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The Monthly Report on Current Business Cycle Developments

GENERAL CHARACTERISTICS

The monthly report was specifically designed to facilitate the early recognition of a reversal in business conditions, from expansion to contraction and from contraction to expansion. By bringing together the evidence on the likelihood of a turning point, it was intended to help reduce the time required to reach agreement on the political actions to be taken. Similarly, insofar as it provided, during a contraction, an early indication of its possible ultimate severity, the report may also have been helpful in choosing among alternative countercyclical measures. This reporting system, it is believed, provided a useful instrument to diagnose changing business conditions and to guide countercyclical actions.

The report organizes and presents generally available economic statistics in ways that are helpful in answering some of the key questions in short-term business forecasting. Its essential feature is that the economic series are arranged according to their usual timing relations during the course of business cycles. It also presents many analytical measures computed from these series, which are similarly arranged according to typical timing relations. The series included were selected on the basis of historical records of their timing and conformity to the business cycle as well as for their theoretical significance.

This type of report is not designed to meet the statistical needs of other economic problems, such as accelerating long-term growth or improving industrial organization. For example, over short periods, expenditures for new plant and equipment may lag behind industrial production because of the time required to get large new projects under way. On the other hand, over long periods, these expenditures tend to lead industrial production because they provide the additional facilities required to expand production. Thus, expenditures for new plant

and equipment cannot be used directly to forecast business cycle turning points in production, but they can be helpful in forecasting the growth of different industries or geographic regions. For such reasons, different types of economic data and entirely different statistical measures may be necessary for these economic problems.

The questions of importance in analyzing the current business situation change as the economy moves from one stage of the business cycle to the next. Thus, at the beginning of a recession it is important to judge what its duration and ultimate severity are likely to be. The rapidity of the decline compared with declines in previous recessions is also of concern. As the recession unfolds, interest shifts to indications of an upturn, and after an upturn seems in sight, to its confirmation. At the beginning of an expansion the question of immediate interest is how soon the previous peak levels will be attained and exceeded. This is followed by questions regarding the vigor and duration of the rise and the probability of inflation. Finally, interest shifts to initial indications of a downturn and its eventual confirmation. Because these questions change continually, a report on economic indicators must be flexible; the emphasis and arrangement of the statistical material must change accordingly. Flexibility is also required of the series used. For example, during the spring and summer of 1960, the government took measures to stimulate the economy by increasing the money supply, changing regulations in order to expand housing, and accelerating government expenditures, particularly for defense and public roads. Hence, during the fall and early winter months, series on the money supply, on housing and public roads construction, and on Defense Department obligations assumed special significance, since they provided direct evidence on the effectiveness of the government actions taken. Flexibility in the presentation of the tables and charts, and in the analytical measures and the series shown, was one of the principal features of the monthly report. Flexibility is also required to take advantage of new findings on business cycles, new techniques, and newly constructed time series. This requirement accounts, in large part, for the bulkiness of the monthly report. Not all the detailed entries in the numerous tables need, or indeed can, be studied every month. They are provided for reference if and when needed, and experience has shown that they are needed at one time or another during the course of a business cycle.

Economic time series are the raw materials for this reporting system. However, these series are not released in a form that is most suitable for business cycle analysis because most of them reflect a composite of cyclical, seasonal, secular, and irregular fluctuations. Month-to-month cyclical changes are obscured by other kinds of monthly

movements in most economic series. Thus, in a carefully selected sample of 150 series covering the period since World War II, the average monthly amplitude of the seasonal factor exceeded that of cyclical movements in 75 per cent of the series.¹ A refinement process is required to separate the underlying, more meaningful cyclical movements from seasonal and irregular movements. Adjustments for the number of working days and for variable holidays, such as Easter and Labor Day, are also required. Secular changes need not be distinguished separately. In the first place, they are usually small over short intervals, and, in the second place, it has been found more helpful to treat the cycle and trend elements in combination.²

The most modern data-processing equipment was used to disentangle the cycle trend from other types of fluctuations. Electronic computers and time series programs made possible the rapid processing of a very large number of time series each month. Partly because of these resources, the preparation of each monthly report was accomplished in a few days, and the results became available shortly after the middle of the month following that covered by the data.

Changes and adaptations were made in this reporting system as experience was gained in using it. Although its usefulness could not be tested under laboratory conditions as understood in the physical sciences, the form of the report was nevertheless hammered out in a realistic environment, where the figures were studied each month by government officials engaged in high-level discussions of economic policy.

It has been found that this reporting system facilitates the identification of cyclical turning points shortly after they have occurred. Similarly, it facilitates the identification of changes in other features of the business cycle, for example, from rapid to slow expansion. It is also helpful in anticipating such changes. However, it does not supply an automatic or explicit forecast of changing business conditions, nor will it pinpoint the month of a cyclical turning date in advance. It can be a valuable statistical tool in the hands of a skillful and well-informed analyst of changing business conditions. It is not a mechanical guide to the future.

PRINCIPAL BUSINESS CYCLE INDICATORS

Sixty-five economic series are used to depict the major short-term changes in the United States economy, together with seven additional

¹ Cyclical movements will, however, usually be dominant if longer periods are considered. Thus, seasonal movements will virtually cancel each other out in a year, whereas cyclical movements will usually cumulate over periods longer than a year.

² See *Measuring Business Cycles*, pp. 37-38, and Chapter 7, pp. 270-309.

series on industrial production in other countries. Fifty-one of these have been classified into "leading," "roughly coincident," or "lagging" groups, according to their typical behavior in past business cycles, following the National Bureau plan.³ Fluctuations in these three main groups of series present a continuous, never-ending flow. Movements of the leading series, twenty-nine of which are included in the report, provide clues to subsequent fluctuations in aggregate economic activity. The early movers belong to five groups: (1) sensitive employment and unemployment indicators (six series); (2) new investment commitments (eight series); (3) new businesses and business failures (four series); (4) profits and stock prices (four series); and (5) inventory investment, buying policy, and sensitive commodity prices (seven series). The fluctuations of the roughly coincident series, of which there are fifteen, express or approximate in different ways the volume of aggregate economic activity. These are classified into groups covering: (1) employment and unemployment (six series); (2) production and demand (four series); and (3) income, trade, and prices (five series). The role of the seven lagging series is partly to confirm the movements of the coincident series and in some cases to reflect conditions that may bring about a cyclical reversal in the leading and, later on, in the coincident series. These series fall under the following headings: investment expenditures, cost per unit of output, inventories, consumer debt, and interest rates.

There are, of course, other economic processes besides those measured by the indicators that have a causal role in cyclical fluctuations. Fourteen of the principal series that do not qualify as indicators according to the National Bureau criteria of consistency in timing and conformity to historical business cycles are included in a fourth group, "other series with business cycle significance." The role of such series in interpreting current economic changes can be illustrated by the 1960-61 recession. Some economists believe that this recession was triggered by the reduction in the money supply (series 85) after the middle of 1959 and by the shift from a large cash deficit to a surplus during 1959-60 (series 84). Thus, these two series, which are not included in the list of indicators, are nevertheless pertinent to an understanding of business cycle developments. A fifth group includes seven production indexes for the principal industrial countries with which the United States trades.

All these series, with measures of their leads or lags, are listed in Table 1. Asterisks identify the series in the National Bureau's most recent list of twenty-six indicators, which provides a set of leading, coincident, and lagging indicators with relatively little duplication. The

³ See "Leading and Confirming Indicators of General Business Changes," by Geoffrey H. Moore, *Business Cycle Indicators*, Volume 1, Chapter 3.

additional series given here are partly duplicative, but appear necessary either because they are available more promptly or at more frequent intervals or because they cover some strategic aspect of economic activity not separately distinguished.

All seventy-two series are plotted in Chart 2 from 1948 to April 1961. This basic chart conveys a large amount of information, historical as well as current, about the performance of the economy and the interrelations of different economic sectors or processes. Seasonal variations have been eliminated where they are present in the raw data. The movements of each series are shown against the background of the expansions and contractions of the general business cycle so that leads and lags can readily be detected and unusual developments spotted.

In each monthly report the seasonally adjusted figures for each series were shown in tabular form for a thirty-month period, ending in the current month. A portion of this table is shown in Table 2. The high values for this period are identified by bold face and the subsequent low values by italics.⁴ These simple devices appear to have substantially improved the usefulness of the basic data table in the report. They provide a graphic view of the distribution of high and low values, thereby facilitating judgments about the current phase of the business cycle. A summary tabulation based on them appears later in the report and is described below.

ANALYTICAL MEASURES OF CURRENT TRENDS

Since the behavior of a large number of series is difficult to grasp, summary measures are required. Several different kinds (described below) are used in this reporting program, besides the aggregates such as gross national product that are shown in the preceding chart and table. In business cycle studies, it is essential to include a wide variety of activities. The compilation of appropriate summary measures has been hampered by the conceptual difficulty of combining different activities and then of weighting the components appropriately. The summary measures compiled for this report are grouped according to their cyclical timing; that is, to obtain a consensus of the movements of many series, it has been found useful to combine series with similar business cycle characteristics, regardless of their other properties. Each summary measure, therefore, includes only leading, or only coincident, or only lagging series. The weighting problem has thus far been simply, though

⁴ Where possible, the high and low values represent specific cycle peaks and troughs (see *Measuring Business Cycles*, pp. 56-66). Otherwise, they are merely the highest value reached to date and the subsequent lowest value.

TABLE 1

SEVENTY-TWO BUSINESS CYCLE SERIES: TIMING CLASSIFICATION
AND SUMMARY MEASURES OF LEADS AND LAGS

Series	Business Cycle Peak or Trough	Period Covered by Timing Measures ^a	Median Lead (-) or Lag (+)	Mean Lead (-) or Lag (+)	Standard Deviation of Leads and Lags	Longest Lead	Longest Lag
(months)							
29 LEADING SERIES							
<i>Sensitive Employment and Unemployment Indicators</i>							
*1. Average workweek, manufacturing (M)	P	1923-57	-6	-7.6	6.3	-20	+2
	T	1921-58	-4	-2.8	3.9	-8	+5
*2. Accession rate, manufacturing (M)	P	1920-57	-10	-15.1	12.1	-35	-3
	T	1919-58	-3.5	-5.7	7.8	-28	0
30. Nonagricultural placements, all industries (M)	P	1948-57	-5	-10.0	7.1	-20	-5
	T	1945-58	-2	+3.5	10.1	-3	+21
*3. Layoff rate, manufacturing (M)	P ^b	1920-57	-8	-10.7	9.0	-27	-1
	T ^b	1921-58	-5	-5.4	3.2	-11	-1
4. Number of persons on temporary layoffs, all industries (M)	P ^b	1953-57	-24	-24.0	11.0	-35	-13
	T ^b	1949-58	-1	-3.3	4.0	-9	0
5. Initial claims for unemployment insurance, state programs (M)	P ^b	1948-57	-11	-14.3	5.4	-22	-10
	T ^b	1949-58	0	-0.3	1.2	-2	+1
<i>New Investment Commitments</i>							
*6. Manufacturers' new orders, value, durable goods industries (M)	P	1923-57	-6	-10.6	10.2	-35	-4
	T	1921-58	-2	-3.1	2.4	-8	0
24. Manufacturers' new orders, value, machinery and equipment industries (M)	P	1953-57	-18.5	-18.5	10.5	-29	-8
	T	1949-58	-6	-5.0	2.1	-7	-2

29 LEADING SERIES

Sensitive Employment and Unemployment Indicators

*1. Average workweek, manufacturing (M)

*2. Accession rate, manufacturing (M)

30. Nonagricultural placements,
all industries (M)

*3. Layoff rate, manufacturing (M)

4. Number of persons on temporary layoffs,
all industries (M)5. Initial claims for unemployment insurance,
state programs (M)*New Investment Commitments**6. Manufacturers' new orders, value,
durable goods industries (M)24. Manufacturers' new orders, value,
machinery and equipment industries (M)

*9. Construction contracts awarded, commercial and industrial buildings, floor space (M)	P	1920-57	-9	-10.9	10.4	-32	+2
	T	1919-58	-1.5	-1.1	2.6	-5	+3
10. New investment orders and contracts (M)	P	1953-57	-16	-16.0	10.0	-26	-6
	T	1949-58	-5	-4.0	2.2	-6	-1
11. Newly approved capital appropriations, 602 manufacturing corporations (Q)	P	1953-57	-8	-8.0	9.0	-17	+1
	T	1954-58	-2.5	-2.5	3.5	-6	+1
27. Buying policy, capital expenditures (NAPA), percentage reporting commitments six months or longer (M)	P	1957	-17 ^c				
	T	1958	+4 ^c				
*7. New private permanent nonfarm dwelling units started (M)	P	1918-57	-14	-12.4	11.2	-31	+8
	T	1919-58	-5	-4.5	2.5	-8	0
29. New private housing units authorized by local building permits (M)	P	1957	-29 ^c				
	T	1954-58	-2 ^c				

New Businesses and Business Failures

*12. Net changes in the business population, operating businesses (M)	P	1948-57	-19	-22.0	8.0	-33	-14
	T	1949-58	-3	-3.3	1.2	-5	-2
13. New business incorporations, number of (M)	P	1865-1957	-2	-4.7	9.1	-28	+15
	T	1861-1958	-6	-3.8	8.2	-18	+21
*14. Current liabilities of business failures (M)	P ^b	1882-1957	-7	-11.5	10.0	-28	+3
	T ^b	1879-1958	-7	-6.9	4.8	-13	+7
15. Number of business failures with liabilities of \$100,000 and over (M)	P ^b	1895-1957	-5	-9.6	12.0	-35	+2
	T ^b	1897-1958	-7.5	-4.9	10.9	-17	+28

Profits and Stock Prices

*16. Corporate profits after taxes (Q)	P	1923-57	-4	-6.0	6.5	-20	0
	T	1921-58	-2	-2.7	3.4	-9	+1
17. Ratio of wholesale prices of manufactured goods to wage and salary cost per unit of output (M)	P	1948-57	-21	-18.7	10.3	-30	-5
	T	1949-58	-5	-4.3	3.3	-8	0

(continued)

TABLE 1 (continued)

Series	Business Cycle Peak or Trough	Period Covered by Timing Measures ^a	Median Lead (-) or Lag (+)	Mean Lead (-) or Lag (+)	Standard Deviation of Leads and Lags (months)	Longest Lead	Longest Lag
18. Profits (before taxes) per dollar of sales, all manufacturing corporations (Q)	P T	1948-57 1949-58	-20 -5	-14.3 -5.3	8.7 2.9	-21 -9	-2 -2
*19. Index of prices of 500 common stocks, Standard and Poor's (M)	P T	1873-1957 1879-1958	-4 -5	-5.4 -6.3	5.8 7.0	-21 -21	+2 +9
<i>Inventory Investment, Buying Policy, and Sensitive Prices</i>							
*21. Change in business inventories, farm and nonfarm, after valuation adjustment (Q)	P T	1945-57 1945-58	-17.5 -5.5	-16.0 -5.2	8.5 4.9	-26 -11	-3 +1
31. Changes in book value of manufacturing and trade inventories, total (M)	P T	1945-57 1945-58	-15.5 -3	-14.8 -4.2	10.0 4.3	-28 -11	0 0
20. Changes in book value of manufacturers' inventories, purchased material (M)	P T	1953-57 1949-58	-11.5 -4	-11.5 -2.7	9.5 3.4	-21 -6	-2 +2
26. Buying policy, production materials (NAPA), percentage reporting commitments 60 days or longer (M)	P T	1957 1958	-19 ^c -2 ^c				
32. Vendor performance (Chicago PAA), percentage reporting slower deliveries (M)	P T	1948-57 1949-58	-12 -7	-11.3 -6.3	8.2 1.7	-21 -8	-1 -4
25. Change in manufacturers' unfilled orders, durable goods industries (M)	P T	1948-57 1949-58	-19 -6	-18.0 -7.0	10.2 2.9	-30 -11	-5 -4
*23. Index of industrial materials prices (M)	P T	1920-57 1919-58	-7.5 0	-9.4 -1.1	9.8 4.6	-29 -8	+3 +9

Employment and Unemployment

*41. Employees in nonagricultural establishments, number of (M)	P	1893-1957	0	-1.6	7.9	-20	+10
	T	1894-1958	0	-2.0	3.5	-10	+2
42. Total nonagricultural employment, labor force survey (M)	P	1945-57	-4	-7.8	10.3	-25	+2
	T	1945-58	-1	-1.2	1.1	-3	0
*43. Unemployment rate (M)	P ^b	1937-57	-4	-3.6	3.9	-10	+2
	T ^b	1933-58	+1.5	+2.3	2.5	0	+7
44. Unemployed, number of (M)	P ^b	1937-57	-4	-4.0	4.6	-12	+2
	T ^b	1933-58	+1.5	+3.5	4.9	0	+14
45. Average weekly insured unemployment, state programs (M)	P ^b	1948-57	-10	-10.7	7.4	-20	-2
	T ^b	1945-58	+1	+1.2	1.1	0	+3
46. Help-wanted advertising in newspapers (M)	P	1920-57	-2	-2.4	4.4	-9	+5
	T	1919-58	0	+0.2	1.0	-2	+2

Production and Demand

*47. Index of industrial production (M)	P	1893-1957	0	-1.5	6.6	-15	+10
	T	1894-1958	-1	-3.2	4.2	-12	+4
*49. Gross national product in current dollars (Q)	P	1923-57	+0.5	+0.8	1.8	-2	+3
	T	1921-58	-1	-1.0	2.7	-5	+4
*50. Gross national product in 1954 dollars (Q)	P	1948-57	0	-0.3	1.2	-2	+1
	T	1949-58	-3	-3.3	1.2	-5	-2
57. Final purchases (Q)	P	1945-57	+1	+1.7	0.9	+1	+3
	T	1945-58	-2	-0.3	3.1	-3	+4

Income, Trade, and Prices

*51. Bank debits outside New York City, 343 centers (M)	P	1882-1957	+1.5	+1.8	4.2	-7	+10
	T	1879-1958	-3	-4.0	3.6	-10	+1
*52. Personal income (M)	P	1923-57	+1	+1.4	3.9	-5	+9
	T	1921-58	-2	-2.8	3.6	-12	0
53. Labor income in mining, manufacturing, and construction (M)	P	1929-57	0	-0.3	0.9	-2	+1
	T	1933-58	0	+0.7	1.5	0	+4

(continued)

TABLE 1 (continued)

Series	Business Cycle Peak or Trough	Period Covered by Timing Measures	(months)				Longest Lead Lag
			Median Lead (-) or Lag (+)	Mean Lead (-) or Lag (+)	Standard Deviation of Leads and Lags	Lead Lag	
°54. Sales of retail stores (M)	P	1920-57	+ 2.5	+ 3.3	3.3	0	+ 9
	T	1921-58	- 0.5	- 0.7	3.2	- 7	+ 3
°55. Index of wholesale prices, all commodities other than farm products and foods (M)	P	1918-57	0	- 1.3	6.7	-15	+ 6
	T	1914-58	+ 1	+ 2.1	2.2	0	+ 7
7 LAGGING SERIES							
°61. Business expenditures on new plant and equipment, total (Q)	P	1918-57	+ 1	+ 0.8	1.9	- 3	+ 4
	T	1919-58	+ 2	+ 2.1	2.1	- 1	+ 6
°62. Wage and salary cost per unit of output, total manufacturing (M)	P	1920-57	+ 6.5	+ 7.0	1.9	+ 5	+10
	T	1919-58	+ 9	+10.7	6.5	+ 3	+24
63. Labor cost per dollar of real GNP (Q)	P	1948-57	+ 7	+ 6.7	2.9	+ 3	+10
	T	1949-58	+ 6	+ 5.7	1.2	+ 4	+ 7
°64. Manufacturers' inventories, book value (M)	P	1926-57	+ 1.5	+ 0.8	5.2	- 9.5	+ 7.5
	T	1927-58	+ 3.5	+ 3.4	5.8	- 7.5	+12.5
65. Manufacturers' inventories, finished goods, book value (M)	P	1945-57	+ 5.5	+ 4.0	4.5	- 3.5	+ 8.5
	T	1938-58	+ 9.5	+ 7.1	6.8	- 2.5	+16.5
°66. Consumer installment debt (M)	P	1929-57	+ 5.5	+ 5.2	1.9	+ 2.5	+ 7.5
	T	1933-58	+ 3.5	+ 2.8	2.7	- 1.5	+ 5.5
°67. Bank rates on short-term business loans, 19 cities (Q)	P	1920-57	+ 5	+ 2.1	9.1	-20	+13
	T	1919-58	+ 5	+ 9.7	11.1	+ 2	+39
14 OTHER U.S. SERIES WITH BUSINESS CYCLE SIGNIFICANCE							
<i>Foreign Trade</i>							
86. U.S. exports, total, excluding military aid shipments (M)	P	1869-1957	- 5	- 3.8	7.7	-18	+ 8
	T	1867-1958	+ 2	+ 2.3	5.1	- 9	+10

TABLE 1 (concluded)

Series	Business Cycle Peak or Trough	Period Covered by Timing Measures ^a	Median Lead (--) or Lag (+)	Mean Lead (--) or Lag (+)	Standard Deviation of Leads and Lags	Longest Lead	Longest Lag	
			(months)					
<i>Miscellaneous</i>								
81. Consumer price index (M)	P	1918-57	+ 4	+ 2.3	5.1	- 6	+ 9	
	T	1914-58	+10	+ 8.6	6.3	+ 1	+17	
94. Index of construction contracts, total value, Dodge (M)	P	1913-57	- 7	- 6.7	4.9	-14	+ 1	
	T	1912-58	- 3.5	- 4.7	3.7	-11	0	

INTERNATIONAL COMPARISONS OF INDUSTRIAL PRODUCTION

- 121. Organization for European Economic Cooperation countries (M)^d
- 122. United Kingdom (M)^d
- 123. Canada (M)^d
- 47. United States (M)
- 125. Germany (M)^d
- 126. France (M)^d
- 127. Italy (M)^d
- 128. Japan (M)^d

^a Years in which first and last business cycle turns occur, including related historical series.

^b Specific cycle troughs are compared with business cycle peaks and specific cycle troughs with business cycle troughs.

^c Based on a single comparison.

^d No timing comparisons have been made for the seven foreign industrial production indexes (series 121-128); measures for the three Defense Department series (90-92) have been omitted because of their brevity and the irregularity of their movements.

Table 1: Explanatory Notes

This table presents a list of the 72 principal business cycle indicators used in the monthly report. It shows the 1960 list of 26 NBER economic indicators (identified by asterisks) and 25 closely related supplementary series. These supplementary series provide data which may be more sensitive to business cycles but with a narrower scope (e.g., new orders for machinery and equipment), which are available more promptly or more frequently (the monthly price-unit labor cost index series as an estimate of the quarterly profit margin series and temporary layoffs as an estimate of the layoff rate), or which have only a short historical record (capital appropriations). Additional series represent major uncovered areas of the economy with business cycle significance (e.g., federal receipts from and payments to the public, and foreign trade) and activities which measure potential countercyclical actions (e.g., money supply and military obligations). Some of these conform fairly well to the business cycle, for example, imports. Finally, industrial production indexes for several countries which have important trade relations with the United States are included.

Fifty-one indicators are grouped according to their usual timing relations and within these groups according to type of economic activity. Twenty-nine series usually have led turns in aggregate economic activity (as measured, e.g., by gross national product, nonfarm employment, or industrial production) and therefore are designated as "leading" series, in accordance with National Bureau terminology; one group of these series pertains to activities in the labor market, another to orders and contracts, and so on. Fifteen series are either direct measures of aggregate economic activity or move roughly together with it (e.g., nonfarm wholesale prices) and hence are referred to as "roughly coincident" series. Seven series have usually lagged behind turns in aggregate economic activity and therefore are designated as "lagging" series.

Fourteen series are in the miscellaneous group "other series with business cycle significance." Industrial production indexes are shown for the O.E.E.C. countries combined and for 6 foreign countries: the United Kingdom, Canada, Germany, France, Italy, and Japan. For convenience, the U.S. index of industrial production is again shown with these series.

All series are seasonally adjusted except those which do not seem to experience seasonal variations, namely, index of stock prices (19), index of industrial materials prices (23), buying policy, production materials (26), buying policy, capital expenditures (27), vendor performance (32), bank rates on short-term loans (67), and free reserves (93). Moving averages are fitted to some of the more irregular series, such as federal receipts from and payments to the public, to bring out the underlying trends more clearly.

Table 1: Explanatory Notes (concluded)

Sixty-one series are monthly (M) and 11 are quarterly (Q). Some of the monthly series are available more frequently. Thus, the stock price and industrial materials price series are available daily. Initial claims for insured unemployment and insured unemployed are available weekly, and have been seasonally adjusted for these more frequent time periods. In these cases, data for the most recent day or week are included in the tables and charts of the monthly series.

The leading series have been assigned the block of numbers 1-39; the coincident series, 40-59; the lagging series, 60-79; the other series with business cycle significance, 80-119; and foreign series 120-149. These numbers are for identification purposes only and do not necessarily reflect series relationships or order within these major groupings.

For an explanation of the criteria used in selecting and classifying indicators, see "Statistical Indicators of Revivals and Recessions" by Geoffrey H. Moore, Business Cycle Indicators, Volume I, Chapter 7.

