CHAPTER 15

The Timing of Cyclical Changes in
the Average Workweek

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IN order to interpret the behavior of economic indicators effectively, a good deal must be known—about their past cyclical behavior, about their relationship to other economic variables, about institutional and other factors that may tend to change the historical patterns and relationships. Ideally, not only should the cyclical characteristics of each indicator be known, but the causes for typical as well as atypical behavior should be understood. In this paper we seek to contribute to both these goals, as they relate to fluctuations in the length of the average workweek.

Long-Term Changes in the Workweek

Let us begin by briefly reviewing some long-term changes. Chart 15.1, portraying average weekly hours in all manufacturing, shows a long-term decline in the length of the workweek, from almost fifty hours during the twenties to about forty hours in recent years—a development that deeply affected the living and spending habits of the population. This decline was not a gradual, progressive change. Hours maintained high levels up to the onset of the Great Depression. Then they declined abruptly and fluctuated around an average of about thirty-seven hours during the thirties. Weekly hours climbed to more than forty-five hours in the course of World War II, declined during 1945, and have oscillated around the forty-hour level during the postwar years. The long-run decline in hours has broad economic causes and consequences, which have attracted the attention of many students.[1] For our purposes, it is essential to note that during the Great Depression and its aftermath the behavior of hours must have been fundamentally affected by noncyclical forces; during the remainder of the period under review, trend forces

[1] For a recent summarization of long-term trends in average weekly hours, and a discussion of basic factors affecting these trends, see Joseph S. Zeisel, "The Workweek in American Industry, 1850–1956," *Monthly Labor Review*, January 1958, pp. 23–29. An earlier analysis of long-term trends toward a shorter workweek is found in Herbert R. Northrup and Herbert R. Brinberg, *Economics of the Work Week* (National Industrial Conference Board, Studies in Business Economics, Number 24, New York, 1950).

CHART 15.1

Average Workweek, Employment, and Man-Hours, All Manufacturing, 1920–57
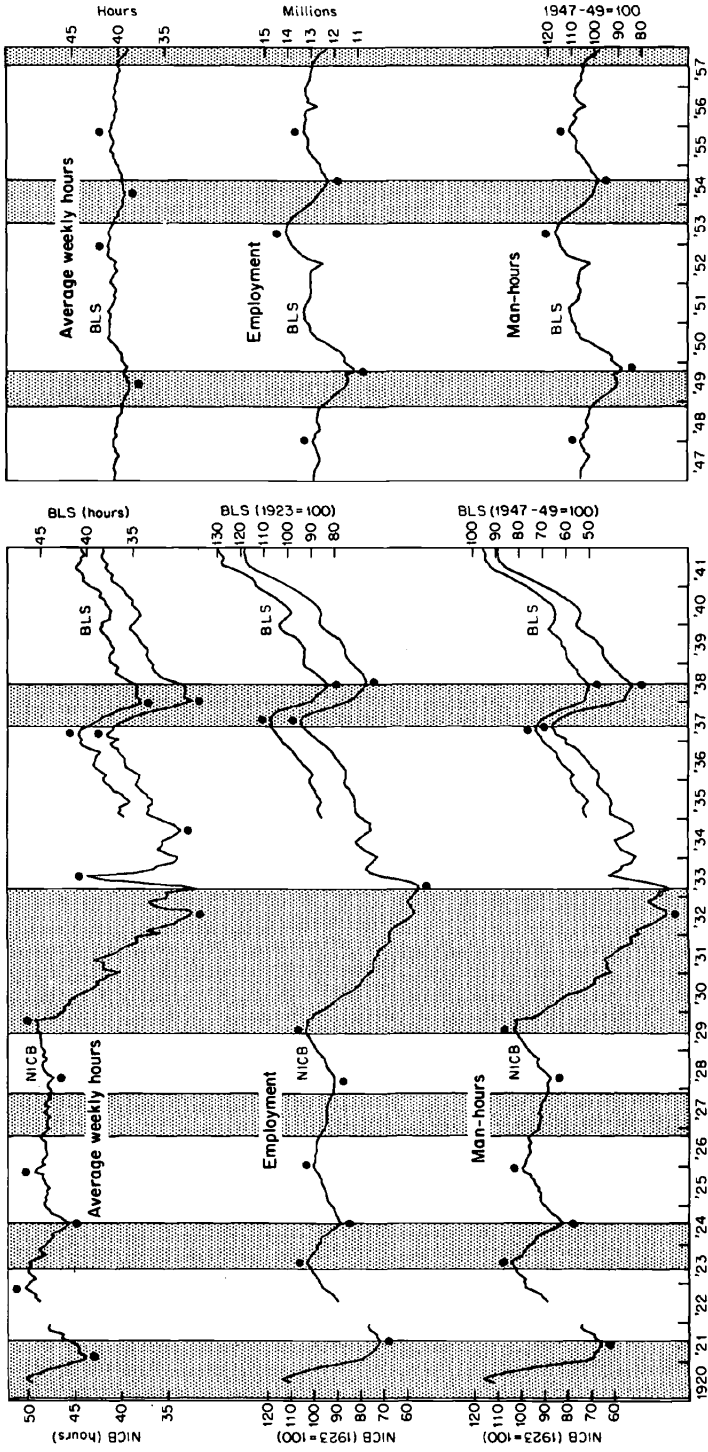
Scales chosen to yield similar amplitudes.   Dots identify peaks and troughs of specific cycles.
Shaded areas represent business contractions; unshaded areas, expansions.

are not likely to disturb materially our observations on cyclical timing—at least not in weekly hours worked in manufacturing.

