CYCLES				TIMING RELATIVE TO EMPLOYMENT			
	Number of			Average Timing (months)	Number of			Average Timing (months)
	Leads	Coincidences	Lags		Leads	Coincidences	Lags	
Anthracite Mining			1	+1.0	n.c.	n.c.	n.c.	n.c.
Bituminous Mining	2			−3.5	2			− 6.0
Metalliferous Mining			2	+1.5	1	1		− 0.5
Quarrying and Nonmetallic Mining	2			−5.5	2			− 4.5
Crude Petroleum Production	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Private Building Construction	1		1	+2.5		1	1	+ 2.5
Wholesale Trade			1	+3.0	1			− 1.0
Retail Trade	1		1	−1.0	1		1	− 2.0
Hotels	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Dyeing and Cleaning			2	+5.5	1		1	− 2.0
Laundries			2	+2.0	1	1		− 0.5
Electric Light and Power	1		1	+2.0	1		1	− 1.5
Class I Railroads	2			−3.5	2			− 4.0
Street Railways and Buses	1		1	−1.0	2			− 6.5
Total or Average[a]	10		12	+0.1	14	3	4	− 2.4

(b) BLS, 1947-1956

Industries	TIMING RELATIVE TO BUSINESS CYCLES				TIMING RELATIVE TO EMPLOYMENT			
	Number of			Average Timing (months)	Number of			Average Timing (months)
	Leads	Coincidences	Lags		Leads	Coincidences	Lags	
Anthracite Mining	3		1	−4.8	n.c.	n.c.	n.c.	n.c.
Bituminous Mining	2		1	−1.0	n.c.	n.c.	n.c.	n.c.
Metal Mining	1		3	−0.8	2		2	− 0.2
Quarrying and Nonmetallic Mining	3			−8.3	3			−10.7
Non-building Construction	1		2	−2.0	2	1		− 2.0
General Contractors	1		1	−0.5			1	+ 1.0
Special Trade Contractors	1		1	−6.5	n.c.	n.c.	n.c.	n.c.
Wholesale Trade	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Retail Trade	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Gas and Electric Utilities	2		1	−2.0	n.c.	n.c.	n.c.	n.c.
Telegraph	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Telephone	3			−5.0	3			− 8.3
Class I Railways	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Local Railways and Buses			1	+2.0	n.c.	n.c.	n.c.	n.c.
Total or Average[a]	17		11	−3.2	10	1	3	− 4.5

n.c.: No comparable turn.

[a]The average timing is derived from the basic observations, not from the industry average given in the table.

Table 23

Weekly Hours in Nonmanufacturing Industries, Average Timing at Matched Turns, 1935-1956

Leads (−), Lags (+), or Coincidences (0) at Business Cycle Turns, in Months

	PEAKS			TROUGHS			PEAKS AND TROUGHS		
	Leads	*Lags*	*All*[a]	*Leads*	*Lags*	*All*[a]	*Leads*	*Lags*	*All*[a]
				Hours Relative to Business Cycles					
14 series, 1935-41	−3.9	+2.2	−1.6	−5.3	+4.5	+1.8	−4.3	+3.8	+0.1
14 series, 1947-56	−8.8	+2.5	−6.9	−4.6	+2.9	−0.4	−7.1	+2.8	−3.2
Averages:									
Nonmanufacturing	−6.8	+2.3	−4.4	−4.8	+3.6	+0.5	−6.0	+3.3	−1.7
Manufacturing, comparable cycles	−7.2	0	−7.1	−5.6	+2.4	−3.8	−6.5	+2.4	−5.4
				Employment Relative to Business Cycles					
14 series, 1935-41	−2.7	+3.4	+1.9	—	+5.7	+4.8	−2.7	+4.6	+3.3
14 series, 1947-56	−5.0	+3.3	+0.2	−4.5	+2.7	+1.4	−4.8	+2.9	+0.9
Averages:									
Nonmanufacturing	−4.0	+3.4	+1.0	−4.5	+4.0	+2.8	−4.1	+3.8	+2.0
Manufacturing, comparable cycles	−8.0	+2.5	−4.3	−2.8	+2.6	+0.3	−6.1	+2.6	−2.0
				Hours Relative to Employment[b]					
14 series, 1935-41	−4.2	+3.0	−3.2	−5.8	+4.3	−1.6	−4.8	+4.0	−2.4
14 series, 1947-56	−7.8	—	−6.5	−5.4	+1.0	−3.0	−6.6	+1.0	−4.5
Averages:									
Nonmanufacturing	−5.5	+3.0	−4.4	−5.6	+2.7	−2.2	−5.5	+2.7	−3.3
Manufacturing, comparable cycles	−5.2	+5.0	−2.9	−5.1	+2.3	−4.4	−5.2	+4.3	−3.7

[a] This column measures the average timing of all leads, lags, and coincidences.

[b] Hours are related to employment only for turns which can be matched with business cycle dates. Inclusion of other corresponding turns in hours and employment would change the averages but little.

(General Contractors, postwar), the "average" is identical with a single observation!

Summary

We found that, on the average, hours worked in nonmanufacturing industries conform less frequently to business cycles, lead in fewer instances, lead by fewer months, and show a greater dispersion of turning points than hours worked in manufacturing. Why should these differences exist? For the answer to this question we must visualize the heterogeneity of the industries bracketed under the vague term of "nonmanufacturing." There are mining, retail trade, railroads, utilities, building, services, etc.— industries whose only common denominator is that they are not producing factory products. Average hours worked in some of these industries—wholesaling and retailing are examples—may show little cyclical fluctuation altogether; hours in other industries, such as building, may experience cycles that are well known to deviate systematically from those shown by business activity at large; and the behavior of hours in personal service industries may well be dominated by factors that are only loosely related to those determining hours in factories.

Thus, relative to business cycles, hours in nonmanufacturing behave erratically—largely in response to the output and employment patterns of the particular industries. If measured against the corresponding employment, the cyclical timing of weekly hours in nonmanufacturing and manufacturing industries becomes more alike.