CHART 2

Business Cycle Indicators, 1948-61

Part A: Leading Series

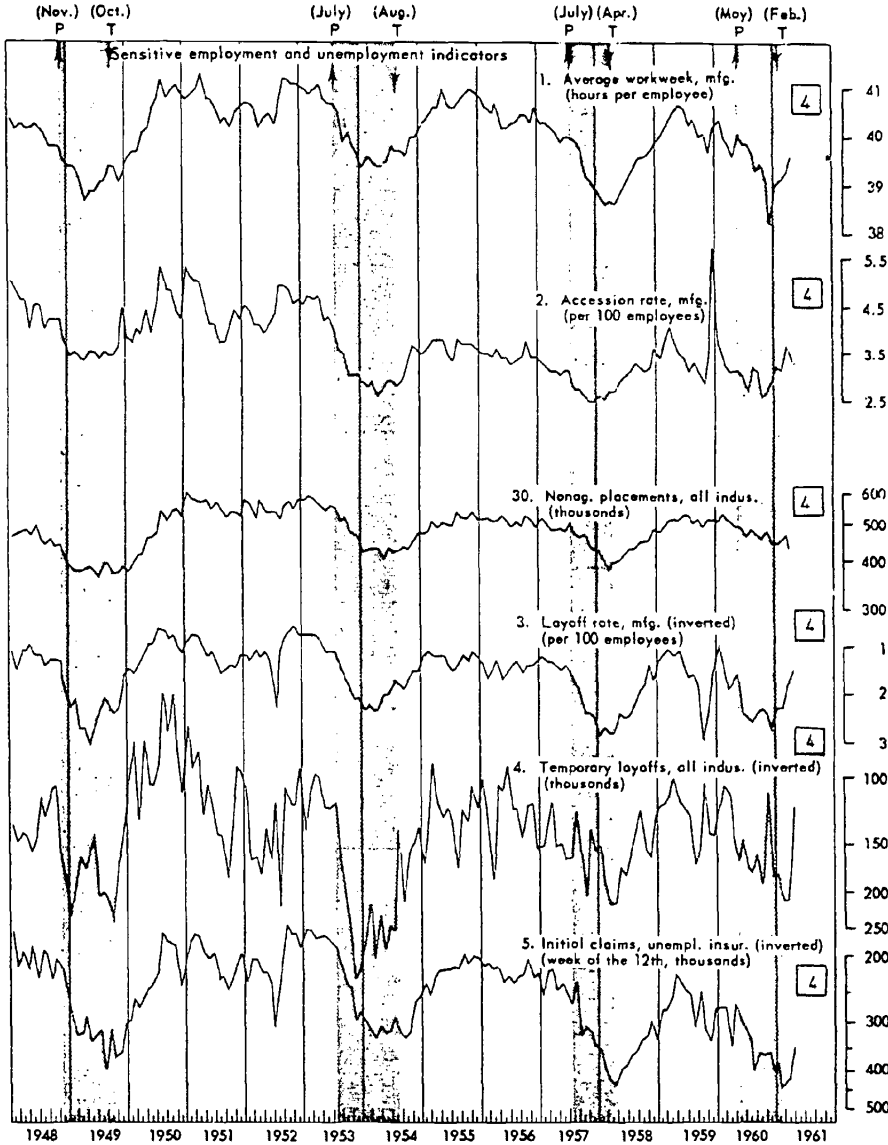


CHART 2 (continued)

Part A: Leading Series (continued)

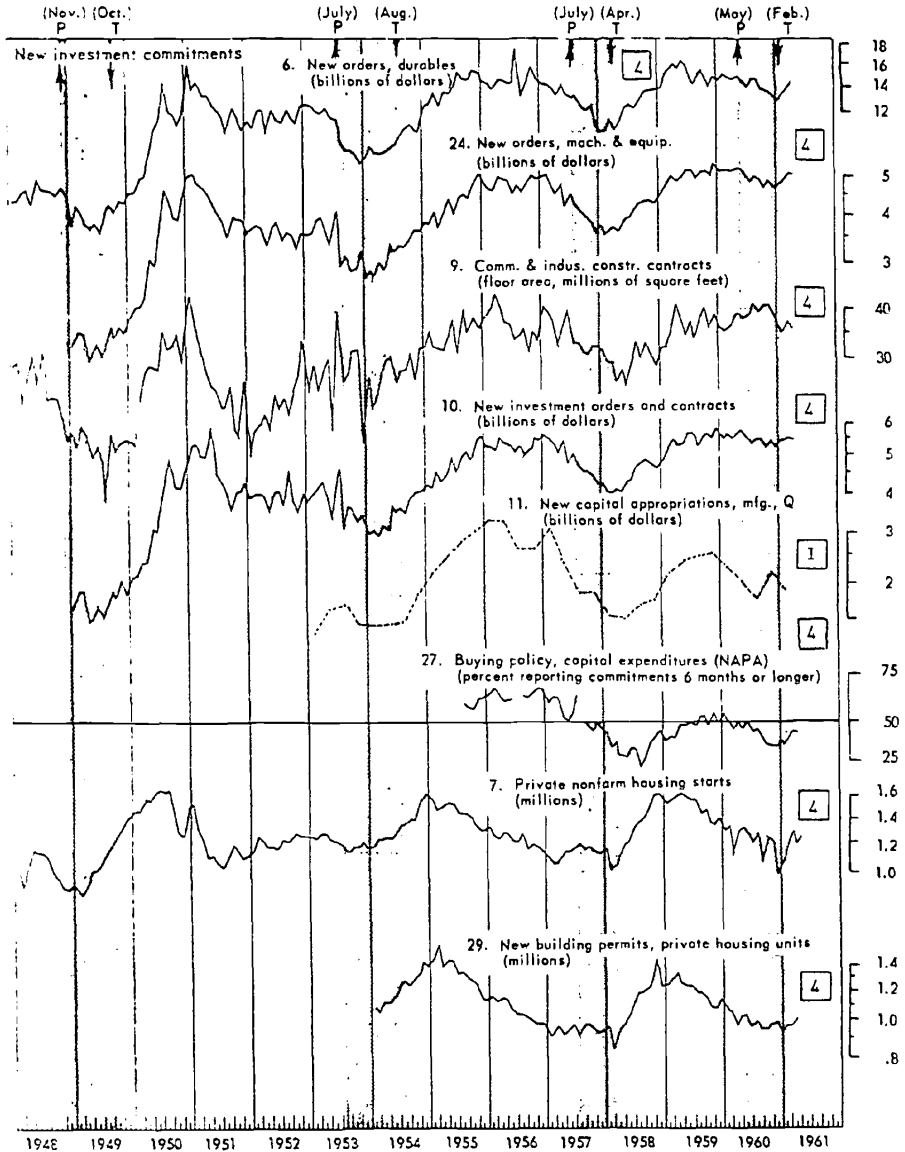


CHART 2 (continued)
Part A: Leading Series (continued)

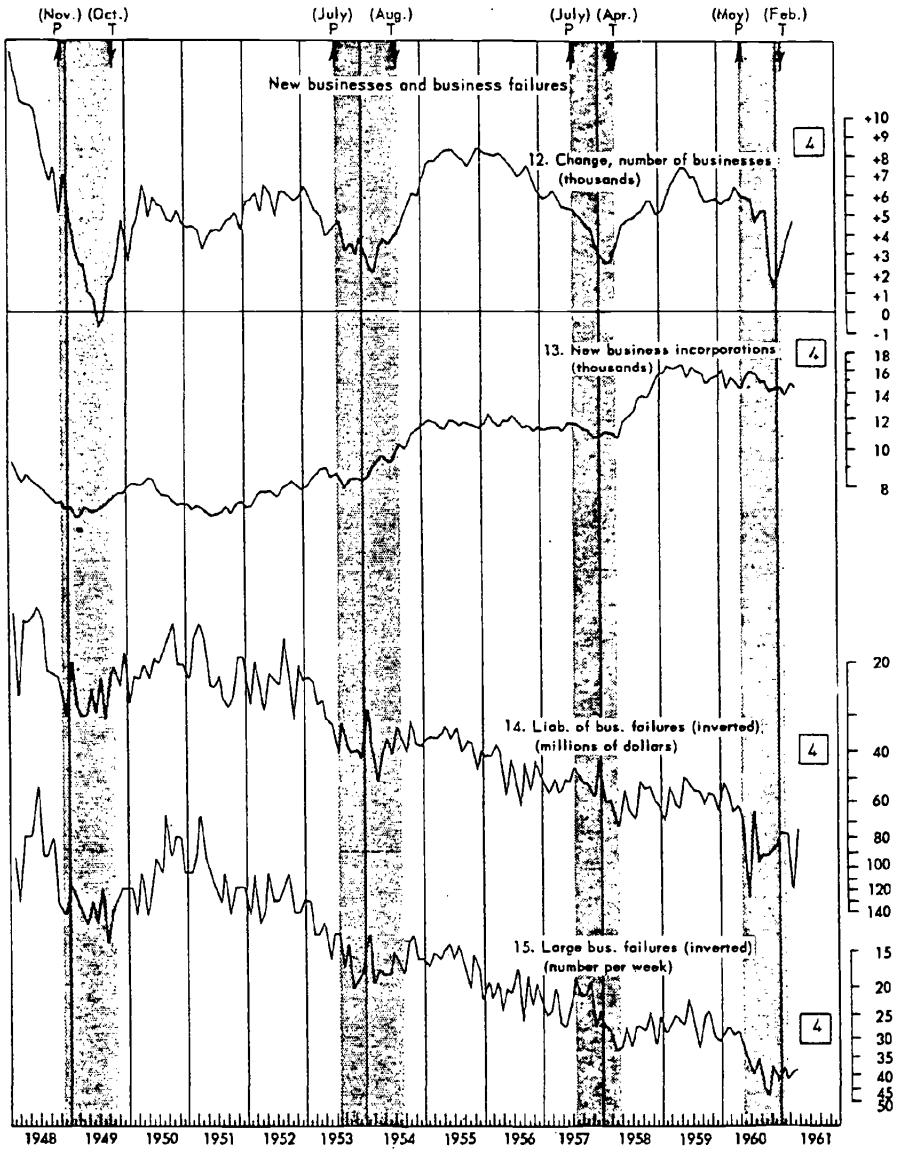


CHART 2 (continued)
Part A: Leading Series (continued)

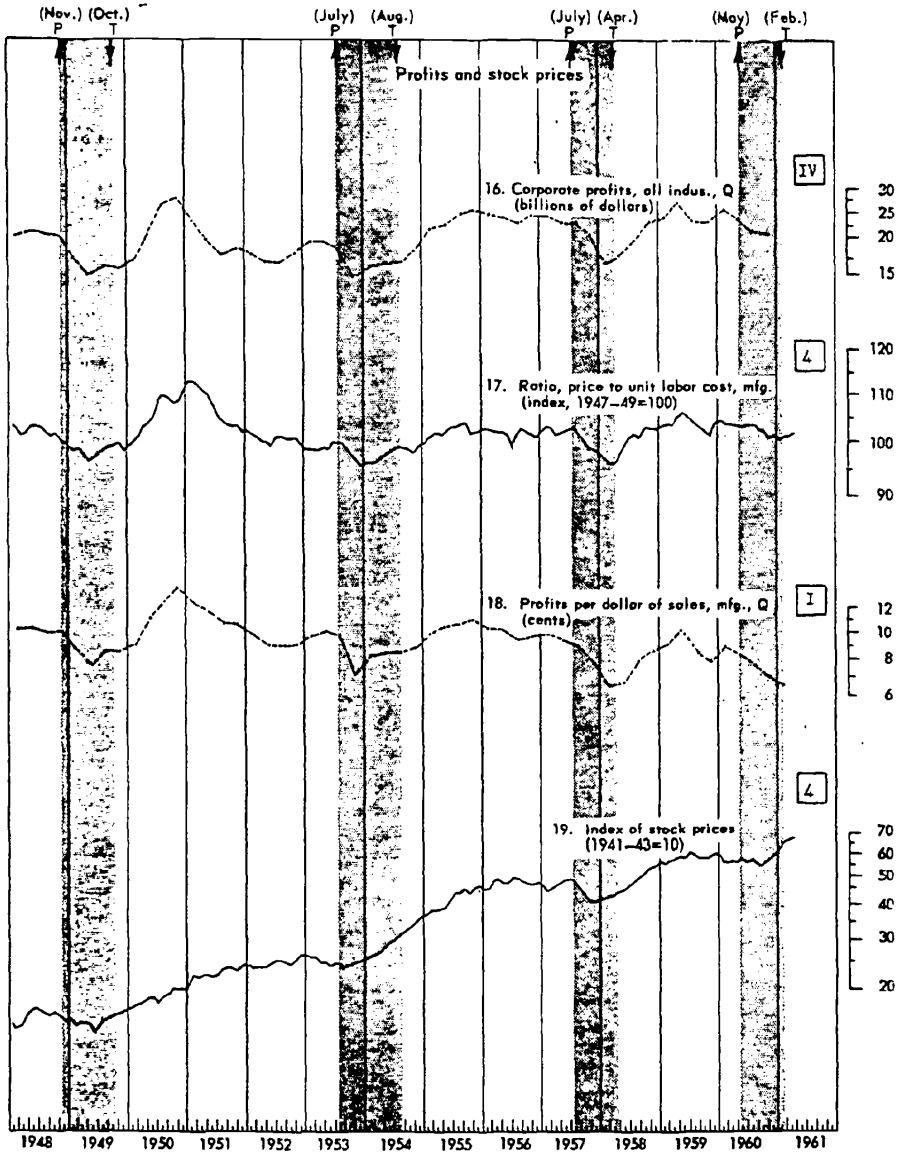


CHART 2 (continued)

Part A: Leading Series (concluded)

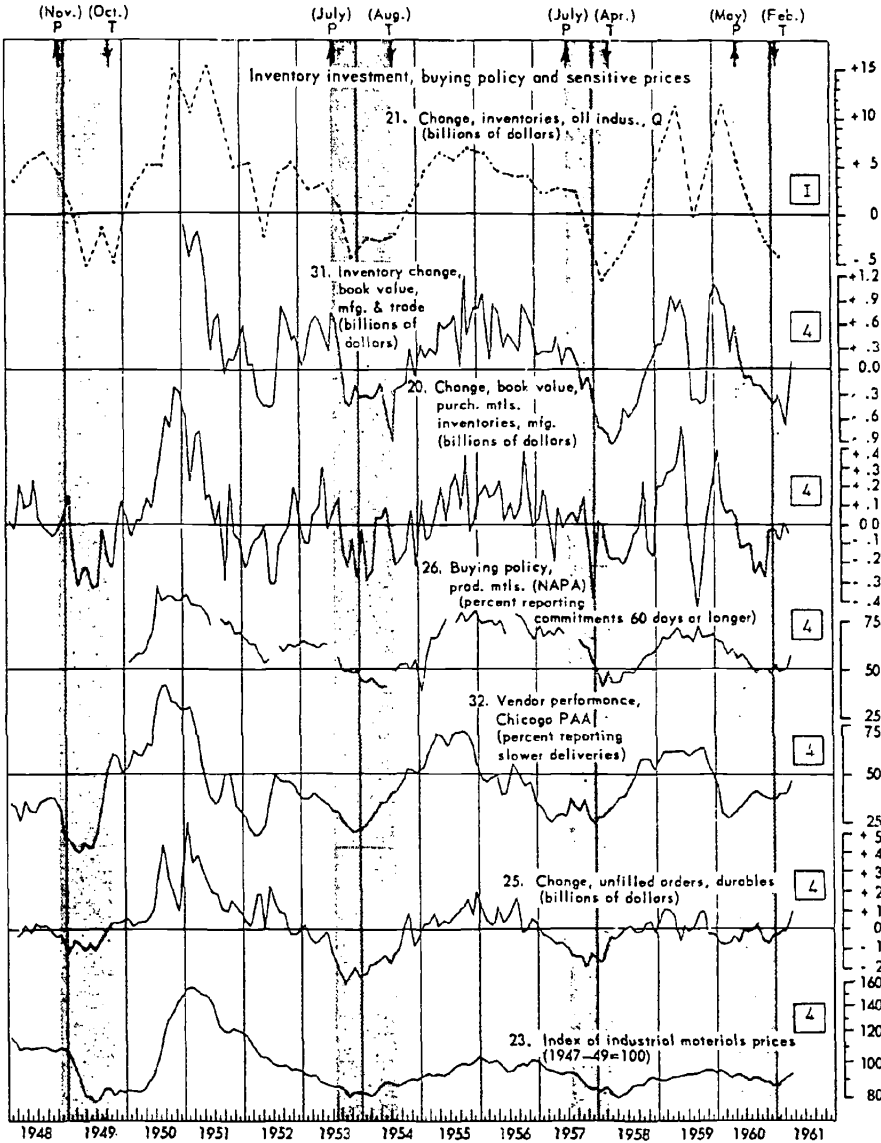


CHART 2 (continued)
 Part B: Roughly Coincident Series

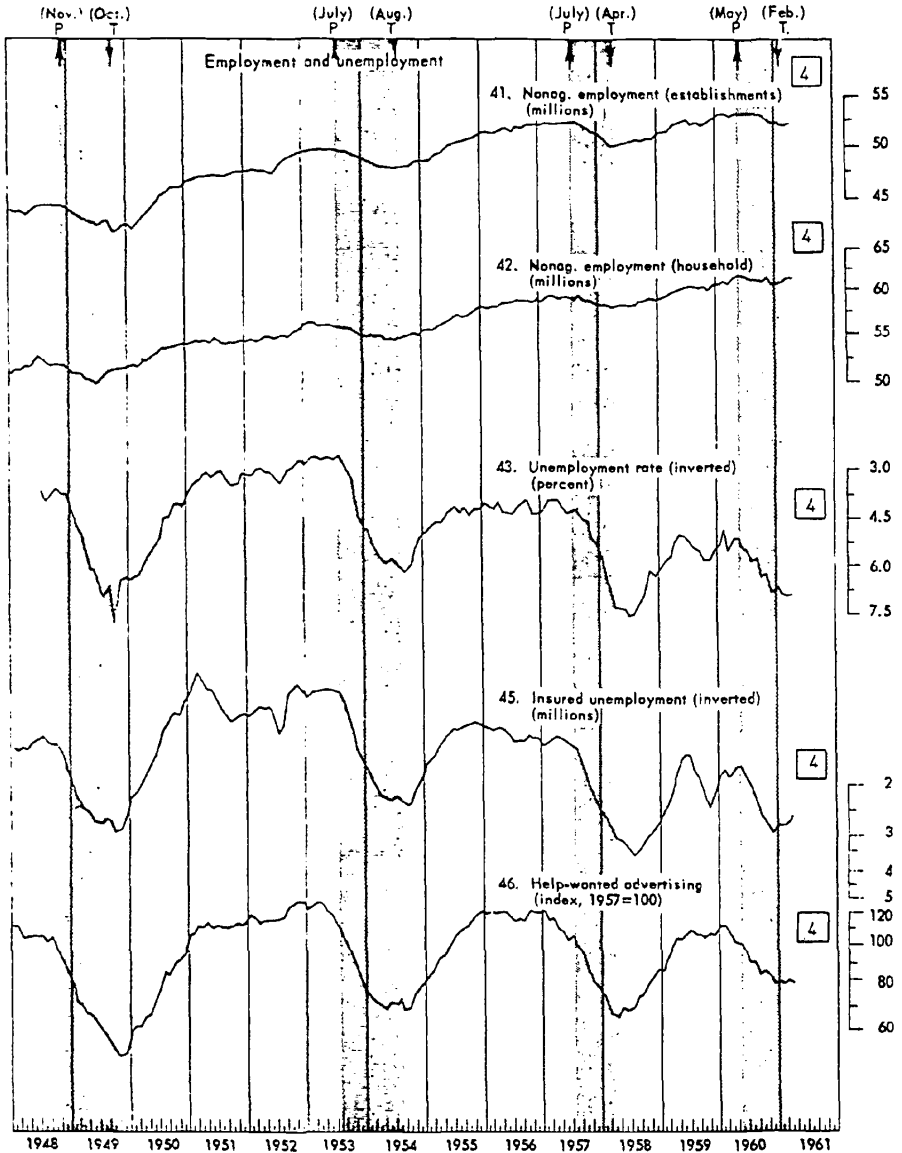


CHART 2 (continued)

Part B: Roughly Coincident Series (continued)

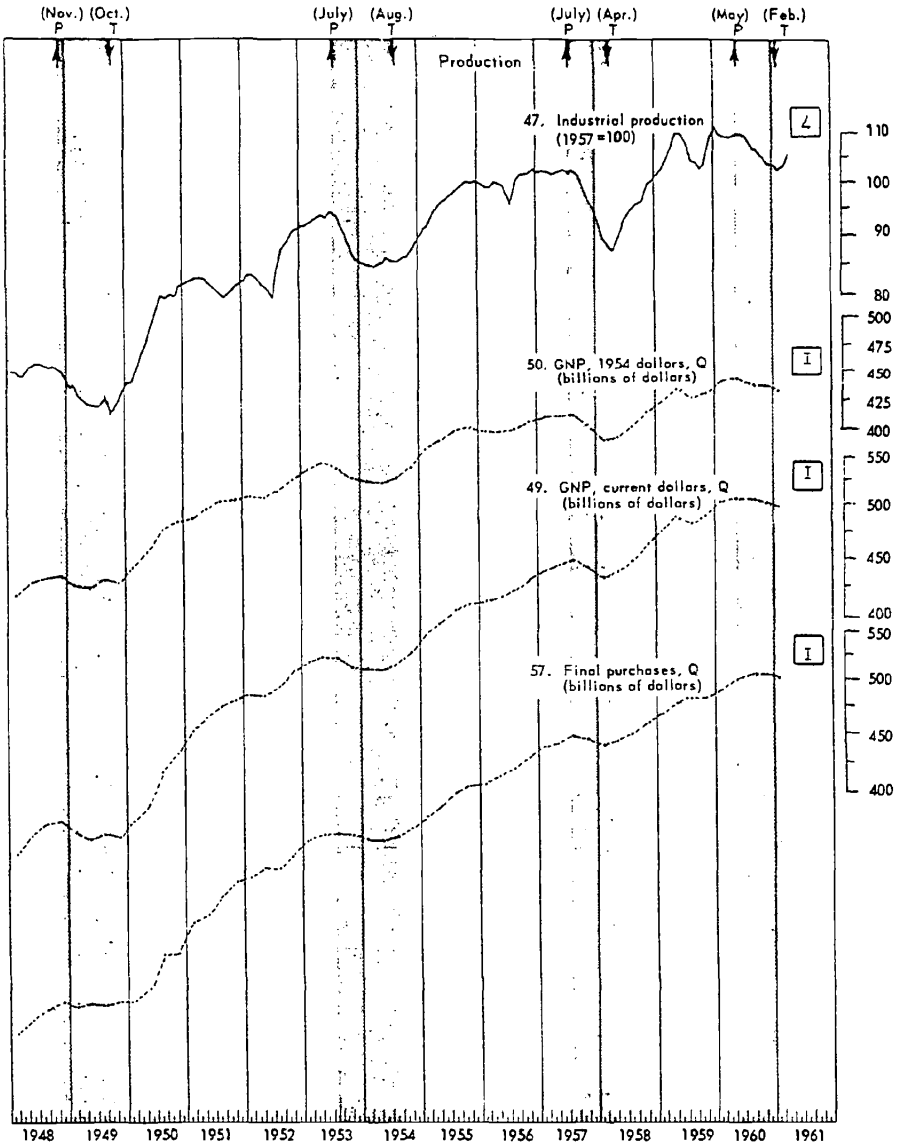


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Part B: Roughly Coincident Series (concluded)

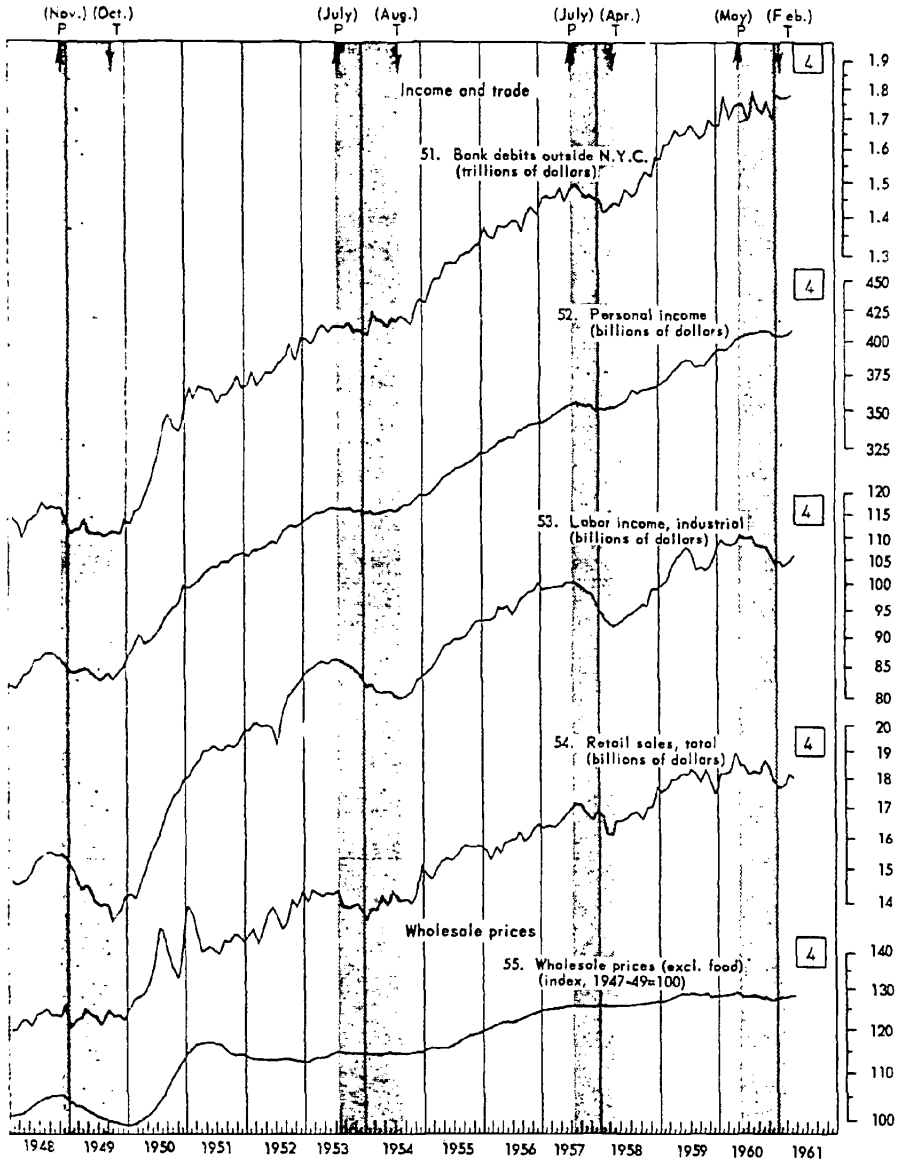


CHART 2 (continued)

Part C: Lagging Series

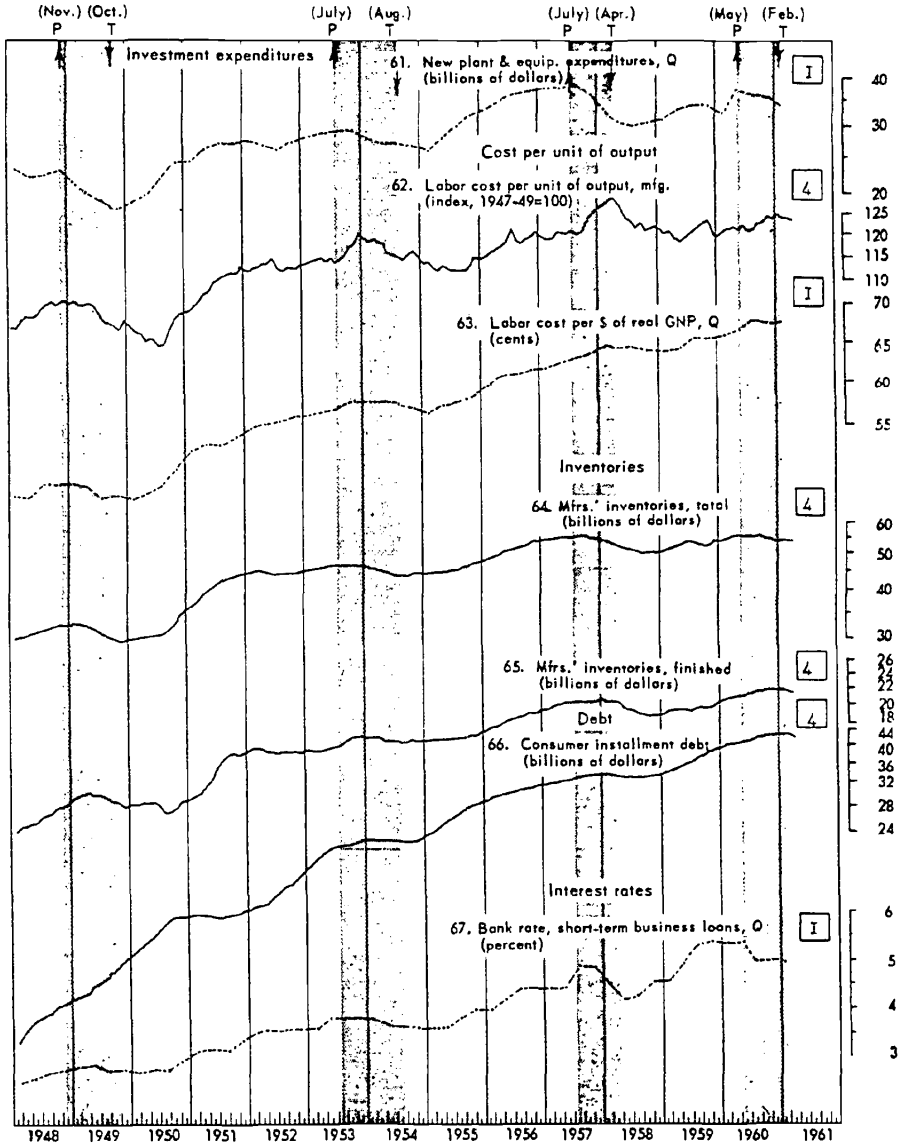


CHART 2 (continued)

Part D: Other Series with Business Cycle Significance

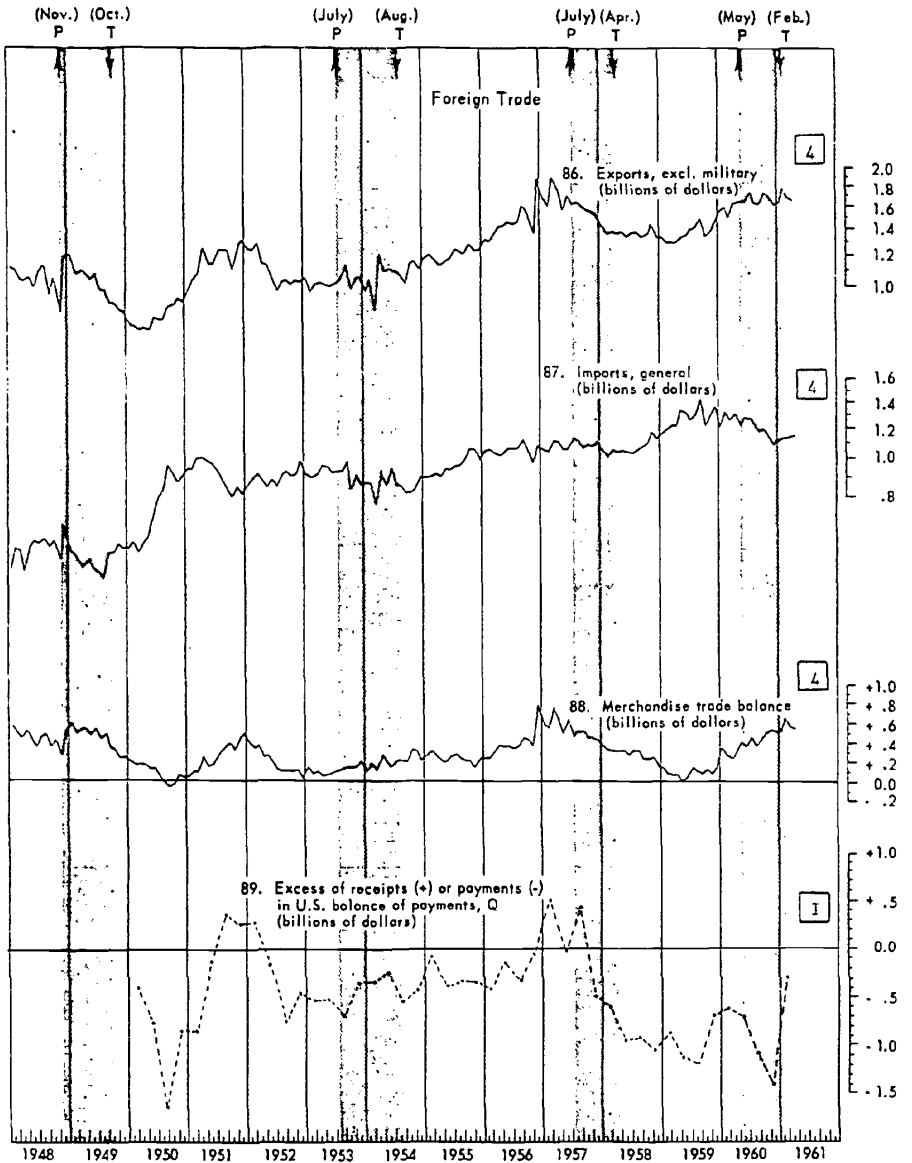
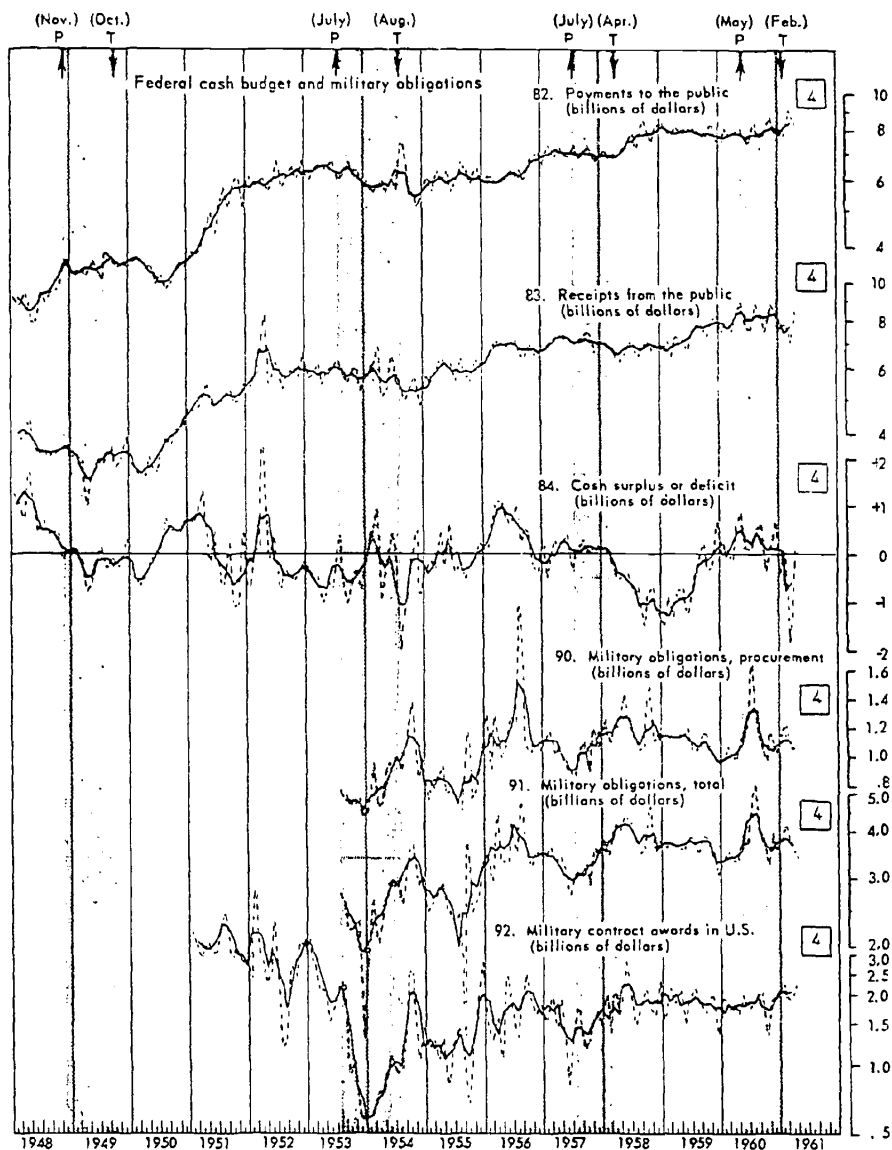


CHART 2 (continued)

Part D: Other Series with Business Cycle Significance (continued)



Heavy lines indicate 3-month moving average; latest data for 3-month moving average plotted one month behind seasonally adjusted data.