After World War II, the length of the workweek in all manufacturing showed little of the downward trend that had characterized its previous history. Recent declines in the workweek have been largely restricted to nonmanufacturing industries. Chart 15.2 contains some evidence to this effect. The nonagricultural work force experienced a decrease in the length of the workweek not shared by manufacturing labor. And the strong decline in the workweek in agriculture, from about fifty to forty-five hours, led to a shortening of the average workweek of "all persons at work" more pronounced than that of the nonagricultural population.

Altogether, the length of the average workweek has become less unequal among workers in different industries or broad industry groups. This may be regarded as part of a "democratization" process in labor input, similar to processes that have been observed in incomes and expenditures.

The Workweek as a Cyclical Indicator

Our graphs of average hours in manufacturing industries (Charts 15.1 and 15.2) show a series of rather mild fluctuations which appear to be regularly related to expansions and contractions in general business. Closer observation reveals that in most cycles the turning points of average hours in all manufacturing preceded those of general economic conditions: for the series shown the lead averaged about four months. This characteristic earned the workweek in manufacturing its selection as one of the eight "leading" indicators of business conditions in the National Bureau's twenty-one basic indicator series.

One of the criteria in selecting economic indicators was that they should represent a broad range of activities and describe a process of stable economic significance.[2] In these respects the average workweek seems to be eminently qualified. Hours of work measure the average labor input of employed workers and, together with the number employed, their skills, etc., determine the labor input of society. However, the restriction of the indicator to average hours worked by production workers in manufacturing makes the coverage incomplete. Let us briefly investigate whether the cyclical behavior of hours in manufacturing is also representative of other segments of the economy. Chart 15.2 shows that for 1947–57 there are considerable differences in the behavior of average hours in different segments of industry. Cyclical fluctuations are most distinct and widest in manufacturing and agriculture, and less distinct in the total nonagricultural labor force or the total work force. Furthermore, the timing of cyclical turns varies for the series shown, manufacturing showing the closest and agriculture the loosest relation to business cycles.

[2] See Chapter 6.

CHART 15.2
Average Workweek, 1947–57
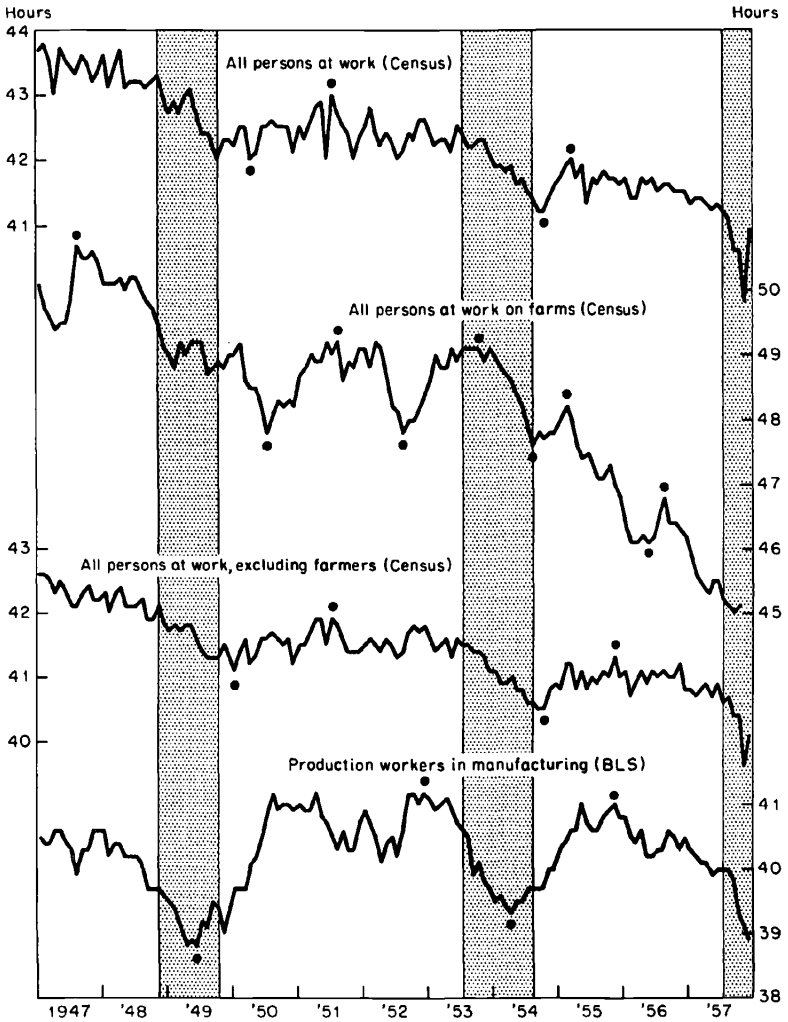
Shaded areas represent business contractions; unshaded areas, expansions.
Dots identify peaks and troughs of specific cycles.

Thus, although average weekly hours in manufacturing may be a preferred indicator of prospective changes in business conditions, this series cannot be regarded as representative of the workweek in the nation at large. The difference between the two lower curves in Chart 15.2 makes it mandatory to analyze the cyclical behavior of hours separately for manufacturing and nonmanufacturing industries.

SOME PROBLEMS

Among the questions which the student of business cycles would raise about the workweek are the following. How typical, how reliable, and how regular in length are the "leads" of hours observed for manufacturing as a whole? Are they also found in most of the individual manufacturing and nonmanufacturing industries? What is the relationship of turns in hours to turns in employment in the same industries? Are there certain industries which tend to turn early (a characteristic of obvious importance for forecasting purposes)? And, above all, what explains the timing characteristics of average weekly hours? Similar questions could, of course, also be raised about other aspects of cyclical behavior, such as amplitudes and cycle patterns; and some of these aspects should indeed be considered in the analysis of cyclical conditions. However, the indicators with which this book is concerned serve mainly as a tool for analyzing the sequence of short-term changes. In that context, the timing of cyclical turning points plays a decisive role. Hence we shall be mainly concerned with the timing characteristics of average weekly hours.

Valuable contributions to the description and analysis of variations in the length of the average workweek have been made in the past,[3] but the available data have never been fully and systematically used. A major problem in such an undertaking is to process a large mass of data in a form in which it can be compared and analyzed. In the study summarized here, this involved, as a basic step, the seasonal adjustment of about 200 time series—a task which would have been forbidding before large-scale electronic computers became available. It also involved the determination of a far greater number of specific turning points and the "matching" of corresponding turns in hours, employment, and business at large. The predominantly empirical approach used should not create the impression that our findings are based entirely on objective facts. There is a surprising amount of discretionary leeway even in this type of quantitative analysis—in the choice among various seasonal adjustments, in the selection of turning points, in the matching of turns in hours with

[3] There are numerous articles in the *Monthly Labor Review, Survey of Current Business*, and various publications of the National Industrial Conference Board. See also Leo Wolman's "Hours of Work in American Industry," Bulletin 71, New York, NBER, 1938; and Geoffrey Moore's "Business Cycles and the Labor Market," *Monthly Labor Review*, March 1955 (reprinted here, Chapter 16).

business cycle or employment turns, and in other matters. However, we have tried to make these decisions conscientiously, and we believe that the broad conclusions presented here would be affected very little by alternative decisions in borderline cases.

The monographic treatment of an economic variable, such as the average length of the workweek, has certain disadvantages, particularly in interpretation. The cyclical behavior of average hours cannot really be understood without reference to the concomitant behavior of other variables, such as overtime work, employment, productivity, labor cost and labor turnover rates, production, sales, and so forth. Some of these activities may suggest why labor input is varied at given times, and others may indicate under what circumstances business management chooses to vary this input by means of hours rather than by means of employment changes. Employment is considered in some detail. But production, sales, labor turnover, and other economic activities are analyzed on an aggregate level only, that is, for all manufacturing or similarly broad classifications. Still, on the basis of these data and some supplementary information, we shall attempt to analyze the reasons why average weekly hours display the cyclical characteristics which we observe.

THE DATA

We are concerned here with average hours worked, or hours paid for, per week. They should be clearly distinguished from so-called "normal" or "nominal" hours. The latter denote the length of the standard workweek, i.e. the maximum number of hours for which no premium payments have to be made. Average hours actually worked per week differ from normal hours because of overtime, short time, Sunday and holiday work, time lost by sickness, labor turnover, etc. Statistically, average hours worked are usually derived by dividing employment into man-hours. This introduces other elements of variation, such as changing proportions among groups of workers who may have workweeks of different lengths (men vs. women, skilled vs. unskilled, workers on time rates vs. workers on piece rates).

Another distinction to be kept in mind is between hours worked and hours paid for. This distinction is important in the case of paid vacations, paid sick leave, paid time-off during strikes, and similar circumstances. One might wish to approximate the concept of hours actually worked. However, most of the hours data at our disposal refer to "hours paid for."

There are several major collections of information at the disposal of the student who wishes to analyze the behavior of hours during business cycles or over longer periods. One is the statistics of hours in twenty-five manufacturing industries compiled by the National Industrial Conference Board monthly, 1920 to 1948. From 1932 on, the Bureau of Labor

bearing on the interpretation of economic conditions. Suppose further that the decline of average weekly hours occurred in a persistent industrial sequence—this would permit us to gauge the progress of declines or recoveries, as they occur.

Even if there is no clear-cut sequence in terms of specific industries, knowledge of the number or percentage of industries with declining hours (as given by diffusion indexes) provides some indication of the extent to which and the speed with which adjustments in labor input (by variation in the length of the workweek) become diffused throughout manufacturing or industry at large. Thus, more detailed knowledge of the behavior of average weekly hours will be an additional tool for the realistic interpretation of economic conditions.

In the study summarized here, the timing of hours in all manufacturing is first compared with that of employment, man-hours, new orders, production, sales, and labor turnover. We then investigate the relation of fluctuations in overtime and short time to those in average hours. And for some of these variables we endeavor to find out whether differential behavior in the aggregate measures is reflected in the corresponding diffusion indexes, and to what extent the latter measures have indicator characteristics of their own.

A major part of the study deals with a detailed analysis of timing relations in individual major manufacturing and nonmanufacturing industries. We establish how regularly turns in hours can be matched with those in business cycles and with those in corresponding employment series; how consistently the average leads observed in the aggregates appear in the component series; how widely dispersed turns in hours are; and how the timing of hours in manufacturing industries compares with that in nonmanufacturing industries. We also investigate how average timing relations vary from cycle to cycle and whether there is any persistence in the sequence of the turns for individual industries.

Finally we attempt to shed some light on the management of labor input, by changes of hours and employment, in individual plants.

Leads and Lags in the Average Workweek

INCIDENCE OF LEADS AND LAGS

We have observed that average weekly hours for manufacturing as a whole show peaks and troughs, in most instances, before the corresponding turns in general business (see Chart 15.1). Theoretically, this lead of weekly hours in total manufacturing might result from widely varying behavior of hours in different industries or from early turning points in most industries. Thus the question arises of how widely the lead of average hours in manufacturing is spread among the constituent industries. Table 15.1 contains the pertinent measures.