CHART 2 (continued)

Part D: Other Series with Business Cycle Significance (concluded)

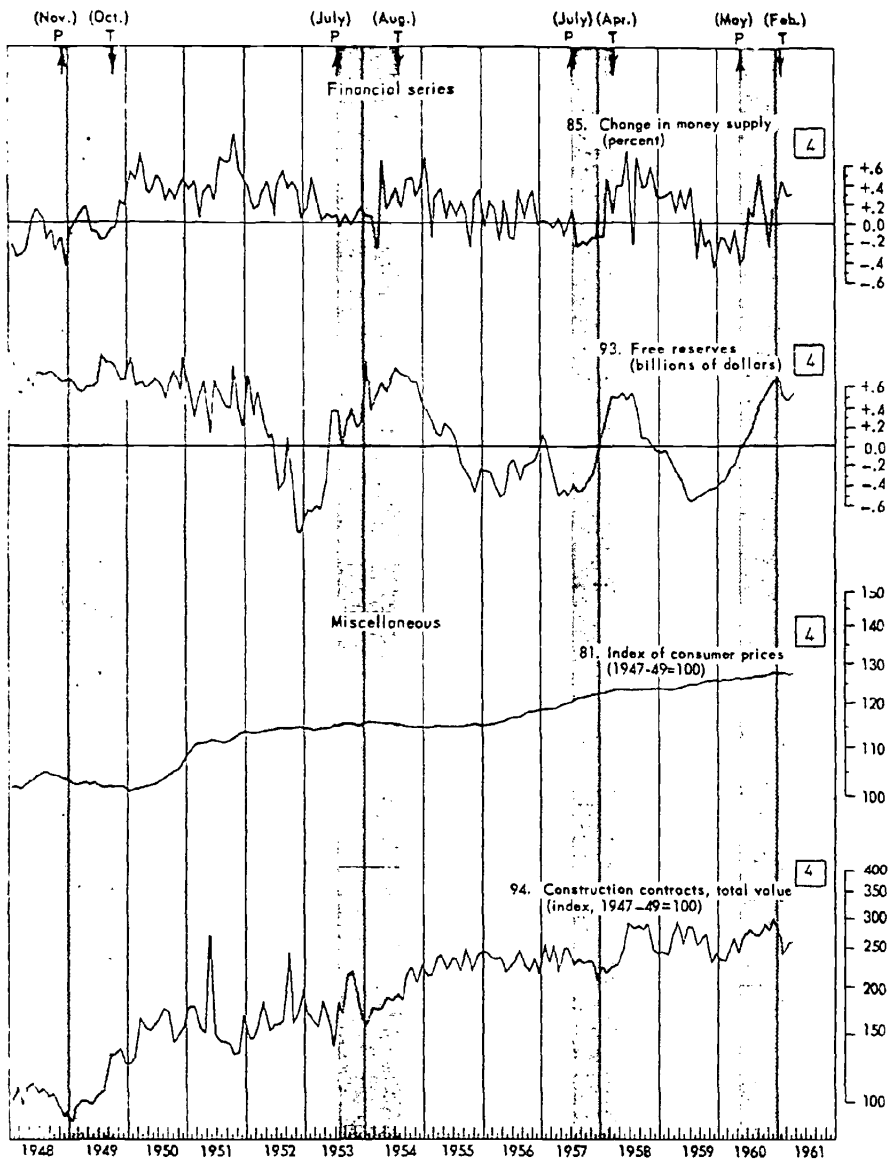


CHART 2 (continued)

Part E: Industrial Production Indexes of Selected Countries

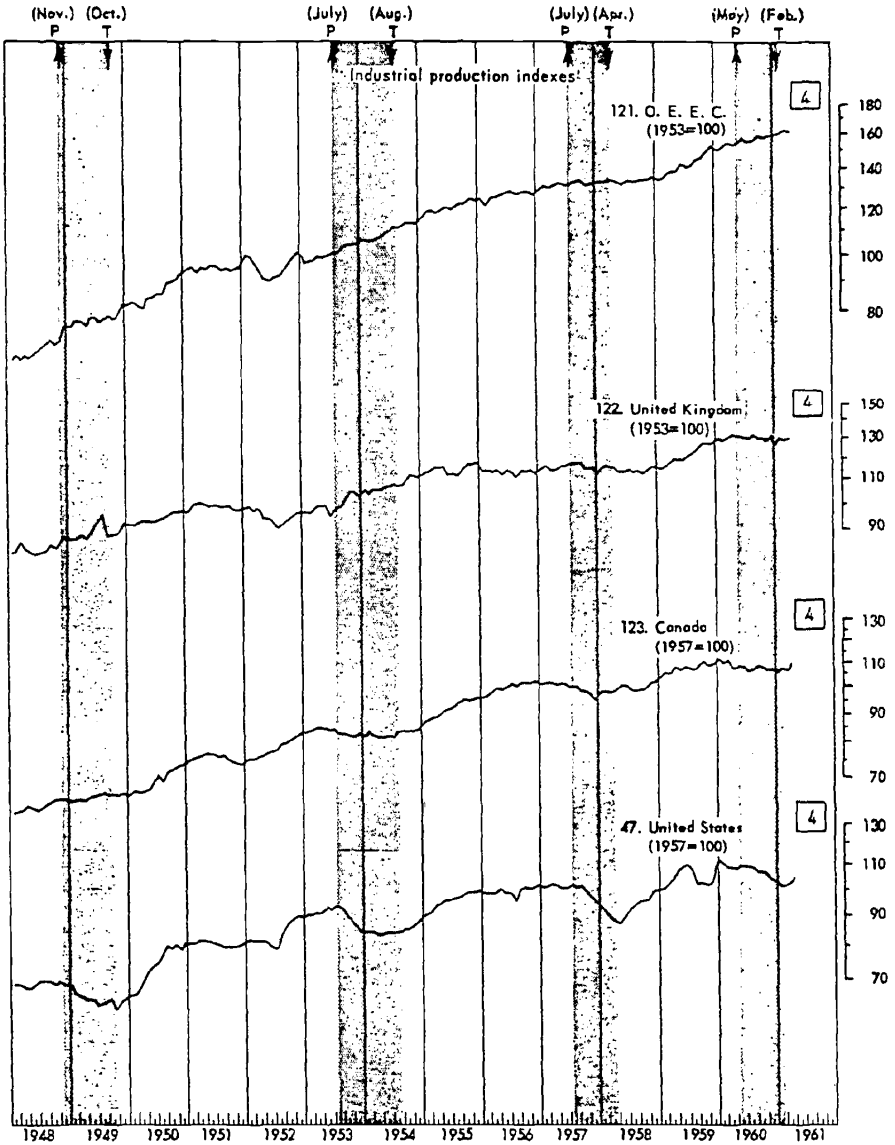
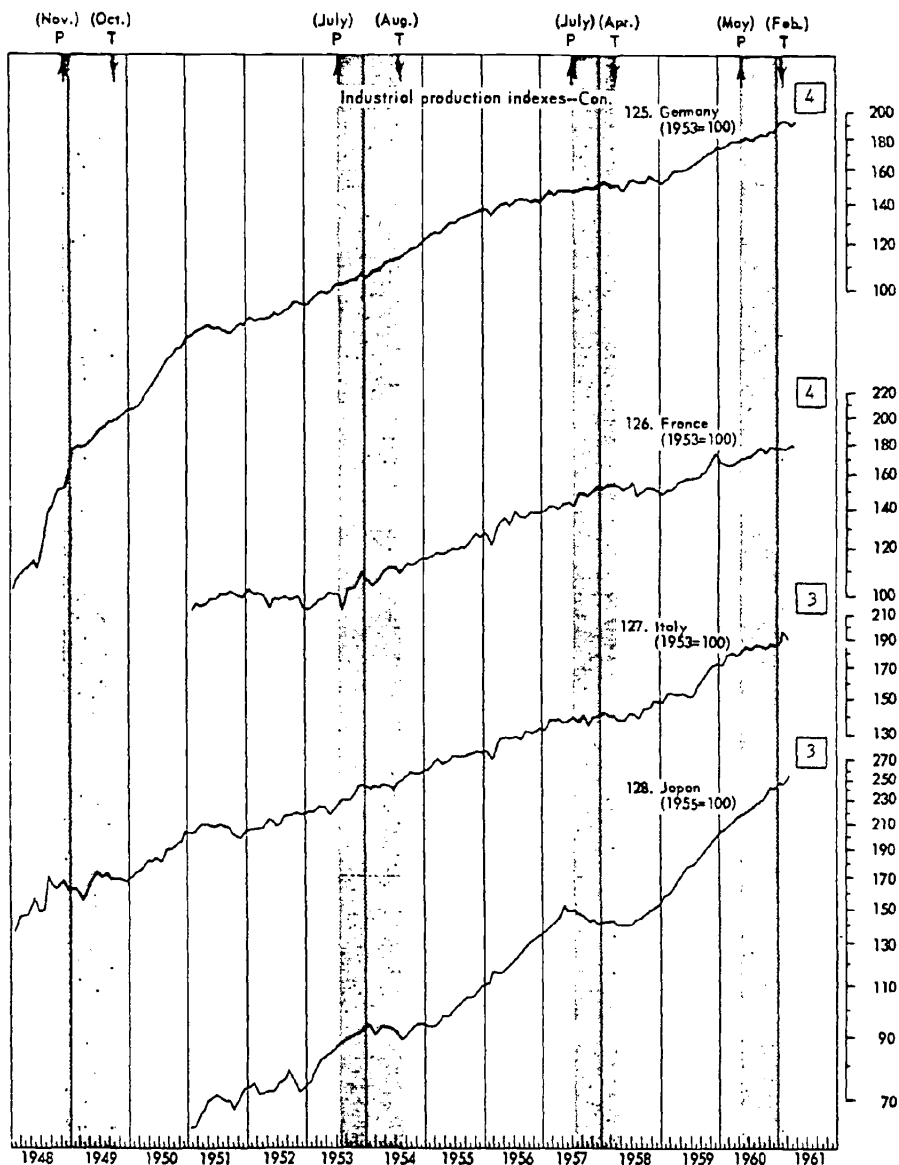


CHART 2 (concluded)

Part E: Industrial Production Indexes of Selected Countries (concluded)



Figures enclosed in rectangular boxes indicate the latest data plotted. Arabic numerals indicate months; Roman numerals, quarters.

Various ratio and arithmetic scales are used in order to highlight the cyclical timing and pattern for each series. Since different scales are used, the rates of change are not comparable from series to series.

Shaded areas represent NBER recession periods (P=peak, T=trough).

See Appendix C for complete titles of series, sources, and recent data.

TABLE 2
RECENT SEASONALLY ADJUSTED DATA FOR SELECTED INDICATORS WITH HIGH AND LOW VALUES IDENTIFIED

	Leading Series				Roughly Coincident Series				Lagging Series		
	1.	6.	7.	19.	41.	47.	51.	52.	54.	65.	66.
	Average Workweek, Mfg.	Mfrs.' New Orders, Durable	New Nonfarm Dwelling Units Started (thousands, annual rate)	Index of Stock Prices (1941-1943 = 10)	Employees in Nonagric. Establish.	Index of Industrial Production (1957=100)	Bank Debts Outside NYC	Personal Income	Sales of Retail Stores	Mfrs.' Inventories, Finished Goods	Consumer Inflation Debt
	(avg. hours per week)	(\$ bill.)	(annual rate)	(1941-1943 = 10)	(millions)	(1957=100)	(\$ bill., annual rate)	(\$ bill., annual rate)	(\$ bill.)	(\$ bill.)	(\$ bill.)
Jan. 1959	40.0	13.9	1,517	55.62	51.3	100.3	1,574	371.9	17.5	18.8	34.0
Feb.	40.2	14.9	1,529	54.77	51.4	101.9	1,622	374.0	17.6	19.1	34.4
Mar.	40.4	15.3	1,580	58.15	51.7	103.6	1,624	378.2	17.9	19.2	34.7
Apr.	40.6	15.8	1,599	57.10	52.1	106.6	1,671	382.0	18.0	19.3	35.2
May	40.7	15.2	1,580	57.96	52.4	109.2	1,648	384.8	18.2	19.4	35.7
June	40.6	16.1	1,563	57.46	52.6	109.6	1,653	386.8	18.2	19.3	36.2
July	40.3	15.5	1,546	59.74	52.8	107.6	1,682	386.9	18.3	19.3	36.7
Aug.	40.4	14.0	1,446	59.40	52.3	103.2	1,668	383.3	18.1	19.4	37.3
Sept.	40.0	14.7	1,468	57.05	52.4	102.0	1,635	384.3	17.8	19.6	37.9
Oct.	40.1	15.1	1,354	57.00	52.2	102.0	1,652	384.3	18.3	19.6	38.5
Nov.	39.7	13.7	1,328	57.23	52.5	102.6	1,696	388.7	17.8	19.7	38.9
Dec.	40.2	14.8	1,401	59.06	52.9	108.8	1,680	393.9	17.5	20.1	39.3
Jan. 1960	40.4	14.2	1,291	58.03	53.1	111.0	1,687	395.7	18.1	20.4	39.7
Feb.	40.0	14.8	1,347	55.78	53.2	109.6	1,784	395.7	18.2	20.6	40.2
Mar.	39.9	14.6	1,098	55.02	53.1	109.1	1,708	397.0	18.2	20.8	40.5
Apr.	39.6	14.5	1,307	55.73	53.4	108.8	1,742	401.9	18.9	21.0	41.1
May	40.1	14.7	1,315	55.22	53.3	109.8	1,758	404.7	18.4	21.2	41.4
June	39.9	14.3	1,285	57.26	53.4	109.4	1,758	406.1	18.5	21.3	41.7
July	39.9	13.8	1,164	55.84	53.4	109.5	1,699	407.3	18.1	21.4	41.8
Aug.	39.7	14.4	1,273	56.51	53.4	108.4	1,790	408.2	18.2	21.6	42.0
Sept.	39.3	14.6	1,040	54.81	53.2	106.8	1,742	408.8	18.1	21.9	42.2
Oct.	39.5	13.7	1,200	53.73	53.0	106.3	1,722	409.7	18.5	21.9	42.4
Nov.	39.1	13.6	1,203	55.47	52.8	104.6	1,768	409.0	18.4	21.9	42.6
Dec.	38.3	13.2	970	58.80	52.5	103.0	1,711	406.9	17.9	21.8	42.6
Jan. 1961	39.0	12.9	1,078	50.72	52.5	102.3	1,782	406.6	17.8	21.8	42.7
Feb.	39.1	13.4	1,133	62.17	52.2	102.0	1,774	406.2	17.8	21.8	42.7
Mar.	39.3	13.9	1,285	64.12	52.2	102.4	1,775	408.0	18.2	21.7	42.6
Apr.	39.5	14.5	1,293	65.83	52.4	105.0	1,783	410.3	18.0	21.7	42.5

Table 2: Explanatory Notes

This table giving recent data for 11 selected indicators illustrates the kinds of data provided each month for all 72 indicators. The actual figures are helpful in interpreting minor movements in the charts and providing revised statistics. Data for all indicators are given in Appendix C for the period January 1958-June 1961. Historical data for most of these series are given in Business Cycle Indicators, Volume II.

This table also illustrates the method used to identify the most recent high and low values. The high values for the 1958-60 expansion are in bold face; in most cases these can now be designated specific cycle peaks, but in some the ensuing declines have not been sufficiently large or protracted to warrant this designation. The subsequent low values are in italics. Isolated erratic high or low values are ignored where they can be clearly identified as such. Where there are ties, the identification of highs and lows is sometimes based on data carried to additional digits. If the values are still tied, the most recent value is designated as the high or low. This identification of the high and low values facilitates an economic interpretation of the summary measures, especially the timing distributions (Tables 5 and 6), since it shows which economic activities reached their most recent highs and lows as of the report date. It also provides a graphic view of the distribution of values around recent turning points.

perhaps not adequately, handled: each series used has been given equal weight. A crude weighting scheme is, however, implicit in our methods, since an attempt is made to keep the number of series representing different activities roughly balanced rather than to allow any single type of activity to dominate. Moreover, because of our selection process, relatively heavy weight is given to those processes that conform regularly to business cycles.

Amplitude-adjusted general indexes and comprehensive diffusion indexes, which cover varieties of economic activities, provide convenient summary measures of the timing, pattern, and scope of cyclical movements in the economy as a whole, and reference frames for judging and interpreting cyclical changes in the individual indicators.

AMPLITUDE-ADJUSTED GENERAL INDEXES AND ADJUSTED RATES OF CHANGE

The first summary measures are amplitude-adjusted general indexes for leading, coincident, and lagging indicators. These are especially difficult to compile, conceptually, because there are differences among the series not only in the economic processes covered (e.g., hours worked, new orders, and prices), but also in the amplitudes of their fluctuations.

Some economic time series typically have greater period-to-period percentage changes than others. Averages of conventional percentage changes for series with varying amplitudes would be dominated by the more volatile series; for instance, liabilities of business failures typically has month-to-month percentage changes which are very large relative to those found in the stock prices and industrial materials prices. If percentage change series based on these three economic indicators were averaged together, the month-to-month movements in the resulting series would be dominated by the movements in the failures series.

To reduce the differences in the amplitudes of various series, the month-to-month percentage changes are modified by the use of a formula which makes the range of positive and negative values symmetrical. These modified percentage changes for each series are then standardized by dividing them by their average (without regard to sign). The resulting series are, henceforth, referred to as adjusted rate of change series. The average month-to-month change (without regard to sign) of such a standardized series will be one. Adjusted rate of change series have several important advantages over conventional rate of change series. First, it is possible to see at a glance whether the current month's change in any series is above or below average—if it is less than one, it is below average; if it is greater than one, it is above average.

Second, it is possible to tell readily, from a comparison of the adjusted rates of change for different series, which series in a group performed relatively well and which relatively poorly, over any given period of time. The series that had the largest rises performed best; those with the smallest rises worst. Such judgments from similar comparisons of conventional rates of change are not necessarily correct because they do not take into account the past typical performance of the data.

Both conventional and adjusted month-to-month rates of change for some of the monthly economic indicators are shown in Table 3 for the period from November 1960 to March 1961. An inspection of corresponding columns in conventional and adjusted rates of change will show how different the interpretations may be. Thus in column 3, the rises between January and February in commercial and industrial construction contracts and stock prices are almost equal; in column 7, the rise in stock prices is substantially greater than in contracts, because the increase in stock prices was large in comparison with their past average rate of change whereas the increase in contracts was relatively small. Again in column 3, the decline between January and February in non-agricultural employment reported in the establishment survey appears mild; in column 7, it appears pronounced.

This standardizing operation affects the month-to-month amplitudes but not the pattern of fluctuation. The total cyclical rise and fall of the different standardized series will not necessarily be the same; no attempt has been made to standardize them. They are, however, likely to be more nearly equal than in the original series.

The adjusted rate of change series are cumulated into "amplitude-adjusted general indexes." In each case the first value of the series is set equal to 100.

There is also, of course, the problem of selecting the series to be included in each of the indexes. The following criteria were used in preparing the general indexes in the report. First, currency was given a great deal of weight, because the index for the current month is always compared with historical data. It is desirable in making such comparisons to have comparable series coverage. For this reason, some of the most important indicators were omitted from the indexes — e.g., quarterly series, such as gross national product and the bank rate on short-term business loans, and the monthly series on the accession rate and the layoff rate, which are not available as promptly as most of the series in the report. Second, the smoothness of a series was an important consideration because large irregularities relative to the cyclical fluctuations even in a small number of series could obscure the underlying trend of the index. For this reason the

TABLE 3

RECENT MONTH-TO-MONTH PERCENTAGE CHANGES FOR PRINCIPAL MONTHLY INDICATORS

	Conventional Rates of Change						Adjusted Rates of Change														
	Nov. 1960		Dec. 1960		Jan. 1961		Feb. 1961		Mar. 1961		Nov. 1960		Dec. 1960		Jan. 1961		Feb. 1961		Mar. 1961		
	to	to	to	to	to	to	to	to	to	to	to	to	to	to	to	to	to	to	to	to	
<i>Leading Series</i>																					
1. Average workweek, mfg.	-2.05	+1.83	+0.26	+0.51	-5.15	+4.55	+0.65	+1.30													
2. Accession rate, mfg.	+7.41	+10.34	-3.12	0.00	+1.19	+1.64	-0.53	0.00													
3. Layoff rate, mfg. (inv.)	-16.67	+17.86	0.00	+26.09	-1.17	+1.50	0.00	+2.29													
6. Mfrs.' new orders, durables	-2.80	+2.62	+3.74	+3.95	-0.51	-0.48	+0.65	+0.69													
24. Mfrs.' new orders, mach. and equip.	-3.10	+2.79	+0.33	+5.62	-0.54	+0.48	+0.06	+0.94													
7. New nonfarm dwelling units started	-18.95	+10.56	+5.38	+13.12	-5.24	+2.51	+1.31	+3.08													
29. New housing units, permits	-9.17	+0.63	-1.67	+11.05	-1.85	+0.12	-0.32	+2.02													
9. Construc. contracts, commec. and inclus.	-4.05	-13.96	+4.13	+7.90	-0.33	-1.21	+0.33	+0.61													
13. New business incorporations	+1.33	+1.17	-3.49	+4.39	+0.44	+0.39	-1.18	+1.43													
14. Liabilities of business failures (inv.)	+4.50	+10.27	-5.09	-46.42	+0.29	+0.68	-0.31	-2.38													
17. Price-labor cost index	+0.59	-1.08	+0.60	0.00	+0.75	-1.35	+0.75	0.00													
19. Index of stock prices	+2.40	+5.14	+4.10	+3.14	+0.91	+1.93	+1.55	+1.18													
23. Inclus. materials prices	-1.70	+0.46	+2.19	+3.72	-0.78	+0.21	+0.98	+1.65													
<i>Roughly Coincident Series</i>																					
41. Employ. in nonagric. establish.	-0.70	+0.01	-0.47	-0.09	-1.75	+0.03	-1.20	-0.20													
42. Nonagric. employment (households)	-1.24	+0.35	+0.32	+0.58	-3.10	+0.90	+0.80	+1.45													
43. Unemployment rate (inv.)	-10.24	+2.21	-2.56	-1.18	-2.03	+0.47	-0.53	-0.24													
47. Industrial production index	-1.53	-0.68	-0.29	+0.39	-1.18	-0.52	-0.23	+0.31													
51. Bank debits outside NYC	-3.24	+4.17	-0.43	+0.02	-2.19	+2.72	-0.28	+0.01													
52. Personal income	-0.51	-0.07	-0.10	+0.44	-0.74	-0.11	-0.14	+0.63													
54. Sales of retail stores	-2.78	-0.64	+0.12	+2.47	-1.76	-0.40	+0.08	+1.52													
55. Whole price index (excl. farm and foods)	-0.08	+0.08	+0.08	+0.23	-0.27	+0.27	+0.27	+0.80													
<i>Lagging Series</i>																					
62. Labor cost/unit of output	-0.56	+1.05	-0.48	-0.16	-0.70	+1.30	-0.60	-0.20													
64. Mfrs.' inventories, total	-0.49	-0.13	-0.13	-0.49	-0.53	-0.15	-0.15	-0.53													
66. Consumer installment debt	+0.05	+0.23	-0.01	-0.29	+0.04	+0.17	-0.01	-0.22													

Table 3: Explanatory Notes

The adjusted percentage changes for each series are derived by dividing the successive monthly modified percentage changes by their average (without regard to sign) for 1948-60. The resulting series is in units of the average modified percentage change and has an average (without regard to sign) of one. Each series can then be compared with others and also with its own average monthly performance. The conventional percentage changes are computed in the usual way; see Appendix A.

Series which usually fall when general business rises and rise when business falls are inverted, so that rises are shown as declines and vice versa. Inverted series, identified by "(inv.)," include the layoff rate, liabilities of business failures, and the unemployment rate. The month-to-month percentage changes above for these series are calculated in the usual way, but the signs are reversed to facilitate interpretation of the cyclical movements; for example, the unemployment rate rose 1.18 per cent between February and March; the sign of this rise is reversed and the figure is shown as -1.18 above.

liabilities of business failures was excluded. Third, as far as possible duplication was avoided. While this proved the most difficult criterion to follow in practice, it nevertheless led to the exclusion of several series: for example, total construction contracts and nonagricultural employment reported in the household survey. Finally, series expressed in positive and negative values, such as changes in inventories and in unfilled orders, had to be omitted for technical reasons.

The application of the criteria to the principal indicators yielded general indexes based on a total of only seventeen series for the period since World War II (eight leading, six coincident, and three lagging) and fifteen for the earlier period. As can be seen in Table 4 and Chart 3, these indexes are all relatively smooth—indeed the reduction in irregularity in the indexes compared with the component series is impressive, particularly in the case of the leaders. Furthermore, the indexes trace out the business cycle clearly, with notable differences in the timing of their movements.

TIMING DISTRIBUTIONS

Timing distributions of current highs and lows appear to be helpful in identifying business cycle turning points. Distribution of highs are started after an expansion has been under way for a few months, and distributions of lows are begun when a contraction has proceeded for several months. The highs are helpful in appraising the evidence for a prospective business cycle downturn and dating it promptly after it occurs, while the lows fill a similar role for an upturn.

To prepare timing distributions, the data for each of the principal indicators over the period of the current cyclical phase are scanned each month. During a business cycle contraction the low value for each series is identified (see Table 2). For inverted series, that is, series that conform inversely to general business, high values are identified during contractions. The opposite procedure is followed during business cycle expansions. If the values for two or more months are equally low (or equally high), the latest of these is taken as the low (or high) month. In selecting the low or high values, extremely erratic values are disregarded. It is, of course, difficult to be sure a value is erratic, particularly in the current month; sometimes this operation is simplified because the circumstances causing the extreme value, such as a strike or its termination, a large government contract, or a storm, are known.

Each month the selected values are cast into a timing distribution, which shows the number of series reaching low values during each of the preceding contraction months, or highs during each of the preceding expansion months. Separate distributions are prepared for the leading,

TABLE 4

MONTHLY AMPLITUDES AND RELATED MEASURES OF GENERAL INDEXES

<i>General Indexes</i>	\bar{C}_I	\bar{I}	\bar{C}	\bar{I}/\bar{C}	MCD	\bar{I}/\bar{C} for MCD Curve	<i>Average Duration of Run</i>		
							CI	I	C
Eight leading series, 1948-60	.55	.37	.38	.97	1	.97	3.38	1.97	13.82
Six leading series, 1919-40	1.30	.94	.79	1.19	2	.73	2.37	1.72	9.74
Six coincident series, 1948-60	.71	.46	.55	.84	1	.84	3.31	1.84	16.56
Six coincident series, 1919-40	1.46	.76	1.18	.64	1	.64	3.87	1.99	13.15
Three lagging series, 1948-60	.72	.31	.64	.48	1	.48	5.63	1.92	21.71
Three lagging series, 1929-40	1.32	.63	1.13	.56	1	.56	3.87	1.86	20.43

Table 4: Explanatory Notes

The amplitude-adjusted general indexes shown in Chart 3 were constructed in the segments shown in Table 4, spliced together, and then standardized once again so that the average month-to-month change (without regard to sign) for each series equals one.

A brief definition of the measures shown in this table is given below; more complete explanations appear in Business Cycle Indicators, Volume I, Chapter 17.

\overline{CI} is the average month-to-month percentage change without regard to sign in seasonally adjusted series.

\bar{I} is the same for the irregular component.

\bar{C} is the same for the cyclical component which is a smooth, flexible moving average. (Similar measures are available from the computer program for the original observations, \bar{O} , and the seasonal component, \bar{S} , but are not included here.)

MCD represents months for cyclical dominance. Percentage changes of the irregular and cyclical factors are computed for consecutive months (January-February, February-March, etc.), 2-month spans (January-March, February-April, etc.), 3-month spans (January-April, February-May, etc.), and so on. MCD is the first interval of months for which the average (without regard to sign) percentage change of the irregular factor is less than that of the cyclical factor and remains so.

\bar{I}/\bar{C} is a measure of the relative smoothness (or irregularity) of the seasonally adjusted series. It is shown above for one-month spans and for spans of the period of MCD. This ratio is approximately equal for all MCD periods except where MCD is given as 6 but is really greater, in which case the \bar{I}/\bar{C} ratio may be relatively high.

Average duration of run is a measure of smoothness, and is equal to the average number of consecutive monthly changes in the same direction, disregarding zeros, in any series of observations.

The summary measures given above were computed by an adaptation of the standard time series program which directly computes these measures for seasonally adjusted series. This is accomplished by using the standard program with a subroutine, which substitutes a series of numbers equal to 100 for each of the seasonal factors after they are computed. As a result, the original observations (here seasonally adjusted series or series free of seasonality) reappear in Table 13 of the standard program which shows the final seasonally adjusted series, and, therefore, all the subsequent operations are performed on these observations. I am indebted to Geoffrey H. Moore for suggesting this simple technique for obtaining the summary measures for series free of seasonality. A computer program to calculate these measures for quarterly series is now being prepared.

CHART 3

Amplitude-Adjusted Indexes and Adjusted Rates of Change for Leading, Coincident, and Lagging Series, 1919-40 and 1948-61

Part A: Amplitude-Adjusted Indexes

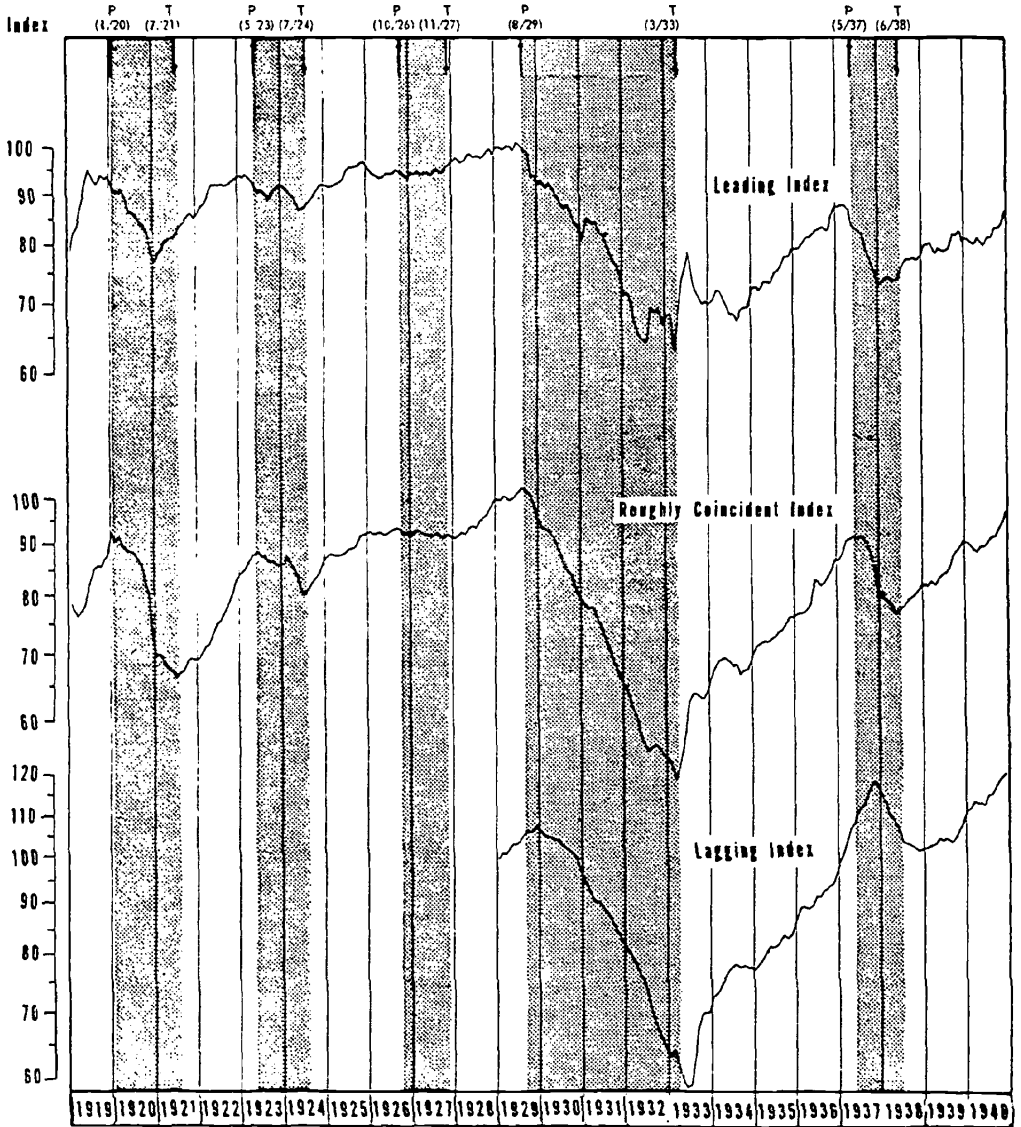


CHART 3 (continued)

Part A: Amplitude-Adjusted Indexes (concluded)

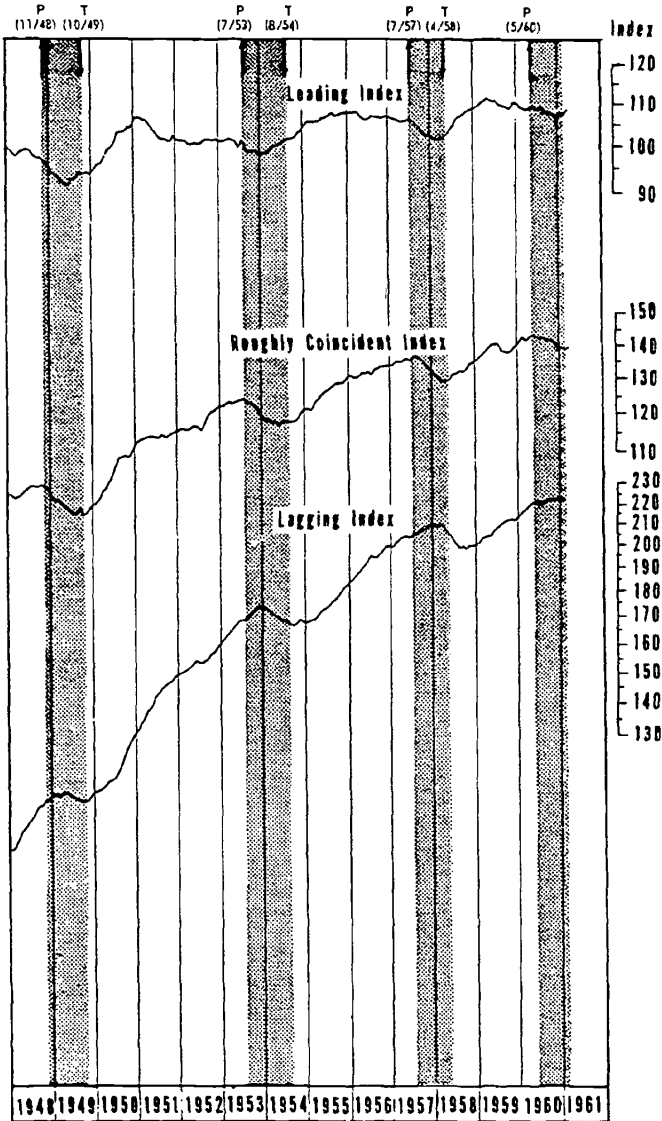


CHART 3 (continued)

Part B: Adjusted Rates of Change Computed over Five-Month and Three-Month Spans

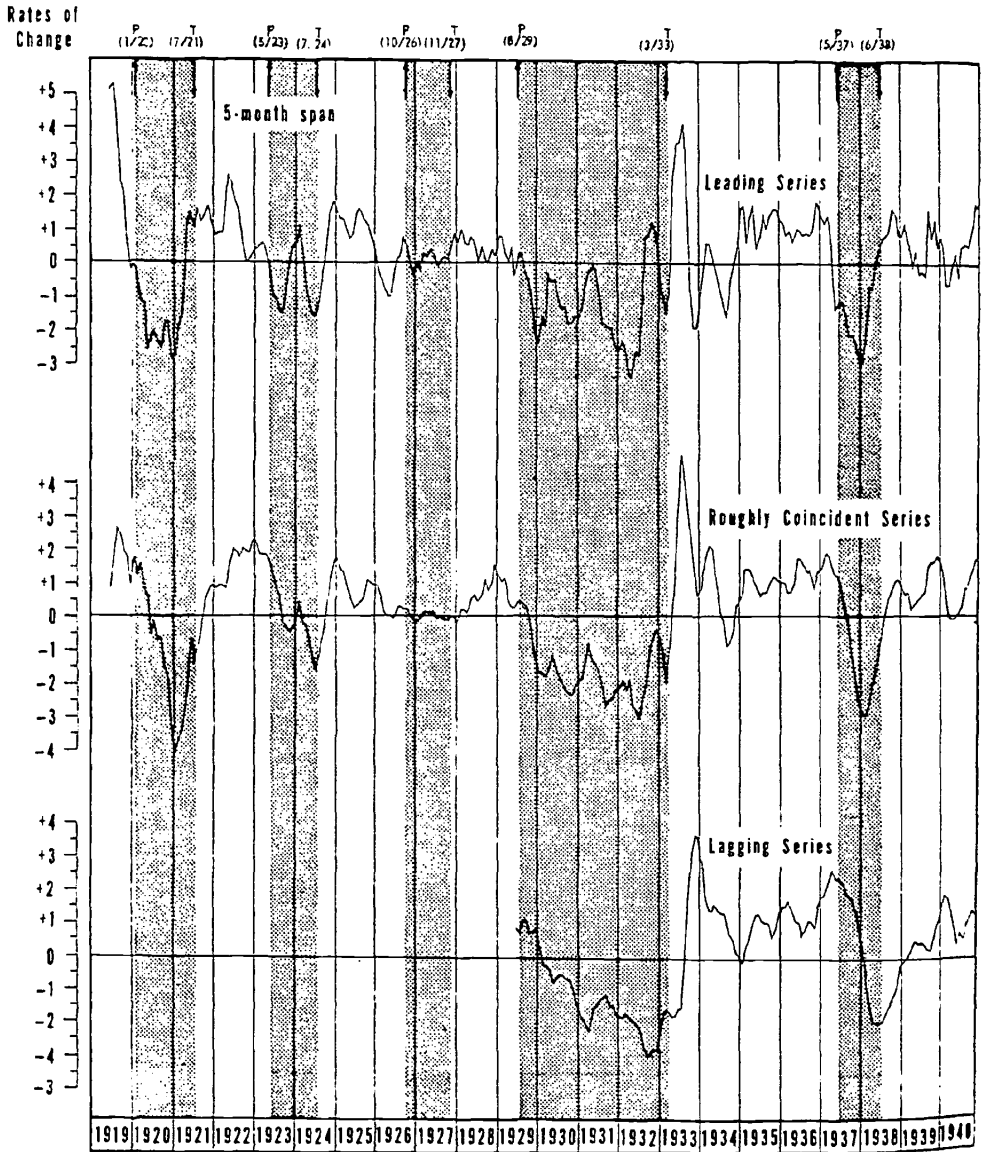


CHART 3 (concluded)

Part B: Adjusted Rates of Change Computed over Five-Month and Three-Month Spans

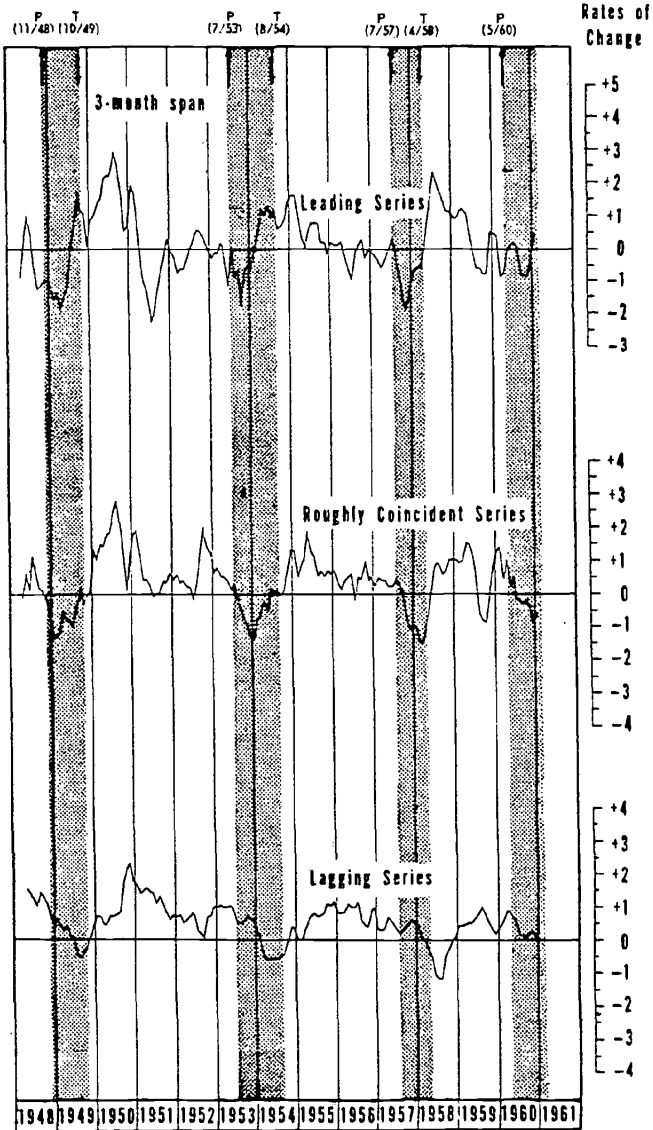


Chart 3: Explanatory Notes

The methods of computing the amplitude-adjusted indexes and the adjusted rates of change on which they are based are described briefly in the text and more fully in Appendix A. The indexes are obtained by cumulating month-to-month adjusted rates of change. Because of their greater irregularity, the adjusted rate of change series shown in the chart are based on changes in component series over longer spans: for 1919-40, a 5-month span is used; and for 1948-61, a 3-month span. The month-to-month change in each index shown here averages one (without regard to sign). To accomplish this for the adjusted rates of change series, the standardizing constants for the 5-month span figures and the 3-month span figures were averaged, and the month-to-month changes were divided by the resulting figure.

The following series are included:

1. Leading series. For 1919-40, 6 series: average workweek (1); new orders, durable manufactures (6); nonfarm housing starts (7); commercial and industrial construction contracts (9); new business incorporations (13); and Standard and Poor's index of stock prices (19). For 1948-60, series (6) and (7) are replaced by new orders for machinery and equipment industries (24) and by new private housing units authorized by local building permits (29). In addition, price-labor cost index (17) and spot market prices of industrial materials (23) are included.

2. Coincident series. For 1919-28, 5 series: employment in nonagricultural establishments (41); index of industrial production (47); bank debits outside NYC (51); personal income (52); and retail sales (54). For 1929-40, 6 series: all the series included in 1919-28 and the index of wholesale prices (55). For 1948-60, the same 6 series included in 1929-40, except that the index of wholesale prices is replaced by the inverted unemployment rate (43).

3. Lagging series. For 1929-40 and 1948-60, 3 series: labor cost per unit of output (62); manufacturers' inventories, total (64); and consumer installment debt (66).

This chart was completed before the business cycle trough in February 1961 had been determined.

coincident, and lagging series. Sample distributions of highs are shown in Table 5 for periods ending in March 1959, July 1959, February 1960, June 1960, and October 1960. The percentage of series currently reaching a new high is shown at the bottom of this table. Table 6 shows the timing distributions of lows for selected leading and coincident series for December 1960 and January, February, and March 1961.

Significant differences in the shapes of the timing distributions for any month and in the pattern of the figures in bold face in the supporting data tables are helpful in determining the current stage of the business cycle. The differences in the appearance of the distributions shown in Table 5 for the different periods and for the three different groups of series in each period are striking. Thus, at the end of March 1959 the economy was surging forward on all fronts. Four months later, at the end of July, a peak in the leading series seemed to have been passed, and while there was some response to contractive forces on the part of the coincident series, it was clear that a business cycle peak had not yet been passed. During the 1959 steel strike, which lasted from July to November, few series surpassed their previous highs. After the steel strike ended, only three of the twenty-five leading series regained their previous highs. This was a sobering fact with respect to prospects for 1960. In February 1960, slightly over half the coincident series were currently at the highest levels reached during the expansion. By the end of June, however, the peak in the coincident series also seemed to have been passed, but the lagging series still showed little sign of being affected. By October, they too joined the procession of downward movements, with only two reaching a new high.

The timing distributions summarizing data for December 1960 and the first three months of 1961 show a concentration of lows in December. At that time, eleven of twenty-two monthly leading series and all fourteen monthly coincident series were currently at low levels. A sharp improvement occurred in January; only two leading and five coincident series were currently low, and the situation was about the same in February. Further improvements in March—only one leading and one coincident series reached lows—suggested that the trough of the recession had been passed.

These measures have only recently been developed, and we have, therefore, had little experience with them. For this reason, timing distributions and the percentage of indicators currently high or low must be interpreted very cautiously for the present.⁵

⁵ It should be noted that even when an expansion high has been reached some months ago, the decline since then may have been small, so that the old high may be exceeded in some nearby future month. This factor requires frequent revisions of

DIFFUSION INDEXES

Three types of diffusion indexes have been used in the report: those covering a variety of economic processes that are broadly similar in their cyclical timing; those measuring a single type of economic activity; and those comparing businessmen's anticipations with actual performance. These diffusion indexes are listed in Table 7 and plotted in Chart 4. The figures for the most recent thirty months are shown for each index in the monthly report. A short explanation of these indexes is given below.

Diffusion Indexes for a Variety of Economic Processes. Two different types of diffusion indexes are shown under this heading. First are comprehensive diffusion indexes based on a fairly large sample of component series for well-known aggregate leading series. After experimenting with several alternative methods, a sample of seventy-nine series was used to compute a comprehensive diffusion index for the leaders, which includes twenty-one series on hours worked, twenty-one on new orders, twenty-four on stock prices, and thirteen on spot market commodity price series for industrial raw materials (see descriptions below). Similarly, a comprehensive diffusion index for the coincident series includes fifty-seven series: twenty-five on industrial production industries and thirty-two on nonagricultural employment.⁶

In addition, diffusion indexes covering the indicators on the most recent National Bureau list are shown: twelve leading series, eight roughly coincident series, and five lagging series.

the historical timing distributions and the series showing currently high percentages.

This approach resembles that suggested by C. Ashley Wright (see *Conference on Business Cycles*, New York, National Bureau of Economic Research, 1951, pp. 339-372). It is, however, different in some respects: (1) each month our method identifies the lowest contraction values (not necessarily the troughs) and consequently there is a value for each series each month; (2) our method treats leading, coincident, and lagging series separately; and (3) it does not try to forecast the date of a reference trough from the tail of a frequency distribution of turning points, but seeks a warning that a trough is ahead from the distribution of leading series lows and a prompt determination of the trough from the distribution of coincident series lows. Wright's approach applied to our sample of series would amount to forecasting the date of a turning point from the frequency distribution, or rather part of the distribution, of peaks of the leading series, since, with only occasional exceptions, the turning points which are available early are those in the leading series.

⁶ These indexes have replaced the average group indexes previously used, mainly because they are easier to explain. Table 8 shows, however, that the average group index for the leaders is slightly smoother than that currently being used. For a description of the earlier comprehensive diffusion indexes, see the explanatory note to Table 8 and my "Statistics for Short-Term Economic Forecasting," *Business Cycle Indicators*, Volume I, Chapter 18, pp. 620-621.

TABLE 5

DISTRIBUTION OF HIGHS IN BUSINESS CYCLE INDICATORS DURING 1958-60 EXPANSION

	STATUS AS OF															
	April 1959			August 1959			March 1960			July 1960			November 1960			
	Lead- ing	Coin- cident	Lag- ging	Lead- ing	Coin- cident	Lag- ging	Lead- ing	Coin- cident	Lag- ging	Lead- ing	Coin- cident	Lag- ging	Lead- ing	Coin- cident	Lag- ging	
Nov. 1958	2															
Dec.	2		1													
Jan. 1959				1												
Feb.	5		1	1			1						1			
Mar.	13	4	14	2	3	3	1						1			
Apr.				5			5						5			
May				7			7						6			
June				6	4	2	3	1	2				2	3		
July				2	7	2	1	1					1			
Aug.							1						1			
Sept.							1						1			
Oct.							1	1					1			1
Nov.							1	1					1	1		
Dec.							1	3					1			
Jan. 1960							1	3					1			
Feb.							8	3					2			
Mar.																
Apr.													3			
May													2	6	2	6
June													3	2	3	2
July																
Aug.																
Sept.																
Oct.																
Nov.																
Per cent currently high	59	100	75	9	50	50	0	57	75	0	21	75	0	7	50	

NOTE: The figures shown above are those that became available in the month specified and cover the preceding month. The number of series included is: leading, 22 monthly (M) and 4 quarterly (Q); coincident, 14 monthly and 2 quarterly; lagging, 4 monthly and 3 quarterly. Quarterly highs are placed in the last month of the high quarter. See explanatory notes to Table 2.

TABLE 6

DISTRIBUTION OF LOWS IN BUSINESS CYCLE INDICATORS DURING 1960-61 CONTRACTION

	STATUS AS OF															
	January 1961			February 1961			March 1961			April 1961						
	Leading	Coincident	Q	Leading	Coincident	Q	Leading	Coincident	Q	Leading	Coincident	Q				
Jan. 1960																
Feb.	1															
Mar.																
Apr.																
May																
June	1			1			1					1				
July	1			1												
Aug.																
Sept.		3						1				1				
Oct.	5			5			4					4				
Nov.	3			4			2					2				
Dec.	11	1	14	2	8	1	8	2	7	2	5	2	7	2	5	
Jan. 1961				2			5		4			3			1	
Feb.									3			5			3	4
Mar.														1	1	2
No. of series	22	4	14	2	21	4	13	2	21	3	11	2	21	3	11	2
Per cent currently low	50		100		10		38		14		45		5		5	9

NOTE: The figures shown above are those that became available in the month specified and cover the preceding month. Quarterly lows are placed in the last month of the low quarter. For an explanation of the identification of the lows, see explanatory notes to Table 2.

TABLE 7

DIFFUSION INDEXES IN THE MONTHLY REPORT

Title and Source	Timing Classification	No. of Components	Comparison Interval			
			One Month	Threc Months	One Quarter	Four Quarters
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Variety of Processes</i>						
Comprehensive, leading series	Lead.	79		x		
Comprehensive, coincident series	Coin.	57	x			
12 NBER indicators, 1960 list	Lead.	12		x		
9 NBER indicators, 1960 list	Coin.	9	x			
5 NBER indicators, 1960 list	Lag.	5	x			
<i>Single Types of Activity</i>						
Workweek, mfg., BLS	Lead.	21		x		
New orders, durables, Census-OBE	Lead.	21		x		
Capital appropriations, NICB	Lead.	602				x
Capital appropriations, NICB	Lead.	15		x		
Profits, Chicago PAA	Lead.	200	x			
Profits, FNCB	Lead.	600			x	
Stock prices, Standard and Poor's	Lead.	82-86		x		
Industrial materials prices, BLS	Lead.	13		x		
Initial claims, BES	Lead.	47		x		
Nonagric. employment, BLS	Coin.	32	x			
Industrial production, FR	Coin.	25	x			
Wholesale prices, BLS	Coin.	23	x			
Retail sales, Census-OBE	Coin.	24			x	
<i>Anticipations and Actual Performance</i>						
Manufacturers' sales, Dun and Bradstreet	Coin.	800				x
New orders, durables, Dun and Bradstreet	Lead.	400				x
Carloadings, AAR	Coin.	19				x
Plant and equipment expenditures, OBE-SEC	Lag.	17-22				x

Table 7: Explanatory Notes

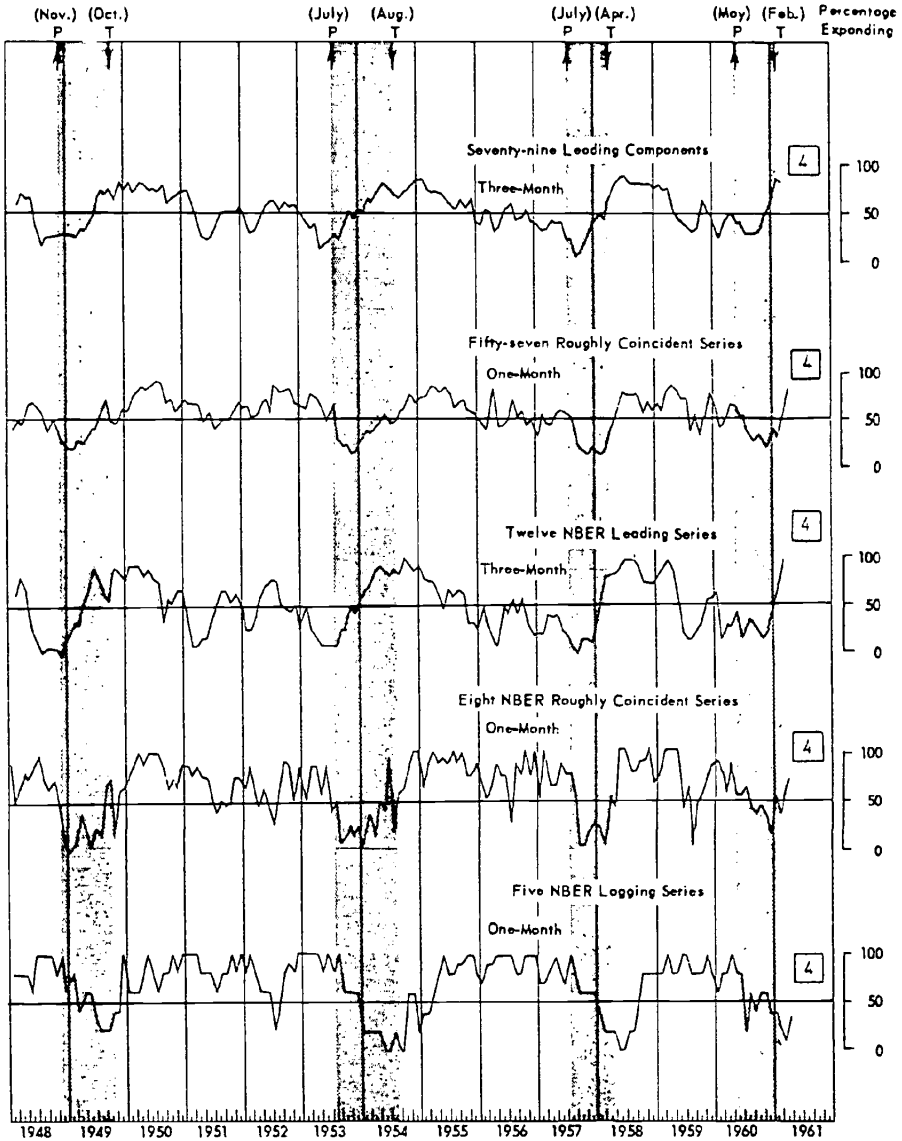
This table gives a list of the current diffusion indexes in the monthly report and the span covered in constructing each one. These indexes are classified into 3 principal groups: those for a variety of economic processes that are broadly similar in their cyclical timing, those for a single type of economic activity, and those for businessmen's anticipations compared with actual performance. The number of series included in each diffusion index is shown in col. 2, and the span covered in the comparisons to determine the signs for diffusion indexes is shown in cols. 3-6. Further explanations of these indexes are given in the text.