Statistics has compiled monthly information on average hours. Fourteen major manufacturing and about as many nonmanufacturing industries were covered from about 1935 on, in the classification used during the interwar period. For the postwar years, we have the Bureau of Labor Statistics information for twenty-one major manufacturing industries, many subdivisions thereof, and some industry divisions, both broad and narrow, outside manufacturing.

For manufacturing, our analysis is largely restricted to the major industries; for nonmanufacturing, we have sometimes had to use narrower industry classes. For all these industries we assembled information not only on hours but also on employment. This permits us to analyze the timing of cyclical changes in average hours in relation to comparable employment turns as well as in relation to turning points of business cycles at large. Since January 1956, the BLS has published separate data for straight-time and for overtime hours in manufacturing industries. We have made limited use of this material.

For some purposes, particularly in our search for the causes of the timing behavior of industry series, we required information in greater detail than was available in published form. The BLS supplied information on the behavior of hours and employment in twenty individual plants—coded in such a way as to comply with the rigorous requirements of the disclosure rules.

Every month the Bureau of the Census conducts a sample inquiry into labor force characteristics, employment status, and number of hours worked during the report week. The information is based on visits to households rather than on plant statistics, and from it are constructed percentage distributions of all persons and of wage-salary workers working specified numbers of hours. These data are available only for relatively broad industrial groupings. The hours and overtime data published by the Census were utilized in our inquiry. Scattered information on the average workweek and the distribution of hours worked, for one point in time or for census years, is neglected in our study, which is concerned with the cyclical behavior of hours and must therefore mainly rely on monthly time series.

THE APPROACH

The aim of our inquiry—as pointed out before—is a systematic analysis of the cyclical timing of average weekly hours. We wish to know how hours behave and why they behave as they do. A reasoned record of the cyclical behavior of hours is not only of academic interest but may also improve our ability to analyze current business conditions. Suppose we found that average hours tended to lead business cycle turns with fair regularity and with moderate industrial dispersion—this would surely have some

The high incidence of leads observed for hours in all manufacturing is also apparent in individual manufacturing industries. Of the 224 cases in which specific industry turns could be matched with those in general business conditions, hours led in 161, or in 72 per cent. The incidence of leads is, percentagewise, even larger when turns in hours are related to corresponding employment turns in the same industry.

The high incidence of leads can also be established at individual peaks and troughs. Only on two occasions, at the trough of July 1924 and at the peak of June 1929, were there fewer leads than lags; and even these exceptions disappear when hours are measured against the corresponding employment turns.[4]

Also for nonmanufacturing industries, turns in hours precede those in business cycles in a majority of cases. However, percentagewise, the incidence is lower than for manufacturing industries, especially at troughs, where leads are less frequent than lags, on the whole. The lower incidence is associated with the behavior of employment. If turns in hours are measured against those in employment, the incidence of leads increases materially, at both peaks and troughs.

LENGTH OF LEADS AND LAGS

For manufacturing industries, the average timing of turns in hours is approximately the same, whether based on the aggregate or the average of component industries. In both cases, hours lead business cycle turns, on the average, by four months and employment turns by three months (see Table 15.2). While the aggregate for manufacturing as a whole lags or coincides at three of twelve business cycle turns since 1921, there is no such exception for the averages derived from the individual manufacturing industries. The explanation may well be that, in matching industry and business cycle turns, some of the turns in hours (among them some which occurred long after the nearest business cycle turn) were not regarded as "corresponding" and hence not included in the averages.

Data for nonmanufacturing industries became available only during the thirties. The average lead of hours, relative to business cycle turns, is shorter than the lead observed for manufacturing industries. This is true not only for the tabulated averages, but also for most of the comparable individual turns. Indeed, the averages for two turning points, June 1938 and October 1949, show short lags. The lead of hours becomes more pronounced when turns in hours are compared with the corresponding ones in employment. Not only do hours, over the average of the nonmanufacturing industries, lead at each turn, but the length of the lead is

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[4] The business cycle reference peak has since been revised to August 1929. This would increase the frequency and duration of leads at this reference turn but would not, of course, alter the timing of hours relative to employment.

TABLE 15.1

Average Workweek and Employment in Manufacturing and Nonmanufacturing Industries,
Number of Leads and Lags at Each Reference Turn, 1921–56

Manufacturing Industries[a]