- BLS — Bureau of Labor Statistics, Department of Labor*
- OBE — Office of Business Economics, Department of Commerce*
- BES — Bureau of Employment Security, Department of Labor*
- NICB — National Industrial Conference Board*
- PAA — Chicago Purchasing Agents Association*
- FR — Federal Reserve System*
- SEC — Securities and Exchange Commission*
- AAR — Association of American Railroads*
- FNCB — First National City Bank of N. Y.*

CHART 4

Current Diffusion Indexes, 1948-61

Part A: Leading, Roughly Coincident, and Lagging Series



Figures enclosed in rectangular boxes indicate the latest data used to calculate the diffusion indexes. Arabic numerals indicate months; Roman numerals, quarters. Shaded areas represent NBER recession periods (P=peak, T=trough). See Appendix C for complete titles of series, sources, and recent data.

CHART 4 (continued)

Part B: Leading Group

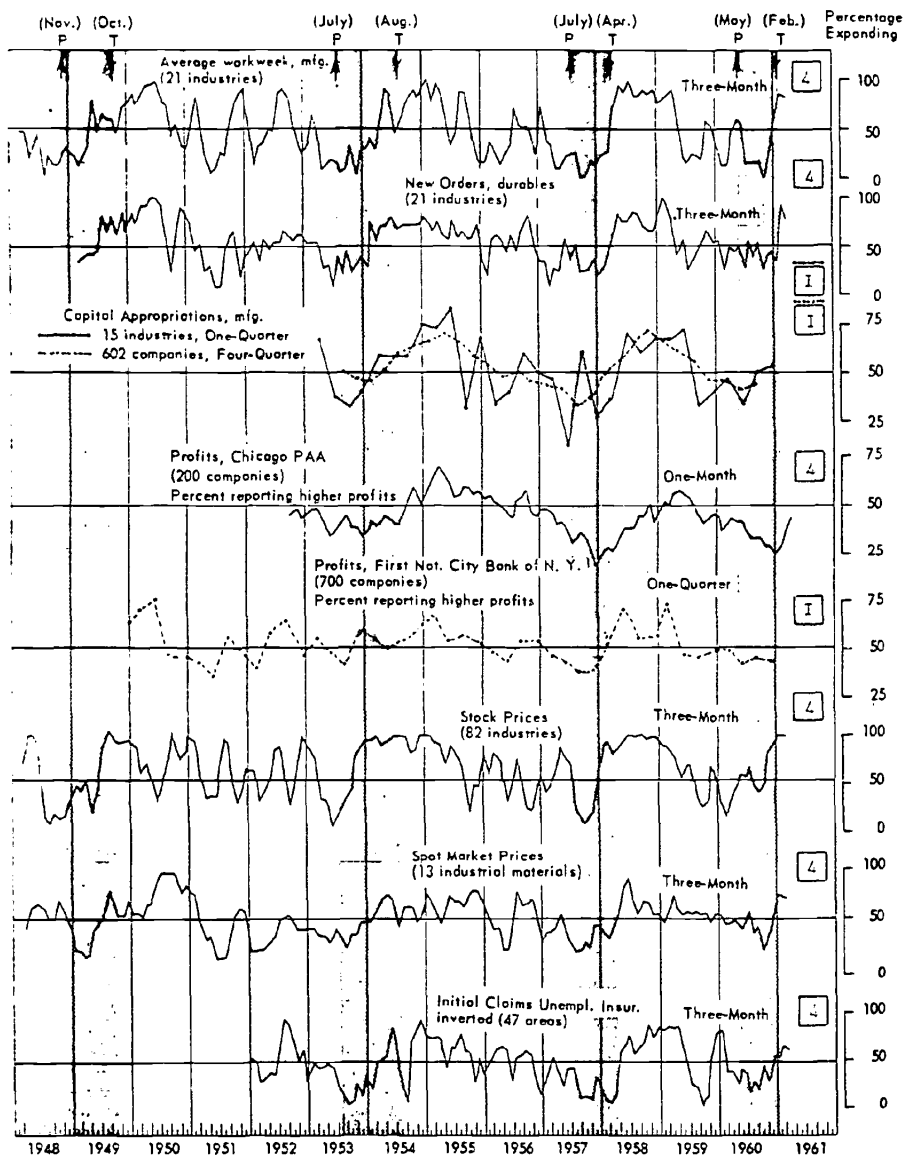


CHART 4 (continued)
 Part C: Roughly Coincident Group

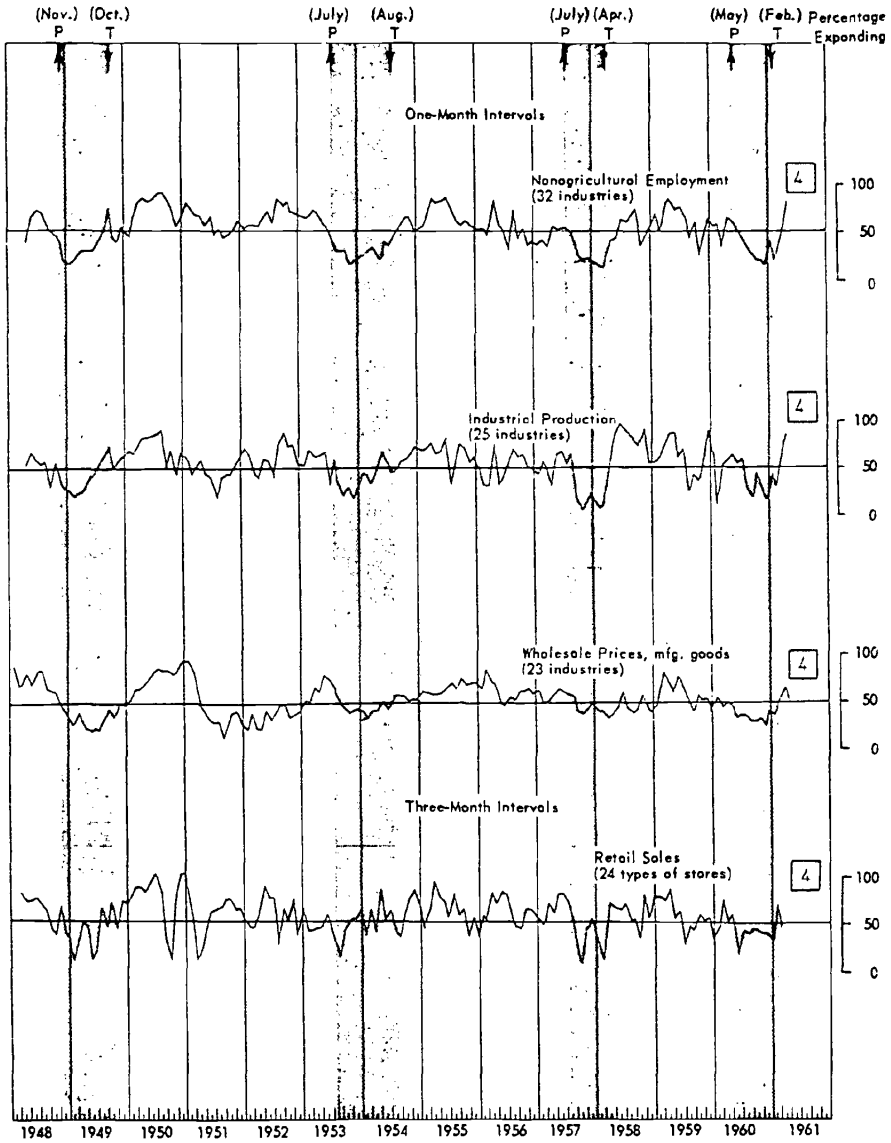
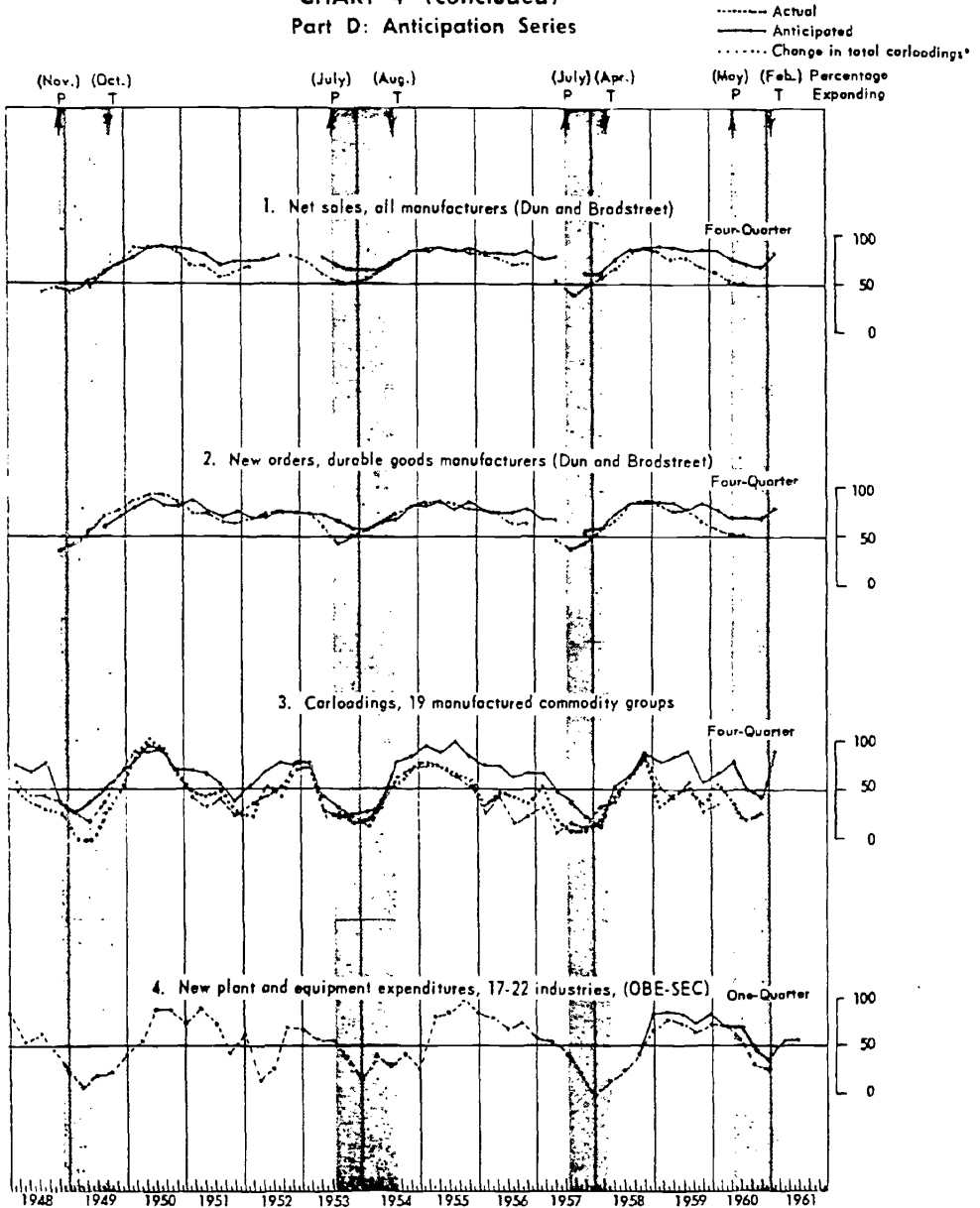


CHART 4 (concluded)
Part D: Anticipation Series



Latest data plotted covering the following spans:

	Actual	Anticipated
Series 1 and 2	I '60 — I '61	III '60 — III '61
3	III '59 — III '60	III '60 — III '61
4	IV '60 — I '61	II '61 — III '61

*Increase of 500,000 carloadings plotted at 100; no change at 50; decrease of 500,000 carloadings at 0.

Although similar in general configuration, the comprehensive diffusion indexes tend to be smoother than the corresponding diffusion indexes for the nine NBER monthly leading and seven monthly coincident series, as can be seen in Table 8. Presumably, the greater smoothness is due to the use of a much larger number of series. Nevertheless, the comprehensive diffusion indexes still include an irregular factor as large as, or larger than, that in the aggregate series for business failure liabilities and for commercial and industrial construction contracts (cf. Table B-1). On the other hand, the cyclical factor in the comprehensive diffusion indexes is also large. The ratio of the average monthly amplitude of the irregular factor to that of the cyclical factor is about 2.0, which is smaller than the ratio for most of the individual leading indicators.

Diffusion Indexes Measuring a Single Type of Economic Activity.

Diffusion indexes for nine important groups of component series were especially prepared for this report, and in addition three diffusion indexes prepared by others are included.

1. Average workweek in twenty-one major manufacturing industries. This group contributes a leading series for each of the twenty-one industries. The average for the entire group (all manufacturing) has tended to lead changes in general business conditions and the workweek in each industry generally leads the corresponding employment series.

An investigation of the relations between turning points in average hours of work and general business conditions has been made by Gerhard Bry at the National Bureau. He found that "turns in the average workweek for all manufacturing usually precede business cycle turns by about four months. Leads tend to be somewhat longer at peaks than at troughs. The lead in average weekly hours can be found in statistics for skilled and unskilled workers, for men and women; it is also reflected in regional data, and very generally among different industries." He also found that diffusion indexes of hours "show leads at business cycle turns two or three times as long as those of the average workweek itself."⁷ His study is based upon fifteen to twenty-one manufacturing industry series from 1920 to 1956 and fourteen nonmanufacturing industry series from 1932 to 1956.

2. New orders received by each of twenty-one durable goods manufacturing industries. The aggregate of these series has been a reliable indicator of prospective business conditions and is included in

⁷ See Gerhard Bry's "The Timing of Cyclical Changes in the Average Workweek," *Business Cycle Indicators*, Volume I, Chapter 15, and *The Average Workweek as an Economic Indicator*, Occasional Paper 69, New York, National Bureau of Economic Research, 1959.

TABLE 8

MEASURES OF SMOOTHNESS FOR COMPREHENSIVE AND
NBER DIFFUSION INDEXES, 1948-60

	Average Amplitudes			\bar{I}/\bar{C}	MCD	Average Duration of Run
	Seasonally Adjusted (\bar{C}_I)	Irregular Component (\bar{I})	Cyclical Component (\bar{C})			
<i>Leading Series</i>						
Comprehensive, 79 component series	18.3	16.1	7.4	2.2	4	2.0
Comprehensive, average of 5 group indexes, 197 series	21.2	17.1	8.0	2.1	3	2.0
NBER, 1960 list, 9 monthly series	35.2	29.8	16.0	1.9	6	2.3
NBER, 1950 list, 8 monthly series	43.7	38.4	11.8	3.2	6	1.7
<i>Coincident Series</i>						
Comprehensive, 57 component series	18.7	14.6	10.4	1.4	2	2.5
Comprehensive, average of 4 group indexes, 84 series	17.8	14.1	6.1	2.3	3	1.7
NBER, 1960 list	27.5	26.6	16.5	1.6	6	2.2
NBER, 1950 list	30.0	40.8	22.1	1.8	6	1.8

Explanatory Notes

The measures shown in this table are computed from seasonally adjusted diffusion indexes over 3-month spans. For an explanation of the measures, see the explanatory notes to Table 4, and Business Cycle Indicators, Volume I, Chapter 17, pp. 556-558.

The diffusion indexes for the 79 leading and 57 coincident series and for the 1960 NBER list cover the period March 1948-August 1960; the group diffusion indexes cover the period April 1948-May 1958; the 1950 NBER list covers the period February 1948-May 1958. The comprehensive average of 5 leading groups includes: (1) average hours of work, 21 series; (2) new orders, 21 series; (3) stock prices, 82-86 series; (4) spot market commodity prices, foods and industrial materials, 22 series; and (5) initial claims, 47 series. The comprehensive average of 4 coincident groups includes: (1) employment in manufacturing industries, 21 series; (2) employment in nonmanufacturing industries, 13 series; (3) industrial production, 26 series; and (4) retail sales, 24 series. In each case the group indexes were averaged without weighting.

the National Bureau list as a leading series. The individual industry series have also consistently led the corresponding production figures.

A comprehensive study of the cyclical behavior of manufacturers' orders has been made by Victor Zarnowitz at the National Bureau.⁸ He points out that new orders tend to lead production because "they lead the output of products to which they give rise and stimulate ordering of other goods needed for that production." His study covers more than sixty manufacturing series relating to various periods between 1870 and the present. It shows that new orders led general business in a large majority of cases. He made use of nearly 450 observations and found that new orders turned ahead of general business in 85 per cent of the comparisons. The average lead was about five months and did not differ materially at peaks and troughs. He also noted that diffusion indexes of new orders "being based on series that have themselves a strong tendency to move ahead of the ebb and flow of general business are especially early indicators of cyclical revivals and recessions." The components of this group also provide information about individual manufacturing industries.

3. Stock market prices. Stock price averages have proven to be a sensitive indicator of business conditions. We used Standard and Poor's stock price indexes for eighty-two to eighty-six industry series covering a total of about 500 individual companies reported on the New York Stock Exchange. Many of these individual series, as well as their total, are fairly consistent leaders.

Edmund A. Mennis, who has investigated the leading tendencies of stock price series, reports as follows: "The Dow-Jones and Standard and Poor's composites for industrials and rails changed direction earlier in 18 out of the 22 turns in business, or about 80 percent of the time, from 1899 to 1949. Using the cycles from 1871 to 1949, we find that the Standard and Poor's composite and rail average led in 28 out of 34 turns in business; the Standard and Poor's industrial led in 29 out of 34 turns."

Dr. Mennis also studied twenty industry stock price series from 1918-49. He was able to make 102 comparisons at business cycle peaks and the same number at troughs. He found that stock prices led general business turns 80 per cent of the time.⁹

4. Spot market prices of thirteen industrial materials. During the period since World War II, most price series have either not declined

⁸ See "The Timing of Manufacturers' Orders During Business Cycles," by Victor Zarnowitz, *Business Cycle Indicators*, Volume I, Chapter 14.

⁹ See Edmund A. Mennis, "Security Prices and Business Cycles," *Analysts Journal*, February 1955, pp. 79-86.

at all during recessions, or their declines during recessions have been much smaller than their rises in the previous expansions. Furthermore, many price series, which in fact declined during recessions, appear to have fallen less in each successive postwar recession. The result has been what is commonly referred to as "creeping" inflation. For this reason, if for no other, it is essential to follow price movements carefully.

Although most price series have not shown the typical cyclical swings in recent years, the index of spot market prices of thirteen industrial materials (steel scrap, copper scrap, lead scrap, tin, zinc, rubber, hides, cotton, wool, print cloth, burlap, rosin, and tallow) has continued to conform to the business cycle and to lead at most turns. These prices are especially sensitive to the efforts of manufacturers to add to or liquidate their inventories of raw materials.¹⁰ Consequently, these series have an important place in a list of business cycle indicators, and the aggregate index as well as the thirteen components were included in our report.

5. Initial claims for unemployment insurance. These series are of interest for several reasons. First, their turning points have generally preceded those in unemployment. New claims for unemployment insurance are one component of the month-to-month change in insured unemployment (the latter is equal to initial claims minus new hirings of formerly insured workers and exhausted claims). Second, initial claims data are available on a geographic basis. This enables us to group the data according to whether they cover distressed or other areas, and to gain a glimpse into the comparative cyclical fluctuations in these two groups. Third, they are available weekly, and the computer program has been used to derive weekly seasonal factors and a weekly seasonally adjusted series. This weekly series has proved to be a useful supplement to the monthly series in interpreting current trends. For the monthly measures used in these studies, statistics on initial claims were assembled for each of forty-seven labor market areas spread through the country for the weeks including the fifteenth day of each month. The weekly series covers initial claims in all states.

These series do not provide a comprehensive picture of unemployment. The incomplete coverage may, however, be an advantage in one respect. The undercoverage occurs mainly in service industries, finance, and government, where cyclical fluctuations tend to be moderate. Consequently, the figures on insured unemployment may show cyclical

¹⁰ See Ruth P. Mack, "The Destabilizing Influence of Raw Materials Prices," *The Relationship of Prices to Economic Stability and Growth*, Joint Economic Committee, 85th Congress, 2nd Session, Washington, 1958.

fluctuations in sharper relief than, for example, those on total employment or unemployment.¹¹

Insured unemployment may also show cyclical changes in direction more accurately than total unemployment. If aggregate economic activity, and particularly manufacturing, declines, initial claims and insured unemployment are likely to rise; similarly, these series are likely to decline if business rises. Changes in total unemployment may, however, not be so well correlated with the volume of business, since they are affected by changes in the labor force. During a period, such as the spring of 1961, when the labor force was growing rapidly, rises in employment may be accompanied by declines in insured unemployment, but not necessarily by declines in unemployment. (This limitation of the total unemployment series as a business cycle indicator does not affect its value as an indicator of social welfare.)

6. Employment in nonagricultural establishments, thirty-two industry groups. This group of series is one of the most comprehensive available monthly. It covers employment in all industries outside of farming. For this reason, it is one of the best measures of short-term changes in total business.

7. Industrial production, twenty-five industries. It is obviously necessary to have in addition to the input measures of employment and average weekly hours, reasonably comprehensive measures of output. The Federal Reserve production index series, covering mining, manufacturing, and utilities industries, are the most appropriate for this purpose.

8. Retail sales, twenty-four series. Retail sales are of vital interest to producers at all earlier stages in the production process. Retail sales usually lagged behind the other general composites at business cycle turning points before World War II, but have led or been roughly coincident since 1947.

9. Wholesale prices. A comprehensive and sensitive index of the pressures of demand and supply on the commodity markets is provided by a diffusion index for twenty-three wholesale commodity price series. This index includes groups of important components of the wholesale price index for manufactured goods. Farm products and foods are excluded, because they often move independently of the business cycle.

10. Profits. Two diffusion indexes were included for this strategic indicator. Both show the percentage of companies reporting higher

¹¹ For a further description of these and related series, see Herbert S. Parnes, "Unemployment Data from the Employment Security Program," *The Measurement and Behavior of Unemployment*, Princeton University Press for National Bureau of Economic Research, 1957, pp. 123-153, especially pp. 130-132.

profits. One is monthly and is based on reports to the Chicago Purchasing Agents' Association. The second is quarterly, and is compiled from a sample of about 600 corporations by the National City Bank of New York. The cyclical movements in the quarterly series are less clearly defined than in the monthly series, but the quarterly series seems a useful supplement because the sample is more broadly based.

11. Capital appropriations. A diffusion index is also compiled for the 602 companies included in the National Industrial Conference Board survey.

Businessmen's Anticipations Compared with Actual Performance. Four diffusion indexes of businessmen's stated anticipations were also presented. These include anticipations of their sales and orders, their carloadings, and their capital expenditures. In the first three surveys from which these series are compiled, the respondents are asked whether they expect the volume of activity in the quarter ahead to be larger, smaller, or equal to the volume in the same quarter one year earlier. (In the charts these series are centered at the midpoints of the years spanned.) In the fourth survey the anticipated plant and equipment expenditures in each of several industries in the quarter ahead are compared with those in the preceding quarter; these series are helpful in indicating businessmen's attitudes around business cycle turning points. They frequently show that at such times most businessmen expect a continuation of current business trends rather than a reversal. Mistaken forecasts at these times inevitably lead to corrections. Hence, the magnitude of discrepancies shown between the diffusion indexes representing actual performance and those representing anticipations is of particular interest.

Concluding Note on Diffusion Indexes. Perhaps the principal limitation of current diffusion indexes is their irregularity. To increase their smoothness, some are calculated over three-month spans, as well as over consecutive months. Diffusion indexes computed over longer spans are smoother than those computed over one-month intervals because longer spans give the cyclical components of each series a better chance to dominate the erratic fluctuations. In addition, diffusion indexes computed over long spans usually have larger cyclical amplitudes since miscellaneous random factors that reverse the movements of some component series over consecutive months do not affect them over longer spans. Such differences are most clearly visible in our one- and three-month comprehensive group diffusion indexes for the leading series; they can also be seen in the one- and three-month indexes for the coincident series. The greater amplitude and smoothness of diffusion indexes computed over longer spans provide very real advantages, which offset to a considerable extent the loss in timeliness. On the other hand,

the one-month indexes are useful in assessing the current month's developments. Hence, both are usually included in the tables (though not shown in charts).

DIRECTION-OF-CHANGE TABLES

The emphasis throughout the monthly report on current economic conditions is upon measures of *change*: *change* from the peaks or troughs of cycles, *change* from the standing three months earlier, and *change* from the standing at the previous month.¹² The magnitude of these changes is of obvious importance. In studying the cumulative movements of the business cycle, however, the direction of change must be given special attention. Persistent changes in the same direction may be significant, even though small. Furthermore, to be most helpful, a statistical system should have an economic framework; that is, changes shown by the statistical indicators should be interpretable in economic terms. This is particularly important in the case of diffusion indexes which show only the percentage of series rising and do not show which components are rising and which are falling. To provide such information, tables have been prepared showing the monthly directions of change in each of the component series. They show not only which series are rising currently, but also how long they have been rising; they indicate whether the series are rising or falling consistently or moving erratically. These tables, therefore, provide a convenient summary view of changing economic conditions. Similar tables containing the rates of change would provide more information, but they would also be more difficult to follow. The way in which these tables helped to trace the spread of the 1957-58 recession and the subsequent recovery is well illustrated by the nonagricultural employment direction-of-change table (Table 9A). This table shows that declines first started in durable and nondurable manufactures; they spread gradually to other industries until after about a year they had encompassed all industries except government ones.¹³ Direction-of-change tables for nine groups of series have been shown in each monthly report for the most recent thirty-

¹² Incidentally, no attention is given to changes from the same month or quarter of the preceding year, except for the anticipations indexes. Same-month-year-ago comparisons can be highly misleading around business cycle turning points at just the time clarity is most essential. For further discussion, see my "Electronic Computers and Business Indicators," *Business Cycle Indicators*, Volume I, Chapter 17.

¹³ For dramatic illustrations of the usefulness of direction-of-change tables in studying typical timing sequences during the course of a business cycle, see "New Facts on Business Cycles," by Arthur F. Burns, *Business Cycle Indicators*, Volume I, Chapter 2, Table 2.1; and "Leading and Confirming Indicators of General Business Changes," by Geoffrey H. Moore, *ibid.*, Chapter 3, Table 3.3.

month period: the twenty-six National Bureau indicators, hours worked, new orders, stock prices, industrial materials prices, initial claims, non-agricultural employment, industrial production, and retail sales. The direction-of-change table for the twenty-six NBER indicators over the period December 1958-April 1961 is shown in Table 9B.

CYCLICAL COMPARISONS

A major goal of business cycle research is to make it possible to judge early in a cyclical phase its ultimate amplitude, pattern, and duration. For this reason, we have pursued Moore's finding that the ultimate relative severity of a contraction seems to be fairly reliably indicated by its standing from four to six months after its onset. Thus, for many of the series on our lists, monthly comparisons were first made in the autumn of 1957 between the declines from the 1957 peak to later months and the declines over the corresponding spans of the 1929-33, 1937-38, 1948-49, and 1953-54 contractions. The comparisons were extended each month to longer spans as the current (1957-58) contraction proceeded and additional figures became available. Once the expansion starting from the business cycle trough in April 1958 had gotten under way, similar comparisons were made with the seven previous expansions starting in 1921, 1924, 1927, 1933, 1938, 1949, and 1954. Starting in August 1960, comparisons were made between the contraction starting in May and the previous eight contractions; that is, in addition to those included when observing the 1957-58 contraction, the 1920-21, 1923-24, and 1927-28 contractions were used. Such comparisons are illustrated in Tables 10A and 10B which compare the declines in the principal NBER indicator series over the first nine months of nine recessions, and Table 10C which compares the rises in the same series over the first twenty-five months of the ensuing expansions.

The changes in nine coincident series from the business cycle trough levels are shown in Table 11, along with changes from the previous peak levels after fourteen months of expansion, for the three most recent expansions. During the 1958-60 expansion this point occurred in June 1959 just before the start of the steel strike and probably represented a temporarily high level of activity because of stockpiling in anticipation of the strike. Nevertheless, these comparisons show that while the 1958-59 expansion proceeded at about the same rate as the 1954-55 expansion during the first fourteen months (see percentage changes from reference troughs), it did not quite attain the same level relative to the previous peak as it had in 1955 (see percentage changes from reference peaks), and in both respects it fell far short of the 1949-50 performance. The explanation lies partly in the fact that economic

Tables 9A and 9B: Explanatory Notes

A plus sign (+) represents a rise, a minus sign (—) a fall, and a zero (0) no change. For inverted series, rises are entered as minus (—) and falls as plus, (+). The quarterly series in Table 9B are centered in the midmonth of the quarter, interpolated by straight-line, and treated as monthly series; the bank rate (series 67), however, refers to the third month in the quarter and is treated accordingly.