	Trough July '21	Peak May '23	Trough July '24	Peak Oct. '26	Trough Nov. '27	Peak June '29	Trough Mar. '33	Peak May '37	Trough June '38	Peak Nov. '48	Trough Oct. '49	Peak July '53	Trough Aug. '54	All Peaks	All Troughs	All Turns
						AVERAGE WEEKLY HOURS VS. BUSINESS CYCLE TURNS										
Leads	17	7	4	12	8	6	12	13	11	19	16	21	15	78	83	161
Coincidences	1	1	5	0	0	2	3	1	2	0	0	0	0	4	11	15
Lags	1	6	7	2	6	10	5	0	1	0	5	0	5	18	30	48
Total	19	14	16	14	14	18	20	14	14	19	21	21	20	100	124	224
Leads as per cent of total	89.5	50.0	25.0	85.7	57.1	33.3	60.0	92.9	78.6	100.0	76.2	100.0	75.0	78.0	66.9	71.9
				PRODUCTION WORKER EMPLOYMENT VS. BUSINESS CYCLE TURNS												
Leads	13	3	1	11	4	2	11	3	1	14	9	13	8	46	47	93
Coincidences	1	1	8	0	2	3	2	2	6	2	2	5	0	13	21	34
Lags	4	12	6	1	8	14	7	9	6	1	9	1	10	38	50	88
Total	18	16	15	12	14	19	20	14	13	17	20	19	18	97	118	215
Leads as per cent of total	72.2	18.8	6.7	91.7	28.6	10.5	55.0	21.4	76.9	82.4	45.0	68.4	44.4	47.4	39.8	43.3
					HOURS VS. EMPLOYMENT TURNS											
Leads	14	10	5	8	7	12	13	12	12	10	16	13	16	65	83	148
Coincidences	2	0	6	0	0	2	2	1	1	1	2	1	0	5	13	18
Lags	1	3	1	3	3	3	5	1	0	4	2	4	1	18	13	31
Total	17	13	12	11	10	17	20	14	13	15	20	18	17	88	109	197
Leads as per cent of total	82.4	76.9	41.7	72.7	70.0	70.6	65.0	85.7	92.3	66.7	80.0	72.2	94.1	73.9	76.1	75.1

TABLE 15.1 (concluded)

Nonmanufacturing Industries[b]

	Peak May '37	Trough June '38	Peak Nov. '48	Trough Oct. '49	Peak July '53	Trough Aug. '54	All Peaks	All Troughs	All Turns
AVERAGE WEEKLY HOURS VS. BUSINESS CYCLE TURNS									
Leads	7	3	3	3	7	4	17	10	27
Coincidences	0	0	0	0	0	0	0	0	0
Lags	4	8	2	7	0	2	6	17	23
Total	11	11	5	10	7	6	23	27	50
Leads as per cent of total	63.6	27.3	60.0	30.0	100.0	66.7	73.9	37.0	54.0
PRODUCTION WORKER EMPLOYMENT VS. BUSINESS CYCLE TURNS									
Leads	3	0	2	1	2	1	7	2	9
Coincidences	0	2	1	2	1	1	2	5	7
Lags	9	10	5	6	2	6	16	22	38
Total	12	12	8	9	5	8	25	29	54
Leads as per cent of total	25.0	0	25.0	11.1	40.0	12.5	28.0	6.9	16.7
HOURS VS. EMPLOYMENT TURNS									
Leads	9	5	2	3	3	2	14	10	24
Coincidences	1	2	1	0	0	0	2	2	4
Lags	1	3	0	2	0	1	1	6	7
Total	11	10	3	5	3	3	17	18	35
Leads as per cent of total	81.8	50.0	66.7	60.0	100.0	66.7	82.4	55.6	68.6

[a] For 1921–35 the 20 industries comprising NICB total; for 1936–41, the 14 industries comprising BLS total; thereafter the 21 two-digit BLS industries.

[b] Includes the following BLS industries:

1935–41: Anthracite Mining, Bituminous Mining, Metaliferous Mining, Quarrying and Nonmetallic Mining, Crude Petroleum Production, Private Building Construction, Wholesale Trade, Retail Trade, Hotels, Dyeing and Cleaning, Laundries, Electric Light and Power, Class I Railroads, Street Railways and Buses.

1947–56: Anthracite Mining, Bituminous Mining, Metal Mining, Quarrying and Nonmetallic Mining, Non-Building Construction, General Contractors, Special Trade Contractors, Wholesale Trade, Retail Trade, Gas and Electric Utilities, Telephone, Telegraph, Class I Railways, Local Railways and Buses.

TABLE 15.2

Average Workweek and Employment in Manufacturing and Nonmanufacturing Industries[a], Timing at Each Reference Turn, 1921–56

	LEAD (−), COINCIDENCE (0), OR LAG (+), IN MONTHS													Averages at		
	Trough July '21	Peak May '23	Trough July '24	Peak Oct. '26	Trough Nov. '27	Peak June '29	Trough March '33	Peak May '37	Trough June '38	Peak Nov. '48	Trough Oct. '49	Peak July '53	Trough Aug. '54	Peaks	Troughs	All Turns
AVERAGE WEEKLY HOURS VS. BUSINESS CYCLE TURNS																
Aggregate manufacturing	−5	−6	0	−11	+5	+4	−8	−2	−6	b	−4	−7	−4	−4.4	−3.1	−3.7
Manufacturing industries	−3.9	−1.9	−0.8	−7.9	−1.4	−0.7	−2.2	−3.9	−2.6	−10.5	−4.2	−6.0	−4.2	−5.3c	−2.9c	−4.0c
Nonmanufacturing industries								−1.6	+1.8	−3.6	+1.3	−9.3	−3.2	−4.4c	+0.5c	−1.7c
PRODUCTION WORKER EMPLOYMENT VS. BUSINESS CYCLE TURNS																
Aggregate manufacturing	0	+2	0	−9	+4	+1	+1	+2	0	b	0	−3	0	−1.4	+0.7	−0.2
Manufacturing industries	−2.6	+2.2	+2.0	−5.6	+0.5	+2.1	−3.5	+0.6	+0.7	−9.0	−0.1	−3.6	+0.4	−2.1c	−0.5c	−1.3c
Nonmanufacturing industries								+1.9	+4.8	+1.0	+1.9	−1.0	+0.8	+1.0c	+2.8c	+2.0c
HOURS VS. EMPLOYMENT TURNS																
Aggregate manufacturing	−5	−8	0	−2	+1	+3	−9	−4	−6	b	−4	−4	−4	−3.0	−3.9	−3.5
Manufacturing industries	−1.9	−3.8	−2.3	−3.9	−2.1	−2.7	+1.3	−4.5	−4.2	−1.3	−3.8	−3.1	−5.1	−3.1c	−2.5c	−2.8c
Nonmanufacturing industries								−3.2	−1.6	−3.3	−2.0	−9.7	−4.7	−4.4c	−2.2c	−3.3c

a For industries included in averages see footnotes to Table 15.1.
b No entries were made for the 1948 peak since the average hours, as reported by BLS, show no specific turn. The NICB series on average hours shows an 11-month lead at this turn which can be established, although the series was discontinued after July 1948.
c Averages are derived from the basic observations, not from averages given in this table.

about three months—substantially the same as that observed for manufacturing.