The percentage rising is the number of series rising plus half the number with no change divided by the total number of series.

TABLE 10A

COMPARISON OF NINE RECENT BUSINESS CYCLE CONTRACTIONS

Percentage Changes for Principal Business Cycle Indicators from

Previous Business Cycle Peak Levels to Levels Nine Months After Business Cycle Peaks

	Periods Covered											
	Jan. 1920 to	May 1923 to	Oct. 1926 to	Aug. 1929 to	May 1937 to	Nov. 1948 to	July 1953 to	July 1957 to	Apr. 1958 to	Apr. 1954 to	Aug. 1949 to	May 1960 to
<i>Leading Series</i>												
1. Average workweek, mfg.	n.a.	-4.4	-1.6	-8.2	-13.3	-1.5	-3.0	-3.5	-1.8			
2. Accession rate, mfg.	-50.2	-56.8	-28.7	-54.9	-19.6	-13.2	-36.1	-22.0	-5.5			
3. Layoff rate, mfg. (inv.)	-94.9	-33.2	-6.8	-48.0	-61.6	-28.6	-47.8	-42.9	-8.1			
6. Mfrs. new orders, durables	-42.0	-14.5	-10.8	-29.8	-36.9	-10.9	-15.1	-17.5	-7.9			
7. New nonfarm dwelling units started	-45.7	-33.3	-12.0	-36.5	-26.3	+27.4	+7.5	-3.8	-12.8			
9. Con., ind., constr. contracts	-70.7	+5.0	-10.2	-35.6	-53.2	-39.4	-3.5	-26.8	-9.5			
13. New business incorp.	-15.8	-19.9	-0.7	-5.0	-16.0	0.0	+13.2	-8.9	-11.1			
14. Liab. of bus. failures (inv.)	-82.2	+23.0	-28.3	-28.4	-36.8	-15.2	-15.6	-40.9	+16.9			
16. Corporate profits, Q	-90.0	-17.3	-26.4	-57.4	-58.5	-20.3	-17.9	-23.0	-14.5			
19. Index of stock prices	-8.6	+2.0	+15.5	-20.1	-32.3	-1.7	+14.1	-10.5	+10.9			
23. Industr. materials prices	-22.9	-7.5	-3.4	-17.5	-26.5	-21.7	-0.4	-13.0	-4.1			
<i>Roughly Coincident Series</i>												
41. Employ. in nonagric. establish.	-12.4	-3.5	-2.1	-6.5	-7.1	-3.5	-2.9	-4.6	-2.2			
43. Unemployment rate (inv.)	n.a.	n.a.	n.a.	-82.9	-35.5	-46.8	-54.2	-42.0	-23.5			
47. Industrial prod. index	-8.9	-3.6	-3.3	-14.6	-29.4	-6.2	-9.5	-14.2	-6.8			
49. GNP, current dollars, Q	n.a.	+2.8	+0.5	-7.6	-11.8	-2.7	-2.4	-2.6	-1.1			
50. GNP, 1954 dollars, Q	n.a.	n.a.	n.a.	n.a.	n.a.	-0.6	-3.4	-4.0	-2.2			
51. Bank debits outside NYC	-2.5	+2.1	+2.2	-15.5	-16.2	-4.7	+1.0	-2.4	+1.2			
52. Personal income	n.a.	+2.7	+1.5	-8.8	-9.5	-3.1	-1.0	-0.3	+0.5			
54. Sales of retail stores	-1.0	+2.0	0.0	-6.1	-14.1	-1.4	-0.3	-2.6	-3.9			
55. Wholesale price index (excl. farm and foods)	+0.4	-4.7	-5.7	-4.3	-3.9	-4.3	-0.3	-0.4	-0.7			
<i>Lagging Series</i>												
61. New plant, equip., expend., Q	n.a.	n.a.	n.a.	n.a.	n.a.	-15.3	-2.3	-19.7	-5.2			
62. Labor cost/unit of output	+11.5	+4.2	-1.1	0.0	+8.0	-3.1	+3.5	+7.6	+2.3			
64. Mfrs. inventories, total	n.a.	n.a.	n.a.	+1.6	+3.2	-5.7	-3.5	-4.7	-2.4			
66. Consumer instal. debt	n.a.	n.a.	n.a.	-6.2	-2.5	+17.9	+4.2	+1.5	+3.2			
67. Bank rate, short-term loans, Q	+13.2	-2.0	-0.2	-15.3	-2.7	-0.4	-0.3	-13.7	-7.1			

TABLE 10B

COMPARISON OF NINE RECENT SPECIFIC CYCLE CONTRACTIONS

Percentage Changes for Principal Business Indicators from Most Recent Specific Peaks of Each Series to February 1961 and for Corresponding Periods of Earlier Cycles

	No. of Months in Span Used	Changes from Specific Peaks Related to Recessions Beginning in								
		1920	1923	1926	1929	1937	1948	1953	1957	1960
Leading Series										
1. Average workweek, mfg.	21	n.a.	-7.8	-1.5	-15.9	-8.1	-10.5	-3.4	-2.4	-3.8
2. Accession rate, mfg.	22	-88.7	-82.2	-49.1	-71.1	-10.6	-40.5	-7.6	-11.1	-17.9
3. Layoff rate, mfg. (inv.)	20	-74.2	-80.3	-38.0	-72.5	-51.5	-35.8	-58.8	-25.0	-47.8
6. Mfrs.' new orders, durables	20	n.a.	-12.8	-26.0	n.a.	-45.0	-0.8	-12.6	-15.9	-14.5
7. New nonfarm dwelling units started	22	-38.8	+12.8	-27.6	-58.3	-1.1	+1.1	-27.8	-25.4	-28.4
9. Com., ind., constr. contracts	21	-71.2	-27.4	-13.8	-64.5	-41.5	-39.3	-32.0	-22.5	-12.6
13. New business incorporations	21	-25.5	-13.7	-7.5	-12.0	-17.4	-25.0	n.s.c.	-10.3	-17.0
14. Liab. of bus. failures (inv.)	21	-88.3	-4.5	-22.2	-40.0	-14.9	-85.0	-30.8	-37.4	-25.5
16. Corporate profits, Q	15	n.a.	-46.2	-26.4	-92.6	-56.9	-23.3	-14.8	-4.8	-18.7
19. Index of stock prices	19	-23.3	-1.5	n.s.c.	-46.8	-34.5	+2.6	+18.1	-13.8	+5.6
23. Industrial materials prices	15	-58.6	-24.6	-24.0	-22.6	-36.3	-28.0	-34.2	-6.0	-5.8
Roughly Coincident Series										
41. Employ. in nonagric. establish.	7	-7.6	-3.8	-1.0	-5.4	-7.6	-3.3	-2.0	-3.6	-3.2
43. Unemployment rate (inv.)	9	n.a.	n.a.	n.a.	n.a.	-40.9	-0.5	-49.4	-24.4	-23.5
47. Industrial production index	9	-9.5	-4.2	-3.9	-13.3	-29.7	-6.8	-9.5	-5.4	-6.8
49. GNP, current dollars, Q	6	n.a.	n.s.c.	n.s.c.	-5.5	-16.0	-3.6	-2.1	-3.6	-0.3
50. GNP, 1954 dollars, Q	6	n.a.	n.a.	n.a.	n.a.	n.a.	-2.4	-2.5	-4.7	-1.2
51. Bank debits outside NYC	6	-15.6	-2.1	n.s.c.	-16.8	-1.5	-4.6	n.s.c.	-4.6	+1.7
52. Personal income	4	n.a.	-2.6	-0.8	-4.5	-3.9	-3.0	-0.7	-0.8	-0.7
54. Sales of retail stores	10	-9.1	-2.9	n.s.c.	-8.7	-16.6	n.s.c.	-2.0	-2.6	-3.4
55. Wholesale price index (excl. farm and foods)	10	-38.1	-6.7	-2.6	n.s.c.	-5.2	-4.2	-3.1	n.s.c.	-0.7
Lagging Series										
61. New plant, equip., expend., Q	6	n.a.	n.a.	n.a.	n.a.	n.a.	-11.6	-4.7	-14.1	-2.2
62. Labor cost/unit of output	3	-9.1	-2.7	n.s.c.	n.s.c.	-5.0	+0.5	-0.9	-4.0	+0.6
64. Mfrs.' inventories, total	7	n.a.	n.a.	n.a.	-0.5	-12.5	-8.2	-2.9	-4.0	-2.5
67. Bank rate, short-term loans, Q	12	-15.0	-14.5	-5.5	-21.8	n.s.c.	-2.2	-5.6	-7.2	-6.9

TABLE 10C

COMPARISON OF EIGHT RECENT BUSINESS CYCLE EXPANSIONS

Percentages of Previous Business Cycle Peak Levels for Principal Business Indicators Twenty-Five Months After Business Cycle Troughs

	Period Covered											
	Jan. 1920 to Aug. 1923	May 1923 to Aug. 1926	Oct. 1926 to Dec. 1929	Aug. 1929 to Apr. 1935	May 1929 to July 1935	May 1937 to Nov. 1940	Nov. 1948 to Nov. 1951	July 1953 to Sept. 1956	July 1953 to May 1957	July 1957 to May 1960		
<i>Leading Series</i>												
1. Average workweek, mfg.	n.a.	96.4	96.3	73.0	95.0	102.0	99.8	100.2				
2. Accession rate, mfg.	60.6	42.6	46.6	46.3	111.1	109.2	83.5	101.0				
3. Layoff rate, mfg. (inv.)	19.6	44.0	41.2	43.3	78.6	100.0	75.0	100.0				
6. Mfrs.' new orders, durables	150.9	117.6	79.0	48.3	142.6	156.4	117.2	111.7				
7. New nonfarm dwelling units started	143.5	135.5	50.8	31.1	170.2	120.3	97.1	115.8				
9. Com., ind., constr. contracts	27.7	118.2	118.0	18.3	112.8	87.9	126.8	110.0				
13. New bus. incorporations	78.9	94.6	98.8	67.2	82.8	99.5	134.5	124.3				
14. Liab. of bus. failures (inv.)	21.6	146.3	66.0	270.0	87.9	139.7	79.6	69.7				
16. Corporate profits, Q	76.0	101.9	105.7	20.6	115.1	91.6	114.3	103.5				
19. Index of stock prices	94.0	150.8	162.4	30.2	61.3	146.0	193.5	116.7				
23. Industrial materials prices	59.4	85.8	89.3	69.0	35.6	111.8	114.3	100.3				
<i>Roughly Coincident Series</i>												
41. Employ. in nonagric. establish.	91.0	96.2	100.1	83.3	100.3	106.6	104.2	101.7				
43. Unemployment rate (inv.)	n.a.	n.a.	n.a.	33.0	81.0	106.2	65.9	83.3				
47. Industrial prod. index	110.3	106.9	102.5	73.7	103.6	118.1	108.2	108.2				
49. GNP, current dollars, Q	n.a.	112.1	110.9	64.3	106.1	127.2	114.2	112.6				
50. GNP, 1954 dollars, Q	n.a.	n.a.	n.a.	n.a.	n.a.	116.7	107.2	107.6				
51. Bank debits outside NYC	92.1	117.1	112.2	53.6	98.0	130.4	121.1	118.8				
52. Personal income	n.a.	113.8	110.4	68.5	102.2	123.5	116.5	113.9				
54. Sales of retail stores	111.8	107.9	102.7	73.0	105.4	116.2	111.8	108.7				
55. Wholesale price index (excl. farm and foods)	65.5	93.4	90.6	84.9	96.1	109.2	107.1	102.1				
<i>Lagging Series</i>												
61. New plant, equip., expend, Q	n.a.	n.a.	n.a.	n.a.	n.a.	119.3	127.6	96.2				
62. Labor cost/unit of output	80.3	91.6	94.4	86.7	95.0	106.4	103.6	101.2				
64. Mfrs.' inventories, total	n.a.	n.a.	n.a.	74.1	104.3	134.6	111.4	101.7				
66. Consumer instalment debt	n.a.	n.a.	n.a.	68.5	128.2	171.5	141.1	126.0				
67. Bank rate, short-term loans, Q	91.7	91.1	120.0	62.9	88.2	123.9	116.6	110.8				

Tables 10A, 10B, and 10C: Explanatory Notes

Comparisons of the general indexes and most of the individual series in the 1960 NBER list of indicators over various periods of contraction and expansion are shown in these tables. Such tables facilitate evaluation of the current business cycle contraction (or expansion) by showing the amount of contraction (or expansion) that has taken place in each series since the most recent turning point, relative to the amounts of contraction (or expansion) over corresponding intervals of preceding contractions (or expansions).

In Table 10A which compares contractions, the declines are measured from the business cycle peaks, that is, from the peaks in aggregate economic activity. These comparisons span the full interval from the peak in general business preceding the 1960-61 recession (May 1960) to the most recent month for which data are available, and corresponding periods of earlier recessions. Thus the interval between May 1960 and February 1961, covered by the table, is 9 months. Changes over this 9-month period are compared with changes over 9-month periods following the general business peaks preceding the 8 previous recessions. The periods covered in the earlier recessions are January 1920-October 1920, May 1923-February 1924, October 1926-July 1927, August 1929-May 1930, May 1937-February 1938, November 1948-August 1949, July 1953-April 1954, and July 1957-April 1958.

In Table 10B similar comparisons are made for specific cycles of the same series. For the current period, each percentage change is computed for the period between what appears to be the most recent specific peak of the series and the latest data available for the series. Corresponding percentage changes are computed for past recessions over time intervals of the same length. A peak preceding a particular contraction period is defined here as the average of three values: the highest in the appropriate segment of the series (excluding erratic values) and the values immediately preceding and following the highest value. Percentage changes between such peaks and subsequent individual values are presented in index form by letting peak value equal 100 relative to appropriate subsequent values.

As an example, the average workweek reached what appears to be a peak in May 1959. A tentative peak value has been established equal to the average of the April, May, and June 1959 figures. The latest average workweek figure at the time this table was prepared was that for February 1961, which is 21 months later than the tentative peak of May 1959. The index of change computed over this 21-month interval is compared in the table with similar indexes of change over 21-month periods following the peaks preceding eight earlier recessions. Similarly, the index of industrial production appears to have reached a peak in May 1960, 9 months before February

Tables 10A, 10B, and 10C: Explanatory Notes (concluded)

1961, the date of the latest available figure. The current index of change for this series was calculated over this 9-month interval. Indexes of change shown for industrial production for earlier recessions were similarly calculated over 9-month periods following the peaks preceding earlier recessions.

Table 10C compares the percentage rises in 8 expansions. It shows the situation after 25 months of expansion, the full period of the 1958-60 expansion, but somewhat longer than the expansions from July 1921 to May 1923 (22 months) and November 1927 to August 1929 (21 months). The first date shown in the column headings is the business cycle peak, the second date is 25 months after the succeeding business cycle trough, i.e., after 25 months of expansion. The business cycle trough months are: July 1921, July 1924, November 1927, March 1933, June 1938, October 1949, August 1954, and April 1958. Percentage changes are computed from the 8 reference peaks to a fixed number of months—25—after each reference trough. For example, the percentage change in personal income from the reference peak in July 1957, the peak month, to May 1960 was 13.9. Since May 1960 is 25 months after the reference trough in April 1958, the percentage changes in earlier cycles are computed for periods 25 months after the reference trough. The values at the previous reference peaks are used as comparison bases. Thus, the percentage change of 23.5 in personal income, indicated for the 1949 cycle, was computed from the reference peak in November 1948 to the 25th month after the reference trough in October 1949, that is, to November 1951.

Since the principal interest in following recoveries seems to be in comparing the current level with that at the previous peak, the percentage changes in the expansion tables have been added to 100, so that the figures actually show the levels at the "current" month relative to those at the previous reference peak months.

The changes in inventories series (20, 21, and 31) are not included in these tables because series with positive and negative numbers cannot be handled by this technique. Consumer instalment debt (series 66) is not included in Table 10B because the specific cycle decline for the period involved is too short, only one month.

Similar tables are prepared periodically showing the percentage changes from the troughs (see, for example, Table 11).

TABLE 11

COMPARISON OF THREE RECENT EXPANSIONS

Percentage Change in Nine Roughly Coincident Series from Previous Business Cycle Peak and Trough Levels to Levels Fourteen Months After Business Cycle Troughs

	Percentage Change from Business Cycle Peaks		Percentage Change from Business Cycle Troughs			
	Nov. 1948 to Dec. 1950	July 1953 to Oct. 1955	July 1957 to June 1959	Oct. 1949 to Dec. 1950	Aug. 1954 to Oct. 1955	April 1958 to June 1959
Gross national product (current dollars)	+19.5	+10.9	+7.4	+23.7	+13.0	+10.2
Gross national product (1954 dollars)	+12.3	+7.5	+3.7	+14.0	+10.8	+8.0
Personal income	+16.0	+9.2	+8.9	+19.8	+9.3	+9.1
Retail sales	+14.5	+10.2	+7.3	+14.9	+11.1	+11.2
Bank debits outside NYC	+22.0	+16.4	+11.8	+27.1	+14.6	+15.2
Employment in nonagricultural establishments	+3.7	+1.8	-0.1	+8.2	+5.4	+4.5
Nonagricultural employment (household survey)	+3.9	+2.3	+2.0	+4.6	+4.9	+3.6
Industrial production	+18.5	+7.0	+8.0	+27.1	+16.8	+24.7
Unemployment rate (inv.)	-10.0	-40.2	-16.4	+68.0	+36.2	+41.1

activity in general fell to a relatively lower level in 1958 than in the two previous recessions; that is, during the first fourteen months of the 1958-59 expansion the rise had to compensate for the relatively sharp decline in 1957-58. Moreover, in 1950 the economy was strongly stimulated by the Korean War, beginning in June 1950, eight months after the business expansion had begun. These relations are shown in more detail in Chart 5 which compares the patterns of the recessions and expansions since World War II, as traced out by our three amplitude-adjusted general indexes and five individual indicators.

Similar comparisons of diffusion indexes show differences in the scope of the current contraction and previous contractions. Comparisons of the current month with immediately preceding months indicate whether the contraction has become more widespread in recent months. Comparisons for the full period of the contraction indicate whether it is more or less widespread than previous contractions. Thus, comparisons of the comprehensive diffusion indexes for the leading and coincident series in Table 12, made immediately after data for the eleventh month after the May 1960 reference peak became available, indicated that the most recent contraction had been somewhat less widespread than those starting in November 1948 and July 1957 at comparable stages and about as widespread as that starting in July 1953. These comparisons also showed that after eleven months not only had the scope of the 1960 contraction in the leading series become narrower, but most leading series were above their previous business cycle peak levels, and suggested that similar improvement in coincident series was not far away.

This approach can also be useful in measuring the effects of other kinds of short-term fluctuations; for example, it was useful in measuring the impact of the 1959 steel strike on the economy. The percentage declines of a few important economic indicators five months after the steel strike was under way, compared with their declines after the first five months of the 1953-54 and 1957-58 recessions, were as follows:

	<i>% Decline from</i>		<i>% Decline from</i>
	<i>Previous Peak Level</i>	<i>1957-58</i>	<i>June 1959</i>
	<i>1953-54</i>		<i>Level</i>
Industrial production	—8.0	—8.3	—4.5
Nonagricultural employment (establishment survey)	—1.1	—2.4	—0.5
Retail sales	—3.7	—1.1	—0.6
Personal income	—1.2	—0.8	+ 0.3
Bank debits outside N.Y.	—1.6	—1.7	+ 0.2

CHART 5

Comparisons of Cyclical Patterns of Amplitude-Adjusted General Indexes and Selected Individual Indicators

Part A: Four Expansions

From reference trough dates
 July 1924 August 1954
 October 1949 April 1958

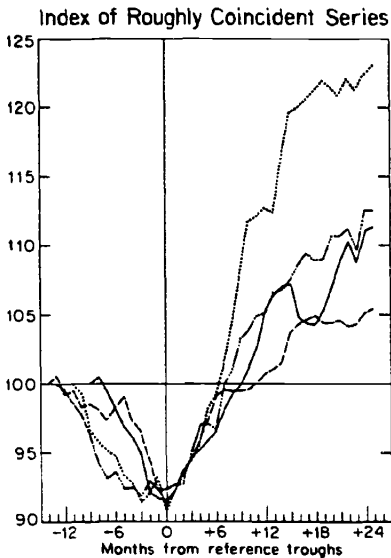
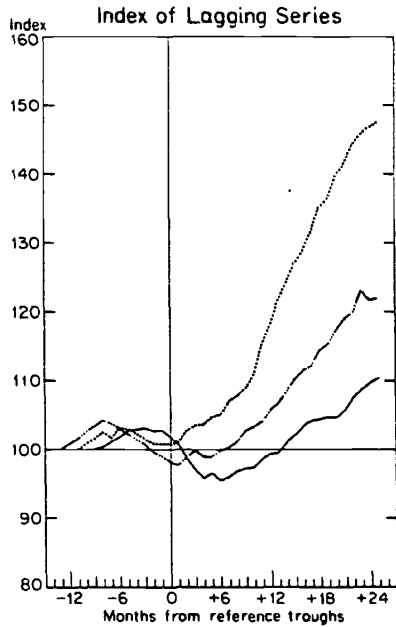
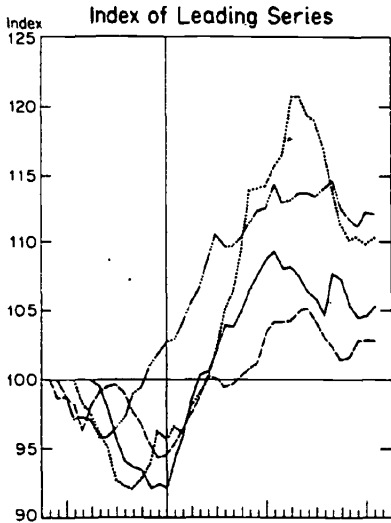


CHART 5 (continued)

Part A: Four Expansions (concluded)

From reference trough dates
 — July 1924 - - - August 1954
 — October 1949 — April 1958

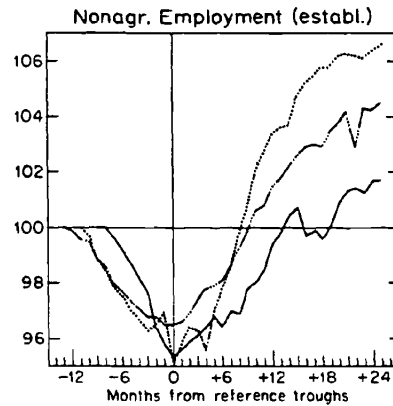
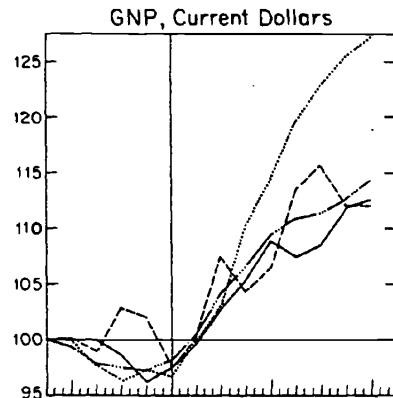
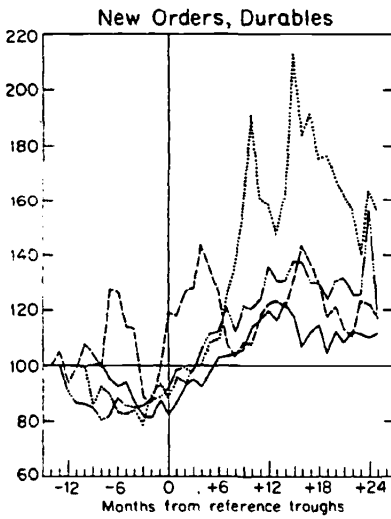
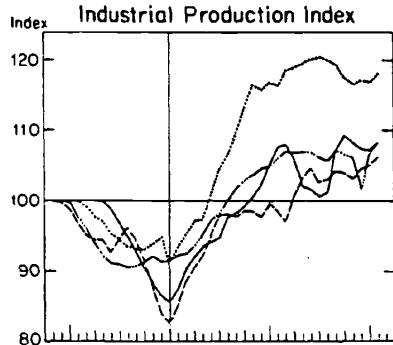
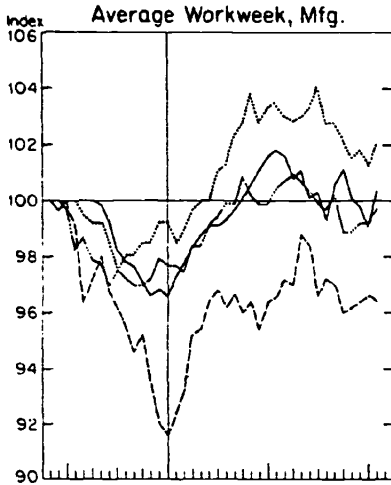


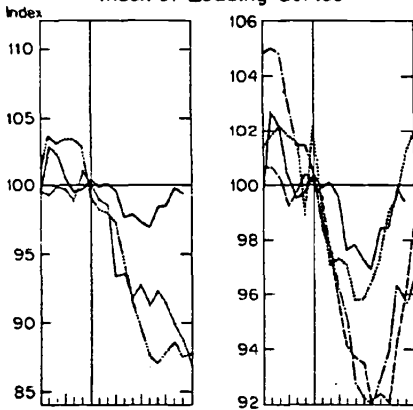
CHART 5 (continued)

Part B: Six Contractions

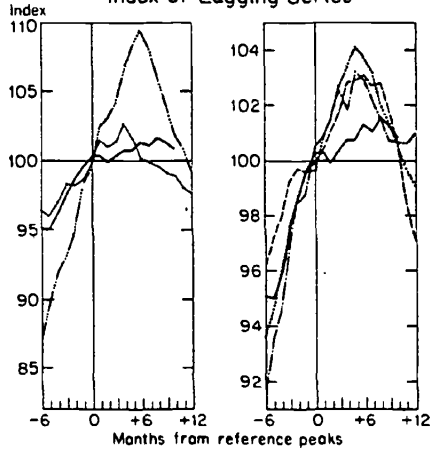
From reference peak dates

— August 1929	— July 1953
— May 1937	— July 1957
— November 1948	— May 1960

Index of Leading Series



Index of Lagging Series



Index of Roughly Coincident Series

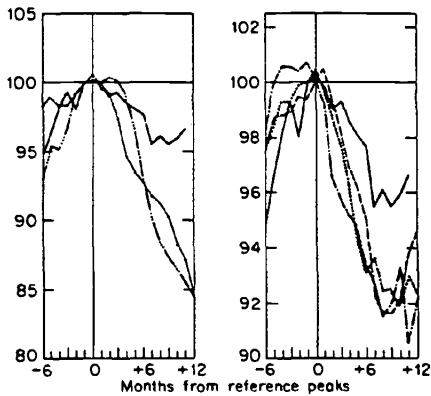


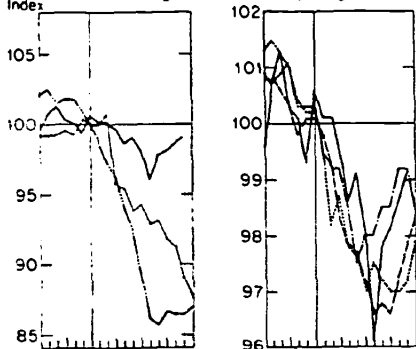
CHART 5 (concluded)

Part B: Six Contractions (concluded)

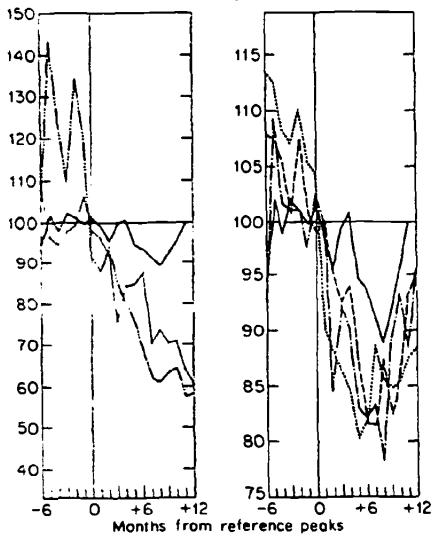
From reference peak dates

— August 1929 July 1953
— May 1937 July 1957
— November 1948 May 1960

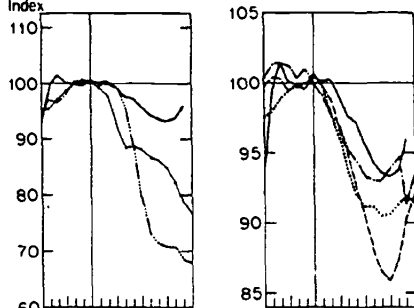
Average Workweek, Mfg.



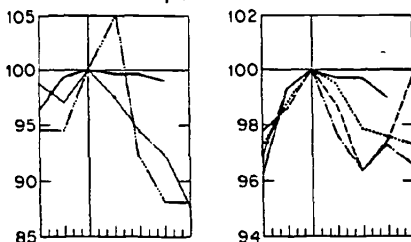
New Orders, Durables



Industrial Production Index



GNP, Current Dollars



Nonagr. Employment (establ.)

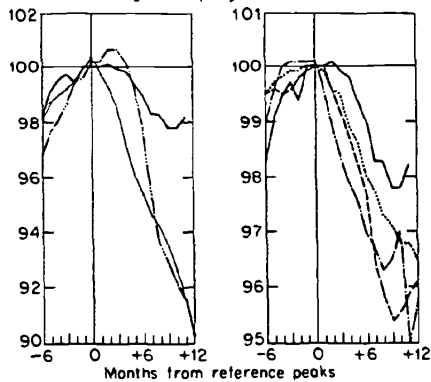


Chart 5: Explanatory Notes

Part A of this chart compares the behavior of three general indexes of leading, lagging, and coincident series and several individual indicators (average work-week, manufacturers' new orders for durable goods, industrial production, gross national product in current dollars, and employees in nonagricultural establishments) over the business cycle phases of four expansions. The data are shown from peaks to the 25th month after troughs. The expansions starting in 1924, 1949, 1954, and 1958 are included because they followed contractions of rather similar severity. In this chart, the trough dates are aligned. The base for computing the percentage change is, however, taken at the level of the previous peak which in each case is set equal to 100. Thus, in this chart the indexes show changes in four recent business cycle expansions from business cycle peak levels over equal periods starting with the business cycle trough dates.

Part B compares the behavior of these general indexes and indicators over the business cycle phases of six contractions. The first bank compares the current contraction (starting May 1960) with the severe contractions starting August 1929 and May 1937, and the second bank the current contraction with the three mild post-World War II contractions starting November 1948, July 1953, and July 1957. In this part, the peak months are aligned; for example, the data for November 1948, July 1953, July 1957, and May 1960 are all set equal to 100 and plotted at the zero point on the horizontal scale. The data for the six months preceding the reference peaks are also plotted.

Thus, in June 1960 the data required to prepare Part A were available. The interval between April 1958, the date of the previous business cycle trough, and May 1960 is 25 months. Inasmuch as the data are plotted with all the business cycle troughs aligned, the expansions all start at the same point on the time scale. However, the contractions do not all start at the same point on the time scale because they all differed in duration.

Since the percentage changes from the previous business cycle peaks (rather than troughs) seem most significant, each of the indexes is expressed as a percentage ratio of previous peak levels. However, similar charts with each of the indexes expressed as a percentage ratio of the previous trough level are also prepared periodically.

The actual computations differ slightly from the explanation given above. The percentages are, in fact, based on 3-month averages centered on the peak months. For this reason, the peak month values plotted in Part B will usually differ from 100.

TABLE 12

PERCENTAGE RISING OF SEVENTY-NINE LEADING AND
FIFTY-SEVEN ROUGHLY COINCIDENT SERIES OVER
SPANS OF ONE TO ELEVEN MONTHS AFTER BUSINESS CYCLE PEAKS

<i>Months After Reference Peaks</i>	<i>Reference Peak Dates</i>			
	November 1948	July 1953	July 1957	May 1960
79 LEADING SERIES				
1	32.9	43.7	27.2	51.3
2	36.1	21.5	20.3	35.4
3	25.3	27.8	8.2	44.3
4	23.4	32.9	13.3	31.0
5	22.8	39.9	11.4	27.8
6	17.7	35.4	9.5	26.6
7	20.9	39.2	14.6	28.5
8	25.9	40.5	17.1	34.2
9	27.8	43.7	17.7	41.8
10	34.8	43.7	19.0	50.0
11	39.9	48.1	20.9	53.8
57 COINCIDENT SERIES				
1	26.3	31.6	48.2	52.6
2	13.2	21.1	28.1	55.3
3	12.3	21.1	16.7	32.5
4	15.8	20.2	10.5	26.3
5	9.6	17.5	7.9	21.9
6	12.3	13.2	5.3	20.2
7	14.9	15.8	6.1	16.7
8	14.9	17.5	4.4	15.8
9	15.8	17.5	5.3	17.5
10	21.1	21.1	7.0	19.3
11	19.3	20.2	11.4	22.8

NOTE: In this table the performance of the 79 leading and the 57 roughly coincident series in the current contraction is compared with their performance in the three most recent contractions. The percentage of series rising is shown from the May 1960 reference peak to 1 month later, 2 months later, 3 months later, etc., up to 11 months later compared with the percentage rising over corresponding spans from 3 previous reference peaks—July 1957, July 1953, and November 1948.

These figures show that this strike not only interrupted the expansion of the economy, but even resulted in a reversal in some important measures, particularly production. The impact of the steel strike upon the economy was not so great, however, as that of the 1953-54 and 1957-58 recessions. Thus, industrial production fell less than 5 per cent during the five months of the steel strike, compared to about 8 per cent during the first five months of the 1953-54 and 1957-58 recessions. Some measures of economic activity, such as bank debits outside New York and personal income, were actually above their June levels in November, though they had been below in earlier strike months.

The declines during the first five months of the strike were also more localized, as can be seen from the following diffusion indexes, which show what percentage of each group was higher after five months than at the outset.

	1953-54 Recession	1957-58 Recession	1959 Strike
Average of leading groups	32	15	28
Average of coincident groups	21	19	46
Industrial production	8	10	36

Similar tables were used to compare the impact of the 1959 steel strike with that of the steel strikes in 1952 and 1956. These showed the effects of the 1959 strike to be both more severe and more widely diffused.

RECORD OF PERFORMANCE

Perhaps the best way to decide how helpful this reporting system has been in interpreting current business cycle developments is to examine the statistical record. This approach seems preferable to reviewing the current reports written by the staff that prepared the monthly report because it is less dependent upon the skill, limitations, or prejudices of particular individuals. The full record is, of course, too voluminous to present here. Our files are complete, however, and the full record is available to research students. A detailed review of the historical record of most of the individual indicators and diffusion indexes is provided in *Business Cycle Indicators*. Here attention is confined to the new summary measures provided in the monthly report.

The record of the most comprehensive indicators is presented in a summary table covering each of the turning dates since 1920, and in other more detailed charts and tables for each of the turning dates since World War II. The leads and lags for the general indexes, their three-month adjusted rates of change, and corresponding diffusion

indexes (where available) are given in Table 13. The general index for the lagging series (including labor cost per unit of output, inventories, and consumer debt) is included in the table twice. First, it has been inverted in the usual way so that its peaks are compared with subsequent business cycle troughs and its troughs with subsequent business cycle peaks. In this way it illustrates the continuous, cumulative, and interacting nature of the business cycle and provides some basis for anticipating the behavior of the leading series. The index for the lagging series is also shown in positive form, with its peaks matched with business cycle peaks and its troughs with business cycle troughs.

The table provides a bird's-eye view of the performance of these series from 1920 to 1960. It reveals both the strength and limitations of this approach. On the one hand, it shows measures that would have been helpful currently in identifying cyclical reversals since 1920. The inverted general index for the lagging series led at every turn for which it is available, though sometimes by very long intervals, i.e., nearly the whole of the expansion or contraction interval. The general index of the leading series led at fourteen turning points and coincided at only two, the abrupt upturns in 1933 and 1958. The general index of the coincident series was in fact roughly coincident (within three months of the NBER reference dates) at every turn; there were nine exact coincidences, five short leads, and three short lags. The general index of the lagging series, which is available for eleven turning points, lagged in every case except the trough in 1949 when it was coincident. The record of the sequence of these series is also quite consistent: the inverted lagging series led the leading series in all cases; the leading led the coincident series in all cases, except the coincidences at the troughs in 1933 and 1958. The coincident led the lagging series in all cases except for the coincidence at the trough in 1949.

The performance of the comprehensive diffusion indexes and adjusted rates of change was even more consistent: they led at every turning point without exception. These series are, however, more irregular than the corresponding aggregates, so that it is more difficult (i.e., it takes longer) to identify their turns currently. The comprehensive current diffusion indexes led by seven or more months at all turns for which they are available, except in 1948 and 1958; here the comprehensive index for the coincident series led only by four and two months, respectively. Furthermore, the comprehensive diffusion index of leading series led the comprehensive diffusion index of coincident series in all cases except 1953, when it was coincident. The adjusted rates of change series performed very similarly to the corresponding diffusion indexes.

This record is shown in greater detail in Chart 6 for each of the peaks since World War II (November 1948, July 1953, July 1957, and

TABLE 13

TIMING OF GENERAL INDEXES, COMPREHENSIVE DIFFUSION INDEXES, AND ADJUSTED RATES OF CHANGE AROUND PEAKS AND TROUGHS, 1920-60

	<i>Peak</i>								
	Jan. 1920	May 1923	Oct. 1926	Aug. 1929	May 1937	Nov. 1948	July 1953	July 1957	May 1960
<i>General Indexes</i>									
Lagging, inverted	n.a.	n.a.	n.a.	n.a.	-47	n.a.	-45	-34	-19
Leading	- 6	- 2	-10	- 1	- 5	n.a.	- 7°	-15	-12
Coincident	0	+ 1	- 1	0	+ 2	- 1	0	+ 1	0
Lagging	n.a.	n.a.	n.a.	+ 4	+ 6	+ 5	+ 5	+ 6	+ 8
<i>Diffusion Indexes</i>									
79 leading (3-mo.)	n.a.	n.a.	n.a.	n.a.	n.a.	- 7	- 9°	-29	-22
57 coincident (3-mo.)	n.a.	n.a.	n.a.	n.a.	n.a.	- 4	- 9°	-26	-13
153 series (12-mo. moving average)	n.a.	- 8	-21	-10	- 8	- 9	- 6°	n.a.	n.a.
<i>Adjusted Rates of Change</i>									
Leading	n.a.	-21	-22	- 1	-28	- 7	-10	-30	-22
Coincident	- 6	-12	-21	- 1	- 5	- 5	-10	-28	-13
	<i>Trough</i>								
	July 1921	July 1924	Nov. 1927	Mar. 1933	June 1938	Oct. 1949	Aug. 1954	Apr. 1958	
<i>General Indexes</i>									
Lagging, inverted	n.a.	n.a.	n.a.	-39	- 7	- 6	- 8	- 3	
Leading	- 6	- 1	-19	0	- 5	- 4	- 7	0	
Coincident	0	0	- 1	0	- 1	0	- 3	0	
Lagging	n.a.	n.a.	n.a.	+ 3	+ 5	0	+ 1	+ 6	
<i>Diffusion Indexes</i>									
79 leading (3-mo.)	n.a.	n.a.	n.a.	n.a.	n.a.	-14	-15	- 7	
57 coincident (3-mo.)	n.a.	n.a.	n.a.	n.a.	n.a.	- 9	- 8	- 2	
153 series (12-mo. moving average)	- 7	- 7	- 8	-16	- 5	- 6	- 7	n.a.	
<i>Adjusted Rates of Change</i>									
Leading	- 7	- 2	-22	-11	- 8	- 6	-12	- 6	
Coincident	- 7	- 2	- 2	-10	- 7	- 9	- 8	- 2	

*Korean War period high disregarded in selecting peak.

May 1960) and troughs (October 1949, August 1954, and April 1958). The amplitude-adjusted indexes for the leading, coincident, and lagging series and the comprehensive diffusion indexes for the leading and the coincident series are shown for a succession of dates—those occurring three months before each turning point, at each turning point, and three and six months after each turning point. The timing distributions and the percentage of series currently high are shown for the same periods in Tables 14 and 15 (except for the May 1960 peak which is shown in Table 5). Finally, the cyclical rankings for the index of the leading and the coincident series are shown in Table 16 for each of the twelve months after the post-World War I peaks, along with the ultimate rankings of the average coincident series. The correlations of the rankings each month of both the leading and the coincident series with the ultimate ranking of the coincident series are given in the last column.

A close look at the record since World War II, as portrayed in these charts and tables, supports the view that there were some early warning signals for every postwar reversal. The general index of the leading series, the adjusted rates of change, the diffusion indexes of the leading and the coincident series, and the timing distributions all served as bellwethers. Let us consider, for example, the performance of these measures around the peak in July 1953 and the trough in August 1954 (Chart 6, Parts C and D). Three months before the 1953 peak, i.e., in April, the general index of the leading series had been wavering for three months, while the diffusion index for the leading series had been declining for six months and that for the coincident series for four months. The timing distribution showed only two of twenty-one leading series currently at peak levels. At the July 1953 peak, when data were available for June, the general index and the comprehensive diffusion index for the leading series were clearly declining. In addition, the general index for the coincident series had leveled off. While the timing distribution for the coincident series showed a plurality of series currently at high points, more than half were short of their peak levels, suggesting that a peak had been passed or was imminent. There was no sign of weakness in the lagging series. Three months later, in October, the leading indicators continued to follow the classic pattern, and in addition the general index of the coincident series was headed down. The timing distribution showed that not a single coincident series had exceeded its earlier high in the past two months, and the peak in one of the lagging series appeared to have been passed. Conclusive evidence that a peak had been passed was shown by the picture three months later; indeed, there was already some evidence, in the rise of the diffusion index for the leading series, that recovery forces were making themselves felt.

CHART 6

Standings of Key Indicators at Several Points Around Peaks and Troughs Since World War II

Part A: November 1948 Peak

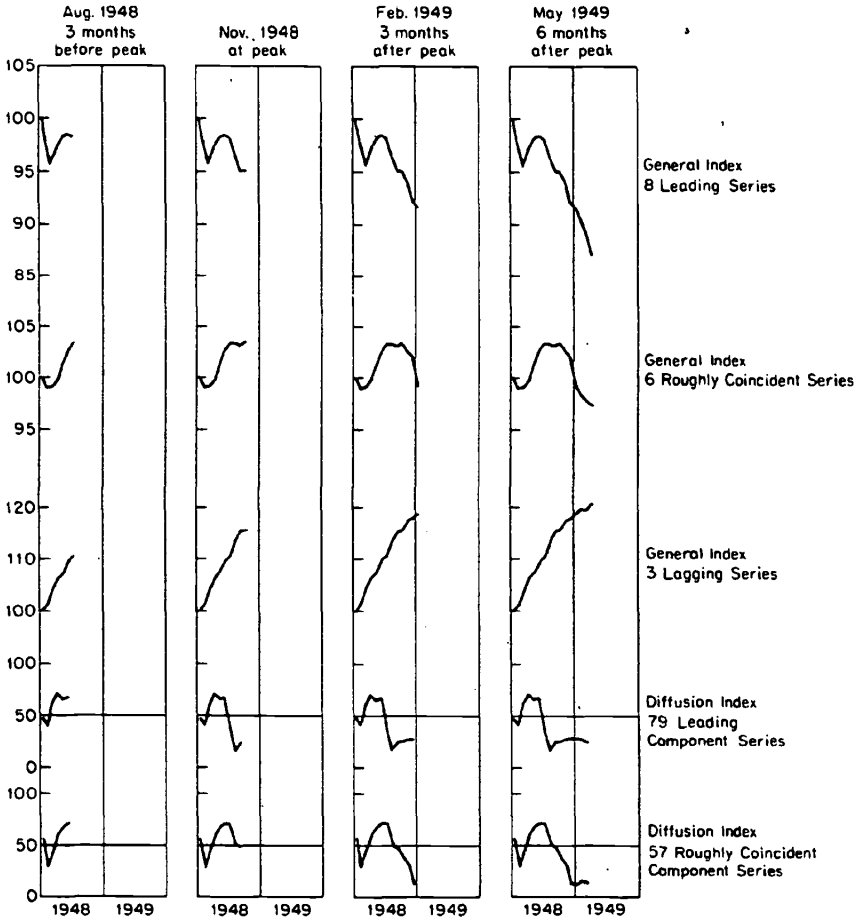


CHART 6 (continued)
Part B: October 1949 Trough

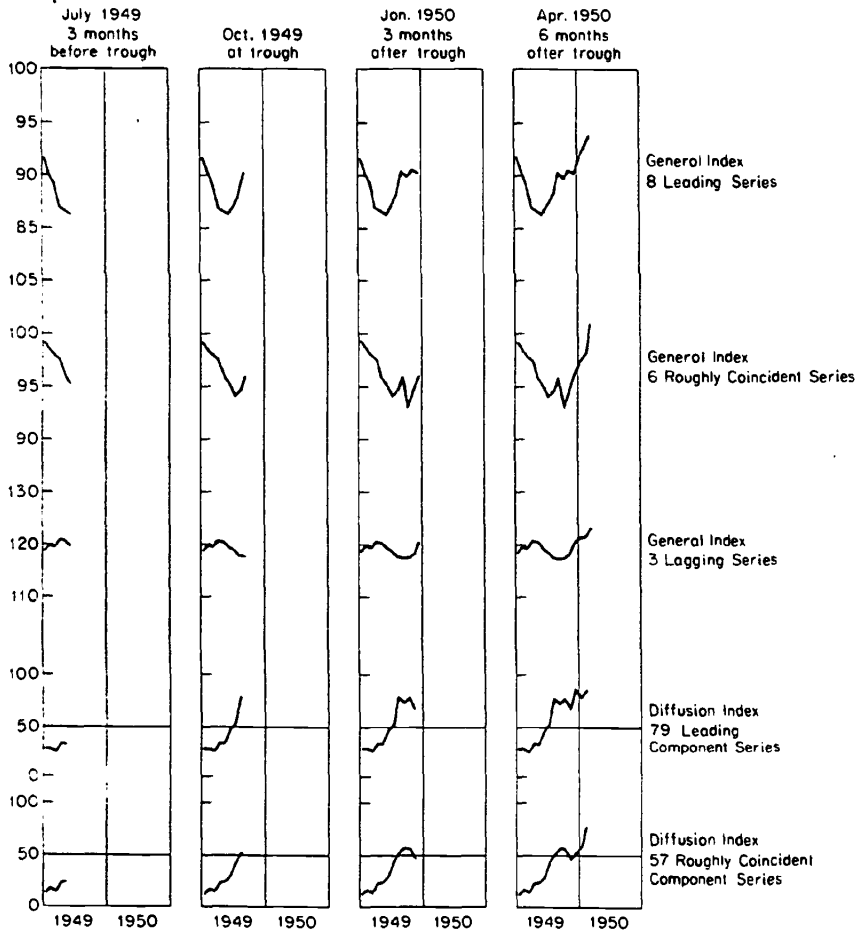


CHART 6 (continued)

Part C: July 1953 Peak

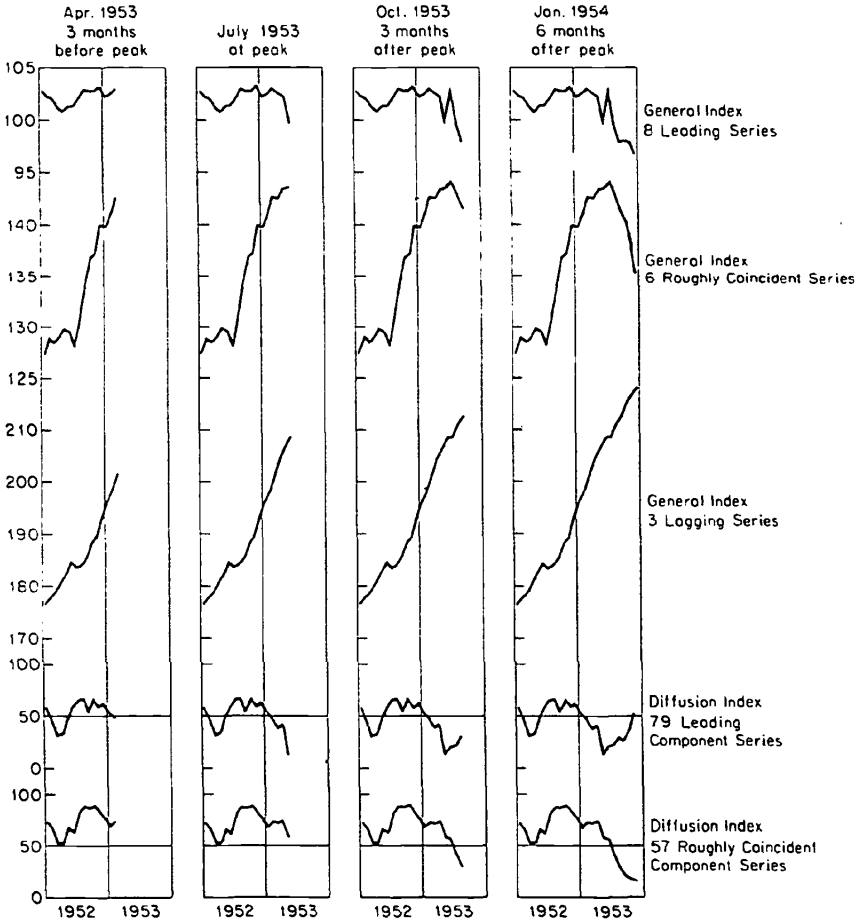


CHART 6 (continued)
Part D: August 1954 Trough

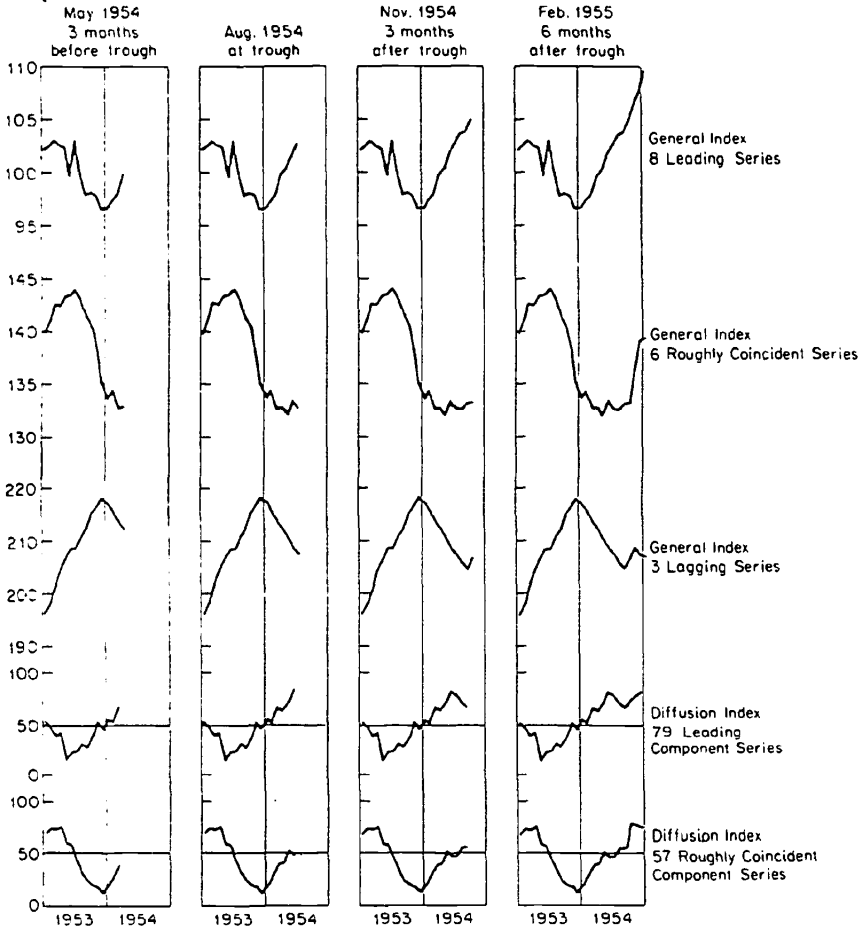


CHART 6 (continued)

Part E: July 1957 Peak

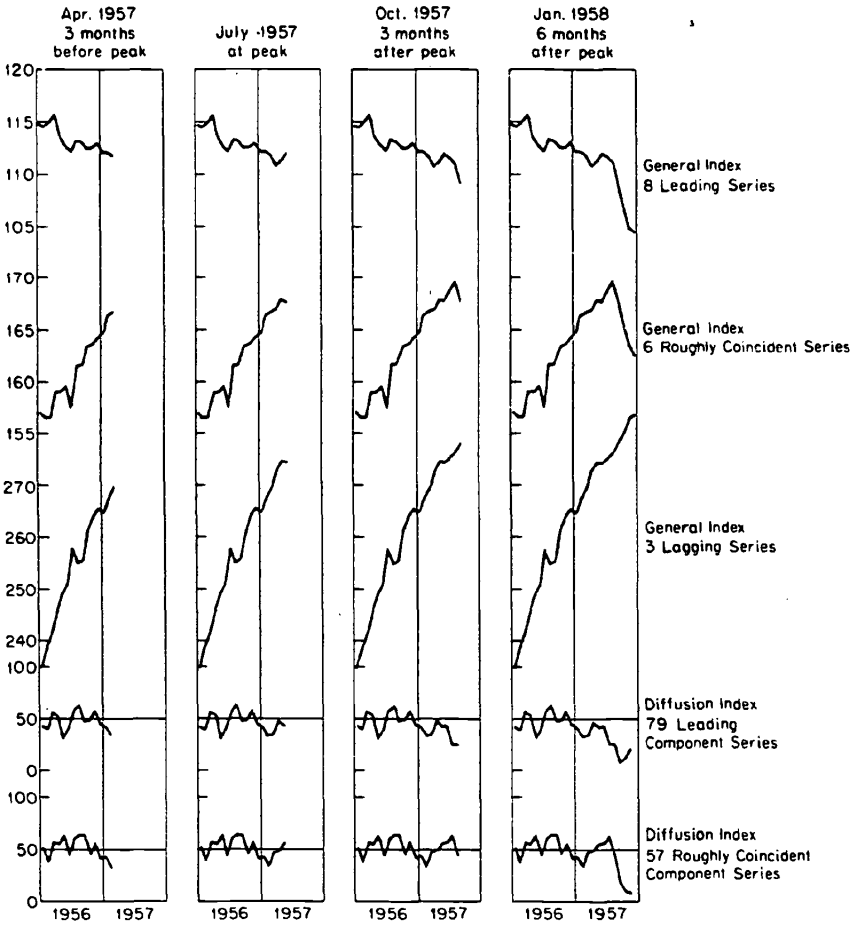


CHART 6 (continued)
Part F: April 1958 Trough

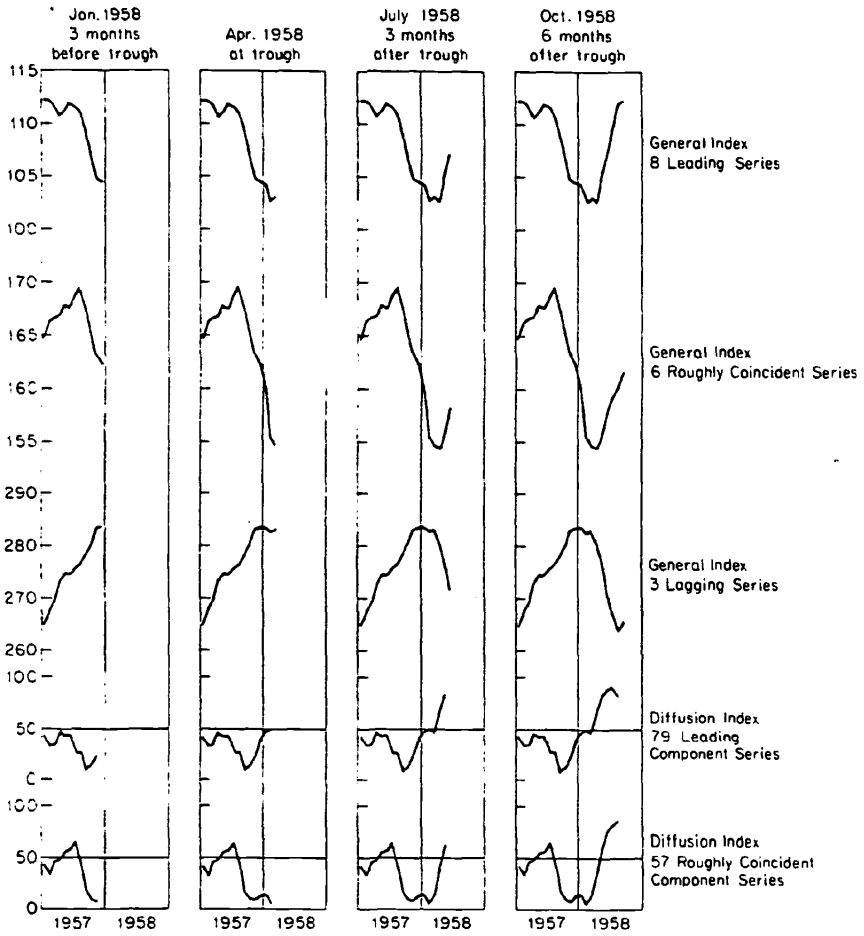
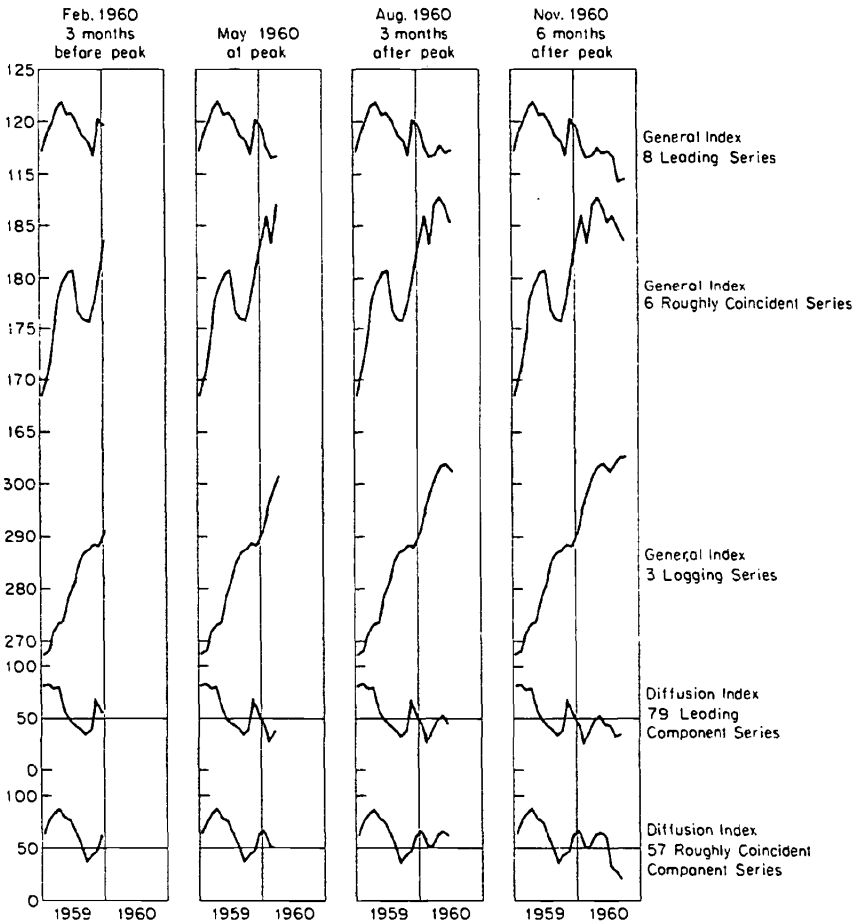


CHART 6 (concluded)

Part G: May 1960 Peak



NOTE: The figures available at the times indicated were slightly different from those shown above because of revisions. See *Business Cycle Indicators*, Chapter 18, pp. 610-614.