Thus, if turns in hours in nonmanufacturing industries seem to behave somewhat erratically relative to changes in general business conditions, this is largely in response to the specific output and employment patterns of the particular industries. If measured against corresponding employment turns, the cyclical timing of weekly hours in manufacturing and nonmanufacturing industries becomes more similar.

A Typical Sequence of Turning Points

It is of interest to observe the cyclical behavior of hours within the context of changes in the labor market and related activities, as they occur during the business cycle. We choose as an example the peak and trough which mark the contraction of 1953–54. It is understood that sequences of turning points vary with historical circumstances. However, the typical behavior of economic activities might, under ordinary conditions, be expected to be discernible within the historically unique patterns. The relevant series are depicted in Chart 15.3 and their cyclical turning points are listed in chronological order in Table 15.3.
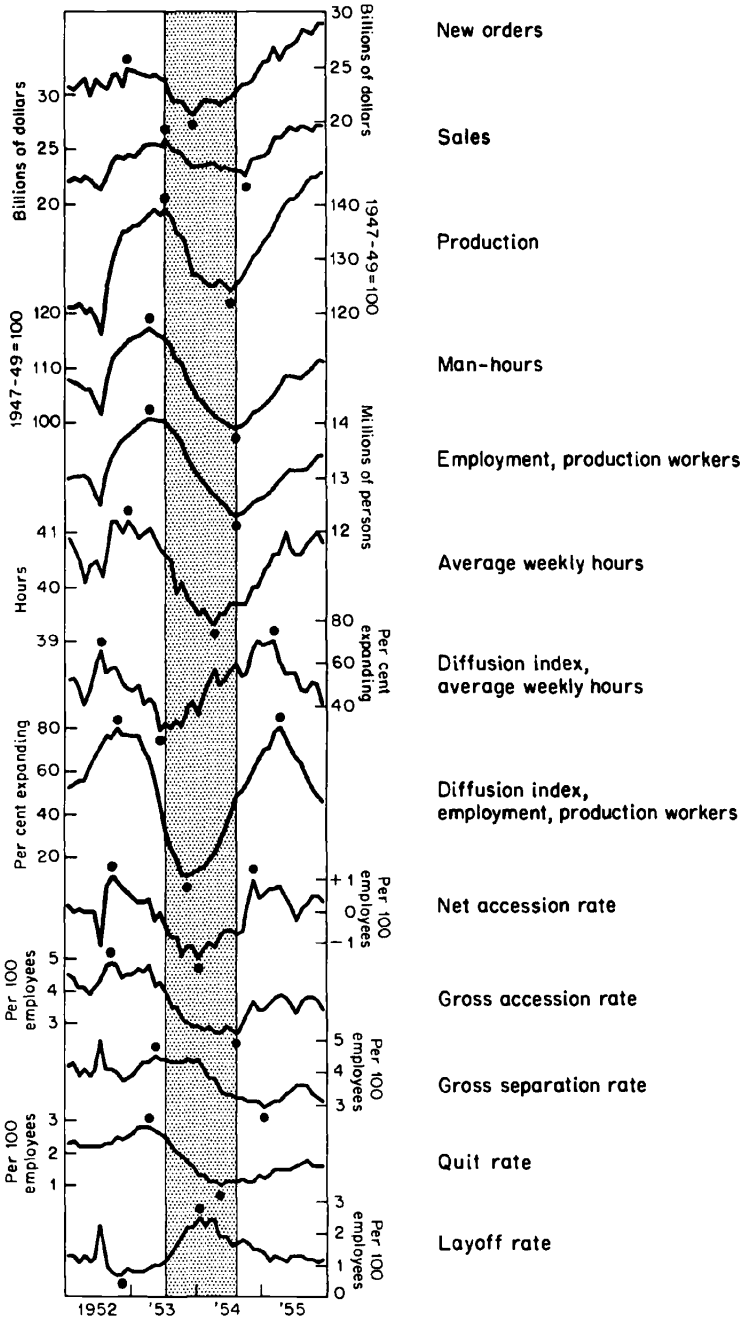
THE BUSINESS CYCLE PEAK OF JULY 1953

Among these materials the earliest indication of an impending cyclical contraction came from the activity that is at the core of the present inquiry—average weekly hours. As early as July 1952, that is a full year before the business cycle turn in 1953, the percentage of industries with a lengthening workweek began to fall. This figure reached 65 per cent in July; after that date it kept declining (with the exception of one month) until, in December 1952, more than half the manufacturing industries included showed a shortening workweek. It took more than a year before this trend was reversed. Let us note that this early turn occurred in the diffusion index rather than in the level of average weekly hours. It signified a slackening of the expansion, but not yet any actual decline in the average workweek for all manufacturing.