The latest figures plotted above are those that became available in the month specified and cover the preceding month. The diffusion indexes are measured over 3-month spans.

TABLE 14

DISTRIBUTION OF HIGHS IN BUSINESS CYCLE INDICATORS AT SELECTED MONTHS
AROUND NOVEMBER 1948, JULY 1953, AND JULY 1957 PEAKS

PART A: NOVEMBER 1948 PEAK

	STATUS AS OF															
	August 1948				November 1948				February 1949				April 1949			
	Coin-		Coin-		Coin-		Coin-		Coin-		Coin-		Coin-		Coin-	
	Leading	Lagging	Leading	Lagging	Leading	Lagging	Leading	Lagging	Leading	Lagging	Leading	Lagging	Leading	Lagging	Leading	Lagging
	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q
May 1947	1				1						1					
June																
July					1						1					
Aug.	1				1						1					
Sept.	1		1		1		1				1				1	
Oct.	3		3		3		3				3					
Nov.	1		1		1		1				1				1	
Dec.	2		2		2		2				2				2	
Jan. 1948	3		3		3		3				3				3	
Feb.																
Mar.	1		2		1		1		1		1		1		1	
Apr.																
May	1		1		1		1				1				1	
June	5	2	1	5	1		5	1			5	1			5	1
July	1	10	4		4		4				4				4	
Aug.					2		2				2				2	
Sept.					1	3	2	1	2		1	3	1		1	3
Oct.					1	1	1	3	1		1	1	3	1	1	3
Nov.																
Dec.																
Jan. 1949																
Feb.																
Mar.																
Per cent																
currently high	5.6	71.4	100.0	5.6	7.1	75.0	0	0	75.0	0	75.0	0	0	50.0	0	50.0

NOTE: The figures shown above are those that became available in the month specified and cover the preceding month. The number of series included is: leading, 18 monthly (M) and 4 quarterly (Q); coincident, 14 monthly and 2 quarterly; lagging, 4 monthly and 3 quarterly. Quarterly highs are placed in the last month of the high quarter.

TABLE 14 (continued)

PART B: JULY 1953 PEAK

STATUS AS OF

	April 1953												July 1953												October 1953												December 1953											
	Leading cident				Lagging				Coin-cident				Leading				Lagging				Coin-cident				Leading				Lagging				Coin-cident				Leading				Lagging							
	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q								
May 1952	3								3																																							
June	1				1				1																																							
July																																																
Aug.	3								3																																							
Sept.	4				1				4																																							
Oct.	1																																															
Nov.	2				1				1																																							
Dec.	3				1				2																																							
Jan. 1953	2								2																																							
Feb.					1																																											
Mar.	2				3				2																																							
Apr.																																																
May	2								2																																							
June																																																
July																																																
Aug.																																																
Sept.																																																
Oct.																																																
Nov.																																																
Dec.																																																
Per cent currently high	9.5				71.4				0				35.7				100.0				0				0				75.0				0				0				0				75.0			

NOTE: The figures shown above are those that became available in the month specified and cover the preceding month. The number of series included is: leading, 21 monthly (M) and 4 quarterly (Q); coincident, 14 monthly and 2 quarterly; lagging, 4 monthly and 3 quarterly. Quarterly highs are placed in the last month of the high quarter.

TABLE 14 (concluded)
PART C: JULY 1957 PEAK

	STATUS AS OF															
	April 1957				July 1957				October 1957				December 1957			
	Coin-		Coin-		Coin-		Coin-		Coin-		Coin-		Coin-		Coin-	
Lending	Lagging	Lending	Lagging	Lending	Lagging	Lending	Lagging	Lending	Lagging	Lending	Lagging	Lending	Lagging	Lending	Lagging	
M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	
May 1955	2					2				2				2		
June																
July	1					1				1				1		
Aug.																
Sept.	1					1				1				1		
Oct.	1					1				1				1		
Nov.	2	1				2	1			2	1			2	1	
Dec.	4	3				4	3			4	3			4	3	
Jan. 1956																
Feb.	2					2				2				2		
Mar.	2	1				2	1			2	1			2	1	
Apr.	2	1				2	1			2	1			2	1	
May																
June	1					1				1				1		
July	1		1			1		1		1		1		1		
Aug.	1		1			1		1		1		1		1		
Sept.																
Oct.	2	1				2	1			2	1			2	1	
Nov.																
Dec.	1	1				1	1			1	1			1	1	
Jan. 1957																
Feb.	3					1				1				1		
Mar.	7	2	3	3		4				3				3		
Apr.								1								
May						1		1		1				1		
June						5	2	2	3	3				3		
July										2	1			2	1	
Aug.										1	2	3	3	1	2	
Sept.																
Oct.																
Nov.																
Dec.																
Per cent	0	50.0	75.0	0	35.7	50.0	0	7.1	75.0	0	50.0	0	0	50.0	0	
currently high																

Note: The figures shown above are those that became available in the month specified and cover the preceding month. The number of series included is: leading, 23 monthly (M) and 4 quarterly (Q); coincident, 14 monthly and 2 quarterly; lagging, 4 monthly and 3 quarterly. Quarterly highs are placed in the last month of the high quarter.

TABLE 15

DISTRIBUTION OF LOWS IN BUSINESS CYCLE INDICATORS AT SELECTED MONTHS
AROUND OCTOBER 1949, AUGUST 1954, AND APRIL 1958 TROUGHS

PART A: OCTOBER 1949 TROUGH

	STATUS AS OF																
	July 1949				October 1949				January 1950				April 1950				
	Leading		Lagging		Coin- cident		Leading		Lagging		Coin- cident		Leading		Lagging		
M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q
Jan. 1949	3	1			3	1			2	1			2	1			
Feb.	2				2				2				2				
Mar.								2									
Apr.	2				2			2					2				
May	6	2			3			3					3				
June	7	3	11	2	2	2	2	5	2	2	2	2	5	2	2	2	2
July					2			2					2				
Aug.					4			4					4				
Sept.					1	4		3	3	1			2	1			
Oct.								1					1				
Nov.													1				
Dec.																	
Jan. 1950																	
Feb.																	
Mar.																	
Apr.																	
Per cent currently low	33.3	78.6	50.0	0	28.6	75.0	0	7.1	0	7.1	0	0	0	0	0	0	25.0

Note: The figures shown above are those that became available in the month specified and cover the preceding month. The number of series included is: leading, 21 monthly (M) and 3 quarterly (Q); coincident, 14 monthly and 2 quarterly; lagging, 4 monthly and 3 quarterly. Quarterly lows are placed in the last month of the low quarter.

TABLE 15 (continued)

PART II: AUGUST 1954 THROUGH

	STATUS AS OF															
	May 1954				August 1954				November 1954				February 1955			
	Coin-		Coin-		Coin-		Coin-		Coin-		Coin-		Coin-			
Leading	Lagging	Leading	Lagging	Leading	Lagging	Leading	Lagging	Leading	Lagging	Leading	Lagging	Leading	Lagging			
M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q			
Nov. 1953	2					2				2						
Dec.	6	3			6	3				6	3					
Jan. 1954	1	2			1	2				1	2					
Feb.	3				3					3						
Mar.	4	1	4	2	1	3	4	1	3	1	3	3	1			
Apr.	3	8	3		3		1		3			3				
May						4										
June							2	1	2			2	1			
July							4	3								
Aug.									1			1	2			
Sept.									1			3	3			
Oct.												1	5			
Nov.																
Dec.																
Jan. 1955																
Feb.													1			
Per cent currently low	14.3	57.1	0	75.0	0	28.6	75.0	0	0	0	0	0	25.0			

NOTE: The figures shown above are those that became available in the month specified and cover the preceding month. The number of series included is: leading, 21 monthly (M) and 4 quarterly (Q); coincident, 14 monthly and 2 quarterly; lagging, 4 monthly and 3 quarterly. Quarterly lows are placed in the last month of the low quarter.

TABLE 15 (concluded)

PART C: APRIL 1958 TROUGH

	STATUS AS OF															
	January 1958				April 1958				July 1958				October 1958			
	Leading	Lagging	Leading	Lagging	Leading	Lagging	Leading	Lagging	Leading	Lagging	Leading	Lagging	Leading	Lagging	Leading	Lagging
July 1957																
Aug.																
Sept.	1															
Oct.	4	1														
Nov.	4	2														
Dec.	15	3	1	1	2											
Jan. 1958																
Feb.																
Mar.																
Apr.																
May																
June																
July																
Aug.																
Sept.																
Oct.																
Per cent currently low	65.2	78.6	25.0	26.1	71.4	75.0	4.3	14.3	100.0	0	0	75.0				

NOTE: The figures shown above are those that became available in the month specified and cover the preceding month. The number of series included is: leading, 23 monthly (M) and 4 quarterly (Q); coincident, 14 monthly and 2 quarterly; lagging, 4 monthly and 3 quarterly. Quarterly lows are placed in the last month of the low quarter.

TABLE 16

SEVERITY RANKINGS OF EIGHT CONTRACTIONS SINCE 1920
FROM ONE TO TWELVE MONTHS AFTER REFERENCE PEAKS

Months After Reference Peak	Contraction Period Beginning in								Rank Correlation with Ultimate Severity ^a
	Jan. 1920	May 1923	Oct. 1926	Aug. 1929	May 1937	Nov. 1948	July 1953	July 1957	
PART A: RANKING BASED ON GENERAL INDEX OF 8 LEADING SERIES									
1	5.5	7	1	4	3	5.5	8	2	— .10
2	5.5	3	3	5.5	1	7	8	3	— .23
3	2	4	1	8	3	6	7	5	.21
4	6	5	1	8	7	3	2	4	.98
5	6	2	1	8	7	5	3	4	.88
6	6	2	1	7	8	5	3	4	.86
7	6	2	1	7	8	5	3	4	.86
8	7	2	1	6	8	5	3	4	.81
9	7	2	1	6	8	4	3	5	.86
10	7.5	3.5	1	6	7.5	3.5	2	5	.92
11	8	5	1	6	7	4	2	3	.83
12	8	5	1	7	6	4	2	3	.86
PART B: RANKING BASED ON GENERAL INDEX OF 6 COINCIDENT SERIES									
1	8	1	5	7	3	5	5	2	.19
2	6	4.5	2	7	1	8	4.5	3	.12
3	7	3	2	8	1	6	5	4	.31
4	7	4	1	8	2	6	5	3	.43
5	6	2	1	8	5	4	7	3	.55
6	6	2	1	8	7	4	5	3	.79
7	6	2	1	7	8	4	3	5	.90
8	6	2	1	7	8	5	3	4	.86
9	7	2	1	6	8	4	3	5	.86
10	8	2	1	6	7	3	5	4	.74
11	8	2	1	7	6	5	4	3	.74
12	8	5	1	7	6	4	3	2	.79
Ultimate ranking of coincident series	6	4	1	8	7	3	2	5	

^aIf the ranks in a given row were identical with the ultimate ranks of coincident series (bottom row), the correlation would be 1.00.

NOTE: Rankings are based on rates of declines in the general indexes. Rank 1 indicates the mildest decline and rank 8 indicates the severest decline.

Three months before the 1954 trough, the general index of the leading series had been rising for four months, the diffusion index for the leading series had been rising for ten months, and the diffusion index for the coincident series for four months. In addition, the diffusion index for the leading series was well above 50. Also, the general index for the coincident series showed signs of leveling off. (Two of the most important coincident series—industrial production and retail sales—were both above their lowest levels.) In the trough month, when data for the previous month were available, the general index for the leading series and the diffusion indexes showed still further improvement. The general index for the coincident series was at a low level, but slightly above the figures a few months earlier. Three months after the trough, the general index for the coincident series had risen significantly, and the general index for the lagging series had also started up. Three more months later—six months after the trough—there could be no doubt that an expansion was well under way. With some modifications in language and figures, this description applies to the other postwar peaks and troughs.

The difference in the performance of the general index of the leading series and the diffusion indexes around postwar business cycle peaks and troughs is noteworthy. The leads of the general index were reasonably long and clear at peaks. The diffusion indexes also led at peaks, but their movements were quite erratic. There were large fluctuations around 50 per cent in 1951 and early 1952 and again in 1956 and 1959. On the other hand, the leads of the general indexes around the postwar troughs were quite short (-4 , -7 , and 0), while the lead of the diffusion indexes (and adjusted rates of change), particularly for the leading series, were substantial and the upward path of the curves fairly smooth.

The record also shows (Table 16) that it has been possible to make a fairly good judgment on the ultimate relative severity of a contraction only a few months after the business cycle peak is reached, and shortly after it has been identified. The relative severity of the contractions fell into approximately their ultimate positions in the general index of the leading series after only four months and in the general index of the coincident series after six or seven months.¹⁴ Findings from similar studies of expansions can also be helpful. Thus, it was clear after fourteen months of the 1958-59 expansion, just before the 1959 steel strike, that despite the temporary stimulus of the preparations for the strike, this expansion was less vigorous than the two previous postwar

¹⁴ For a fuller discussion of this technique for making an early judgment on the ultimate severity of a recession, see "Measuring Recessions," by Geoffrey H. Moore, *Business Cycle Indicators*, Volume I, Chapter 5.

recessions. It did not quite attain the same levels relative to the previous peak in 1955 and was well below 1950. Immediately after the strike, the failure of new orders, the workweek, and other leading indicators to rise appreciably, if at all, above their prestrike levels raised further doubts about its future vigor and duration.

There is another side to this story—the indicators occasionally give false signals. Sometimes these are easy to explain, for example, most of the leading business indicators pointed to a reversal of the upward trend of the economy in 1951. Both the general indexes and the diffusion indexes started down early that year, as did some of the important leading indicators, such as the average workweek, new orders for durable goods, and commercial and industrial construction contracts. Housing starts and new business incorporations had started down even earlier. The explanation for these declines in the face of a continued rise in aggregate economic activity (though at a perceptibly slower rate) seems fairly clear. Shortly after the Korean War started in June 1950, many steps were taken to build up our defense facilities, and for a time both defense and nondefense industries prospered, especially since recovery from the 1948-49 recession was still in process. Later, however, a number of nondefense industries experienced contractions, but these were offset by expansion in defense industries so that aggregate activity continued to rise. The mixed character of the expansion was reflected in the diffusion indexes and in many of the leading indicators.

Another example, but of a quite different nature, is provided by the situation in the summer of 1959. Again the diffusion indexes for both the leading and coincident series declined, the general indexes declined, and many important individual leading indicators declined. These declines were widely interpreted as due to the steel strike and were heavily discounted. They were, of course, followed by widespread rises immediately after the strike settlement in December. In this case it is, however, also possible that some of the declines heralded a recession which was temporarily deferred by the strike.

The situation in the middle of 1956 is more difficult to explain. During this period, the diffusion indexes which had been declining hovered around 50 and actually fell substantially below that figure several times. Similarly, the general index for the leading series started to decline. Some of the more important leading series were declining: for example, average hours worked, housing starts, new investment orders and contracts, the net change in the number of new businesses, and corporate profits. Most of these declines were, however, arrested and reversed later in the year. At any rate, a recession which seemed fairly imminent in the middle of 1956 actually did not get under way until a year later, although there was little further increase in

aggregate activity in the interim. Just before the contraction did start, the signs of it were no more decisive than they had been about a year earlier; for example, shortly before the business cycle peak in July 1957, stock prices, housing starts, and the general index for the leading series were rising. The comprehensive one-month diffusion index for the leading series fluctuated around 50 until July 1957, and the one-month comprehensive diffusion index for the coincident series rose in May and June 1957 and stood above 50 in these two months and July as well. Although the 1956 steel strike was short (30 days—from June 30 to July 30), uncertainties arising from it may have played an important role in these movements. A thorough study of the performance of the indicators in relation to economic developments during this period would be well worthwhile.

The variations in the leads and the occasional coincidences are further warnings of the pitfalls facing the user of these materials; for example, occasionally the turn comes swiftly, and while its arrival may be anticipated, the timing cannot be. This is well illustrated by the 1958 revival. One important group of indicators did show early evidence that the recession was coming to an end—the diffusion indexes for the leading series. The comprehensive diffusion index for the leading series turned up during the winter of 1957 and continued almost uninterruptedly upward. The diffusion indexes for almost all the important groups of leading series had turned up: for example, hours worked, new orders, stock prices, and industrial materials prices. At the month of the trough the leads were, however, shorter than at the troughs of the preceding two recessions. Thus, the comprehensive index for the leading series turned up fourteen months in advance of the 1949 trough and fifteen months in advance of the 1954 trough, but only seven months in advance of the 1958 trough.

The upturns in the leading series themselves gave little advance notice of the 1958 revival. Thus, the timing distributions in Table 17 show that, of the twenty-five leading series, thirteen were currently at their lowest level to date in January 1958, while in February as many as sixteen were in this position. By March the number of new lows had dropped to nine, and it remained there in April. In May only one reached a new low. Thus, both the March and April figures for the leading series as a group showed significant improvement, but these, of course, occurred at or immediately before the actual trough date.

On occasion, the leads are very long. In an economy that has been characterized for more than a hundred years by alternate waves of expansion and contraction averaging thirty and twenty months respectively, a signal twenty months in advance may be misleading. However, if the business analyst takes into account not only the record of leads

TABLE 17

DISTRIBUTION OF LOWS IN BUSINESS CYCLE INDICATORS DURING 1957-58 CONTRACTION

	STATUS AS OF																	
	February 1958		March 1958		April 1958		May 1958		June 1958		July 1958							
	Leading	Coin-	Leading	Coin-	Leading	Coin-	Leading	Coin-	Leading	Coin-	Leading	Coin-						
	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	M	Q	
July 1957																		
Aug.																		
Sept.																		
Oct.	3		2		1		1		1		1		1		1		1	
Nov.	2		1		1													
Dec.	7		2		2		2		2		2		2		2		2	
Jan. 1958	13	4	9	3	4	4	3	2	4	3	2	3	2	3	2	3	1	3
Feb.			16	12	10	3	8	3	9	3	8	3	8	3	8	3	8	3
Mar.					9	9	3	3	1	3	1	3	1	3	1	3	1	3
Apr.							9	1	8	8	1	7	7	1	7	1	7	1
May										1	1	1	1	1	1	1	1	1
June																		
Per cent	52	75	64	100	36	75	36	67	4	8	8	8	8	8	8	8	8	8
currently low																		

NOTE: The figures shown above are those that became available in the month specified and cover the preceding month. The number of series included is: leading, 25 monthly (M) and 4 quarterly (Q); coincident, 12 monthly and 3 quarterly. Quarterly lows are placed in the last month of the low quarter. This table was prepared at a later date than Table 15 and includes more series. For this reason, the figures under the April and July headings in the two tables differ somewhat.

and lags but also the rate and extent of the decline after a high has been reached in a particular indicator, the degree to which its behavior is consistent with other evidence relating to the same economic process, its consilience with evidence on other economic processes, a long lead may not result in a misinterpretation of the situation. Nevertheless, there are undoubtedly occasions when this happens.

Another problem is that it is frequently difficult to distinguish between cyclical and irregular movements. Sometimes movements which appear to be cyclical changes, after allowing for irregular fluctuations, prove abortive and are reversed after a few months, as before the troughs in 1924 and 1933 and during the expansion of 1933-37.

Furthermore, the precise date of a business cycle peak or trough often remains uncertain for years afterward, partly because of revisions in data, but primarily because of the varying configuration of different measures of aggregate activity. Consequently, precision in this matter should not be expected in advance. Often the peak or trough month cannot be confidently specified until at least several months after it has passed. Thus, the July 1957 peak was somewhat more difficult to identify than the July 1953 one, since there were more lags and greater dispersion of turning dates (see Table 18). The May 1960 peak was also difficult to specify because of the relatively slight changes in the level of activity during the whole period from February to July. There is also doubt about some of the trough dates. For example, at this writing, in April 1961, it is not certain whether the 1954 trough should be dated in August or a few months earlier.¹⁵

There are also problems on the statistical side. The analyst of current business conditions depends heavily upon preliminary figures, which sometimes are only rough approximations of the more accurate final figures. Seasonal adjustment factors are always based upon historical data, and the implicit assumption of their applicability to current data involves a margin of error. The smoothing of series, which can accomplish much for historical time series, is considerably less useful on a current basis. That is, there are many satisfactory smoothing formulae for eliminating the irregular factor from historical series so that the underlying trends are clearly exposed; they cannot, however, be applied to current figures because the data for the future months needed for the computations are not available. Such limitations of the data are probably most significant at the very time when the greatest accuracy is required—around business cycle turning points. At such critical stages of the cycle, the magnitude of the cyclical changes is frequently smaller than at other stages.

¹⁵ For a discussion of the National Bureau methods of selecting business cycle turning dates, see *Measuring Business Cycles*, pp. 71-114.

TABLE 18

DISPERSION ABOUT BUSINESS CYCLE PEAKS AND TROUGHS FOR THREE GENERAL INDEXES AND NINE COINCIDENT INDICATORS

	LEAD (—) OR LAG (+) AT BUSINESS CYCLE															
	Peak						Trough									
	May 1923 (1)	Oct. 1926 (2)	Aug. 1929 (3)	May 1937 (4)	Nov. 1948 (5)	July 1953 (6)	July 1957 (7)	May 1960 (8)	July 1961 (1)	July 1924 (2)	Nov. 1927 (3)	Mar. 1933 (4)	June 1938 (5)	Oct. 1949 (6)	Aug. 1954 (7)	Apr. 1958 (8)
1. General index, leading series	-2	-10	-1	-5	n.a.	-7 ^a	-15	-12	-6	-1	-19	0	-5	-4	-7	0
2. General index, lagging series	n.a.	n.a.	+4	+6	+5	+5	+6	+8	n.a.	n.a.	n.a.	+3	+5	0	+1	+6
3. General index, coincident series	+1	-1	0	+2	-1	0	+1	0	0	0	-1	0	-1	0	-3	0
4. Employment in nonagric. establish.	+1	-9	0	+2	0	-1	0	+2	0	0	+2	0	0	0	-1	0
5. Unemployment rate (inverted)	n.a.	n.a.	n.a.	+2	-10	-2	-4	-3	n.a.	n.a.	n.a.	+2	0	0	+1	+4
6. Industrial production (incl. utilities)	0	+5	-1	0	-4	0	-5	-4	-3	0	0	-8	-1	0	-5	0
7. GNP, current dollars, Q	n.s.c.	n.s.c.	0	+3	0	-2	+1	0	+4	n.s.c.	n.s.c.	-1	-1	-5	-3	-2
8. GNP, 1954 dollars, Q	n.a.	n.a.	n.a.	n.a.	0	-2	+1	0	n.a.	n.a.	n.a.	n.a.	n.a.	-5	-3	-2
9. Bank debits outside NYC	0	n.s.c.	0	-2	-3	n.s.c.	+1	+3	0	-1	n.s.c.	+1	-1	-2	n.s.c.	-2
10. Personal income	+9	-5	0	+1	-2	+3	+1	+5	-2	-2	-12	0	-1	0	-5	-2
11. Sales of retail stores ^a	+9	n.s.c.	+1	+4	n.s.c.	0	0	-1	+2	+3	n.s.c.	0	-1	n.s.c.	-7	-1
12. Wholesale price index, excl. farm prod. and food	-2	-15	n.s.c.	+2	-2	n.s.c.	n.s.c.	-1	+1	0	n.s.c.	+1	+7	+3	n.s.c.	n.s.c.
Average, coincident series	+2.8	-6.0	0.0	+1.5	-2.6	-0.6	-0.6	+0.1	+0.3	0.0	-3.3	-0.6	+0.2	-1.1	-3.3	-0.6
Average without regard to sign, coincident series	3.5	8.5	0.3	2.0	2.6	1.4	1.6	2.1	1.7	1.0	4.7	1.6	1.5	1.9	3.6	1.6

n.s.c. = No specific cycle.

^aDepartment store sales, 1921-33.

^bKorean War period high disregarded in selecting peak.

In utilizing the indicators, it is important to bear in mind that knowledge of a prospective reversal in business conditions does not come at any one point in time. There are at first some very tentative suggestions; for example, a rise in such lagging series as labor cost per unit of output and inventories may occur months before a downturn. Later the leading series may decline, and some of the coincident series may falter. Around suspected cyclical turning points, the situation must be reviewed each month in the light of new statistical data (and other evidence), and the previous judgment reconsidered. That is, the judgments made each month must be reconsidered in the light of the additional evidence provided when data for the following month become available. In this way, a hypothesis is tentatively formulated, and later confirmed or rejected, as more information becomes available.

It is also necessary to emphasize that these indicators must be used together with other data, which are arranged in a different framework, such as the national income accounts. Findings from contemporary studies of industry, consumer, and government trends and plans are obviously pertinent. In addition, close attention must be paid to contemporary industrial, financial, political, and international developments: for example, the Korean War during the 1949-53 expansion; the 1953, 1956, and especially 1959 steel strikes; the Suez crisis in the fall of 1956; and the rapid shift from a government surplus position in the winter of 1957 to a pronounced deficit early in 1959, and then back again to a surplus position in the spring of 1960.

What can be said, on balance, of the usefulness of these forecasting techniques? It seems reasonable to put the matter this way. In determining government or private policies that must take account of the business cycle, it is not necessary to know in advance the exact month when a turn will take place. It may be sufficient to know only that a turn is ahead and about when—say, in what four- or five-month period—it is apt to occur. Later it is helpful to know that it has just passed. Similarly, it is not necessary to know exactly what the ultimate decline in a current cyclical recession will be, nor exactly how it will rank in comparison with earlier recessions. It may be sufficient for practical purposes to know that it is likely to be relatively mild, moderate, or severe. Again, at the beginning of an expansion, only approximate answers are needed in estimating when previous peak levels will be exceeded and then what levels the expansion will ultimately attain. Our current methods should, therefore, be judged against less exacting standards than might be thought appropriate at first. In these terms, I would conclude that the indicator series and summary measures provide a sensitive and revealing picture of the ebb and flow of economic tides, which a skillful analyst of the economic, political, and international

scene can use to improve his chances of making a good forecast of short-run economic trends. In summary, if one is aware of their limitations and alert to events in the world around him, the indicators do provide useful guideposts for taking stock of the economy and its needs.¹⁶

¹⁶ For some other appraisals of the indicator approach, see Sydney S. Alexander, "Rate of Change Approaches to Forecasting—Diffusion Indexes and First Differences," *The Economic Journal*, June 1958, pp. 288-301; Arthur L. Broida, "Diffusion Indexes," *American Statistician*, June 1955, pp. 7-16; Frank E. Morris, "The Predictive Values of the National Bureau's Leading Indicators," *Business Cycle Indicators*, Volume I, Chapter 4; Alexander Sachs, "The Cyclical Indicator Approach," *The Conference Board Business Record*, April 1957; Leonard H. Lempert, "On the Value of Cyclical Indicators," *The Conference Board Business Record*, June 1957; Arthur M. Okun, "On the Appraisal of Cyclical Turning Point Predictors," *Journal of Business*, April 1960, pp. 101-120.

See also the commentaries on the behavior of the cyclical indicators by Leonard H. Lempert since April 1954 in the weekly report of Statistical Indicator Associates, and by Frank E. Morris since August 1956 in his monthly economic indicator report for the Investment Bankers Association. A similar monthly commentary on the performance of analogous indicators in Canada by W. A. Beckett Associates of Toronto, Canada, may also be of interest.