The next activity to turn was the gross accession rate, which experienced a peak in September 1952. Business firms became more cautious in their hiring,[5] and did not necessarily replace quitting workers (the quit rate continued to rise for many months). The reduction in the hiring rate, in combination with a virtually stable level of total separations, forced a decline of the net accession rate. That is, net additions to employment became smaller. The net change stayed positive for seven more

[5] The decline in the hiring rate might also be affected, however, by the increasing tightness of the labor market (which makes hiring difficult) and by the rising levels of employment (which increase the denominator and thus decrease the value of the hiring ratio).

CHART 15.3

Labor Input and Related Variables, All Manufacturing, 1952–55

New orders

Sales

Production

Man-hours

Employment, production workers

Average weekly hours

Diffusion index,
average weekly hours

Diffusion index,
employment, production workers

Net accession rate

Gross accession rate

Gross separation rate

Quit rate

Layoff rate

Shaded areas represent business contractions; unshaded areas, expansions.
Dots identify peaks and troughs of specific cycles.

TABLE 15.3

Sequence of Cyclical Turning Points in Manufacturing Labor Input and Related Variables, at Two Business Cycle Turning Points (July 1953 and August 1954)

Specific Peaks	Lead (−) or Lag (+) at July 1953 Bus. Cycle Peak (months)	Activity
July 1952	−12	Diffusion index of average hours
Sept. 1952	−10	Gross accession rate Net accession rate
Oct. 1952	−9	Diffusion index of employment
Nov. 1952	−8	Layoff rate (inverted)
Dec. 1952	−7	Average hours New orders
Apr. 1953	−3	Quit rate Employment Man-hours
May 1953	−2	Gross separation rate
July 1953	0	Sales Production

Specific Troughs	Lead (−) or Lag (+) at August 1954 Bus. Cycle Trough (months)	Activity
June 1953	−14	Diffusion index of average hours
Nov. 1953	−9	Diffusion index of employment
Dec. 1953	−8	New orders
Jan. 1954	−7	Net accession rate Layoff rate (inverted)
Apr. 1954	−4	Average hours
May 1954	−3	Quit rate
July 1954	−1	Production
Aug. 1954	0	Gross accession rate Employment Man-hours
Oct. 1954	+2	Sales
Feb. 1955	+6	Gross separation rate

months; thereafter it showed negative values for the whole of the business contraction. We shall soon see how the various major components of the rate contributed to this result.

The decline in net accessions meant merely that the additions to the work force now became smaller. As long as net accession remained positive, employment continued to rise. But the decreasing size of net additions meant a declining rate of growth in employment, a development that can be verified from Chart 15.3. The greater caution of management was reflected in a decline in the percentage of industries showing expanding employment: the diffusion index reached its peak in October. Also, the next turn in our labor market indicators was an upturn in the layoff rate in November 1952. This turn must be regarded as highly significant. From November on, for more than a year, business firms increased, almost every month, the number of workers who were laid off their jobs.

Up to this point we have found only reversals in rates of growth or in diffusion indexes. In December 1952 we witness the first actual downturn in a labor input measure—average weekly hours. The decline was mild at first, but soon gained momentum and eventually led to a reduction of the average workweek by about two hours. The peak in average weekly hours occurred in the same months in which the number of industries with declining hours exceeded, for the first time, the number with expanding hours. That these two events might occur close to each other stands to reason. It is, however, not necessary that they actually coincide.

In the same month, December 1952, new orders reached their highest level. This represents a lead of seven months over the business cycle peak. Such a lead of new orders is not surprising since we know empirically that they tend to lead business reversals, and they may be expected, on general economic grounds, to precede business cycle peaks. Can anything be said about the relation between the decline in new orders and the contraction of the average workweek from their December peaks? Businessmen are generally aware of changes in shipments and backlogs (which add up to new orders). Many had undoubtedly already experienced declines in new orders. They might well have reacted to a deterioration in demand with general economy measures including reduction of labor input, particularly overtime hours. Not much lead is required for such a response. In fact the proportion of workers working more than forty-one hours, and those working more than forty-eight hours experienced peaks in the same month.

During the first quarter of 1953 none of our series showed any peaks, but in the second quarter we find increasing signs of contraction in the labor market. Voluntary quitting decreases—presumably due to more limited employment opportunities and greater caution of workers in

leaving their jobs. It is interesting to note that for a while the reduced voluntary quitting just about balanced the mounting layoffs, which roughly stabilized gross separations from April to the end of the year. It was the rapid decline in hiring that forced the net accession rate below zero and led to a decline in employment after April 1953.

Employment, with its large cyclical swings, clearly dominated the fluctuations of labor input. Thus, despite the prior decline in the length of the workweek, total man-hours of production workers experienced their peak in April, together with employment. Although under the impact of downward changes in both employment and average weekly hours the decline in man-hours was fairly rapid, it was not, for a while, reflected in declines of output—presumably because of the existence of goods in process, the need to replenish essential stocks, a tightening of managerial controls, and perhaps somewhat greater exertion on the part of the work force.

In July 1953, that is coincident with the peak of general business conditions, production and sales reached their apex. In terms of historical experience, the behavior of these two activities ran true to form. There are some labor market activities, such as wage rates, that typically show lags behind business cycle turns, but none of these are included among the variables on which the present description is based.

THE BUSINESS CYCLE TROUGH OF AUGUST 1954

From July 1953 to August 1954, the economy of the United States experienced a general contraction—a mild one, if measured against the cycles of the interwar period, yet one that resulted in a decrease of production worker employment in manufacturing by about 13 per cent.

Long before the low point of this contraction was reached, the first signs of recovery in labor input factors made their appearance. Some of these signs emerged, in fact, before general business conditions had even reached their preceding peak! Again, one of the first indications of revival can be found in the behavior of average weekly hours. As early as June 1953, one month before the business cycle peak, the percentage of industries showing an expansion in the average workweek began to increase. In June, less than 30 per cent of the major manufacturing industries showed a lengthening of the workweek; after this month the percentage began to rise, first haltingly but soon more rapidly. Also the next turn for the better appeared in the structure rather than in the level of an economic activity: after November 1953 the number and percentage of industries showing an increase in production worker employment began to grow. On our chart, which shows a six-month moving average through these percentages, the upswing is well defined and uninterrupted—a development related to a deceleration in the decline of aggregate

501

employment but not as readily apparent from the employment series graphed on our chart.

The next activity to turn up was new orders, which reached its low mark in December 1953. The upturn of new orders preceded the business cycle recovery in August 1954 by eight months and ushered in a variety of developments in labor input.

In January 1954, the peak of layoffs was reached; after this date, the percentage of workers involuntarily separated from their jobs began to fall. Accompanied by a continued decrease in voluntary quits, this led to a marked decline of gross separations, which had maintained a high level for about three-quarters of a year. The gross accession rate, on the other hand, maintained, with minor exceptions, a low flat-bottom plateau. The combinations of markedly reduced separations and almost stabilized hiring led to an upturn in the net accession rate after January. The rate stayed negative, however, throughout the remainder of the business contraction and thus led to a deceleration but not to a reversal of the decline in production worker employment.

The first activity on our list showing a rise in levels is again the average workweek. In the last section of this report we shall present possible reasons why businessmen prefer to manipulate labor input (during periods of uncertainty) by expanding and contracting average weekly hours rather than employment. Suffice it to say at this point that this preference was shown again in the sequence of turning points around the 1954 trough.

At business troughs, workers are loath to leave their jobs; there are few openings and many competitors among the unemployed. Thus, over the whole period of historical experience under review, we found that voluntary quit rates lagged behind business cycle troughs. At the 1954 trough, however, our tabulation shows that workers began to increase quitting as early as May 1954, several months before the turn in general business conditions. One might point to the mildness of the contraction for a general explanation of this behavior. More revealing, however, is the observation of the record as it appears on our chart. Although a trough was reached in May 1954, voluntary quits stayed on a very low level throughout most of 1954 and began to rise significantly only during the subsequent year, when the expansion had become certain and vigorous.

In the months of July and August, approximately coincident with the revival of general business conditions, our measures of production, employment, and man-hours experienced their low. The domination of man-hours by employment is again confirmed by this record. Sales of manufactured goods reached their trough two months later, in October. Their cyclical turns tend, on the average, to coincide with those of

502

business cycles; a deviation by as little as two months is, however, well within the range of historical precedent.

The last activity on our list to experience an upturn is the gross separation rate. Its trough in February 1955 occurred six months after the revival in general business conditions. The lag of gross separation rates at business troughs is a common historical phenomenon. The turn occurs usually when, early in the expansion, the gradually rising quit rate becomes larger than the gradually declining layoff rate. This development can be clearly observed on our chart during the recovery from the 1954 business cycle trough.

The above description should provide some conspectus of the interrelated changes of labor market activities around business cycle turns. It might be added that, judged against our knowledge of the average behavior of the selected variables, the sequence of turning points during the 1953–54 business contraction proved to be fairly typical.

Why Do Hours Lead?

One of the major findings reported in this paper is the pervasiveness of the lead of turns in average hours over those in business cycles and employment. What are the reasons for this?

Initially the cyclical decline of weekly hours is mainly brought about by reduction in overtime. The decline of straight time hours makes its influence felt at a later date. The reasons why labor input is adjusted initially by hours rather than employment are manifold. Labor costs per hour can be reduced sharply by cutting overtime hours. A reduction in the workweek can be implemented quickly and reversed easily if necessary. It does not involve sacrificing part of an experienced work force; and sharing the work by working fewer hours may help maintain worker morale. Most of the reasons are short-term considerations. The actions flowing from them are largely taken by supervisory personnel, in response to current pressures on production schedules. They are not based on changes in policy. The reduction of hours near the peak does not differ from numerous other temporary reductions in the course of cyclical expansion.

Employment and even man-hours continue to rise after the peak in weekly hours, largely in continuation of past policies. A reversal of these policies implies fairly drastic changes in anticipations; the external and internal evidence warranting these changes accumulates only in the course of several months. This is the reason that reversals in employment trends occur only after considerable delay. It is true that hiring rates begin to be reduced and layoff rates begin to rise even before the peak in the average workweek is reached; but these changes are partly compensated by a decline in the voluntary quit rate. Some short-term factors support

503

the continued employment increases. The attempt to reduce overtime creates demand for additional workers. Some layoffs are postponed by work-sharing provisions in union contracts, and seniority rules and retraining needs may lead to temporary "doubling up" for the same job while layoffs are under way.

In the neighborhood of troughs, adjustments in the workweek are made in preference to sharp increases in hiring, in order to reduce undesirable part-time work, to comply with provisions in labor contracts, to limit training costs, and to avoid unfavorable experience rating which affects unemployment insurance contributions. The general softness of the labor market makes it unnecessary for most business establishments to do advance hiring in anticipation of future needs. Again, the cyclical turn in employment will come about only as result of changes in managerial policies—changes based on a revision of anticipations, or made in response to demand pressures that cannot be taken care of by the currently employed work force. This explains why at troughs also, where the avoidance of overtime premium rates plays no role, cyclical changes in average weekly hours precede those in employment.