

Cyclical Indicators of Economic Activity:

Part II

Part I of this article, which appeared in August 1971, concentrated on the leading indicators of economic activity. The purpose of Part II is to define, explain, and evaluate the performance of other important measures of business activity. The initial section deals with the "roughly coincident" indicators. These economic time series are defined as measures of economic activity that in the past have usually experienced cyclical peaks or troughs at about the same time as general economic activity. The second section is devoted to a discussion of the "lagging" indicators, which usually reach cyclical peaks and troughs after changes in general business conditions. The remainder of the article is devoted to other important indicators such as diffusion indexes and "anticipations and intentions" data.

ROUGHLY COINCIDENT INDICATORS

Coincident indexes are primarily useful in providing an analytical base for determining specific dates of business cycle peaks and troughs. Economic series included in this classification are aggregate measures of production, employment, income, and sales. Since these data measure the general level of business activity, their cycle should roughly conform to the general business cycle. In addition to their use as confirming indicators, the coinciders, like the leaders, are also useful in explaining links between different measures of economic activity.

NBER Short List and Composite Index The National Bureau of Economic Research (NBER) and the United States Department of Commerce report twenty-five economic series classified as roughly coincident indicators in *Business Conditions Digest (BCD)*. These twenty-five series are cross-classified into six economic processes as illustrated in Table 1 in the first part of this article.

A short list of eight coincident indicators is published in *BCD* each month. This list is provided as a summary of various unduplicated coincident economic indicators. Five of the eight series in the short list are combined to form the composite index of five coincident indicators. The five series include:

(1) the industrial production index, (2) personal income, (3) manufacturing and trade sales, (4) employees on nonagricultural payrolls, and (5) the unemployment rate. Although GNP is not included in the composite index, this measure of economic activity is an important measure of current business conditions and is therefore included in the short list of eight coincident indicators in both current and constant dollars. Retail sales completes the series in the short list. Both categories of GNP are calculated quarterly; the five series in the composite index and retail sales are compiled monthly. Each series and the composite are updated following revisions by the individual source agencies.

Performance Record The NBER classifies an indicator as roughly coincident if it exhibits a significant number of turning points within ± 3 months of the turn in general business activity. As a result, most coincident indicators have median lead or lag times of one month or less though the median could be longer if the indicator did not meet the criteria established for a leader or lagger. For example, an indicator with a lead-lag pattern at peaks of $-3, -2, +1, -2, +2$ qualifies in timing as a roughly coincident indicator even though the median lead is two months. On the other hand, an indicator with a pattern of $-2, -3, -2, -2, -1$ qualifies as a leading indicator with a median lead of two months. In the former case, the indicator is not reliable as a leader; in the latter case, the indicator has a significant number of leads, albeit short, and has proven to be reliable as a leader over past cyclical peaks.

Using peak and trough dates established by the NBER in the five postwar recessions, the composite index of five coincident indicators showed a cyclical pattern quite similar to the cycle in general economic activity. Since the NBER uses some of the individual coincident indicators to determine cyclical turning points, the composite coincident index should be expected to display a pattern similar to the general business cycle. At specific trough dates, the lead or lag time of the composite index was zero for each of the recessions since World War II. At peak

dates, the composite index led the 1960 peak by three months and the 1948 peak by one month; it lagged the 1969 and 1957 peaks by one month; and it was coincident with the 1953 peak.

Specific series in the composite index have shown much more variability than the composite index in postwar recessions. For example, manufacturing and trade sales showed a lag of nine months at the 1969 peak date and a five-month lead at the 1957 peak date. This example clearly shows the risk of relying on one specific indicator in determining cyclical turning points as opposed to several indicators or a composite of several indicators.

Variability of lead-lag times of individual components of the composite index appears to be somewhat greater at peak dates than at trough dates. The median lead-lag time was zero for three series at trough dates. Only one series exhibited a median time coincident with the general business cycle at peak dates. The median lead-lag time of the composite index was zero at both peak and trough dates in the postwar period.

LAGGING INDICATORS

Lagging indicators, like coincident indicators, are important in confirming past periods of economic expansion and contraction. They can also be helpful in analyzing important links between various economic processes.

In the past, the most reliable groups of indicators to meet the standards of performance required of lagging indicators have been interest rates and bond yields and labor costs per unit of output. Both book value of manufacturers' inventories and consumer instalment debt series have also displayed lagging characteristics. It is worthwhile to note that while inventories and consumer instalment debt are generally lagging series, changes in these groups are classified as leading indicators. In the early stages of general economic recovery, consumer instalment debt usually increases at a slow pace; toward the middle of the recovery stage, the rate of change reaches a maximum; and near the end of the recovery phase, the change in debt is positive but declining. As a result, the *change* in consumer instalment debt reaches a maximum and begins to decline before the peak in general economic activity, while the absolute *level* of the debt figure continues to rise slowly throughout the recovery phase.

A small number of economic series have been classified in the past as both leading and lagging series. Many times when a series consistently lags behind general business conditions at both peaks and troughs, such a series can also be said to lead on-

coming troughs that follow peaks and oncoming peaks that follow previous troughs. This form of "inverting" a series from a lagger to a leader often has a clear and meaningful economic interpretation. For example, a downturn in a lagging series, such as yields on new mortgages, usually precedes an upturn in housing starts, which in turn is one of the leading indicators. Yields on new mortgages could, therefore, be considered a "long-lead" indicator rather than a lagging one.

NBER Short List and Composite Index The NBER reports a total of eleven lagging indicators each month in *BCD*. Of the eleven, six have been chosen to summarize the movements of the lagging indicators. This short list of six indicators contains two quarterly series and four monthly series. Business expenditures on new plant and equipment and bank rates on short-term business loans are reported quarterly; the long-term unemployment rate, book value of manufacturing and trade inventories, labor cost per unit of output, and commercial and industrial loans outstanding are reported monthly by their respective source agencies. The NBER cross-classifies the lagging indicators by timing and economic process, as shown in Table 1 of Part I of this article.

The six series comprising the short list are standardized and are combined to form the composite index of six lagging indicators. Since two series are reported quarterly, the composite index is revised quarterly to reflect deviations from extrapolated monthly figures and final quarterly figures of these two series. Additional revisions are made when reporting source agencies revise their earlier data.

Performance Record The performance of individual lagging indicators and the composite index have shown more consistency at trough dates than at peak dates in postwar cycles. The composite index reached its cyclical low point two to six months following the trough of each general downturn in the postwar period. At the peak dates of general business activity, however, the composite index reached its peak coincident with the general cycle in 1948 and 1960. The longest lag in the composite index was nine months following the November 1969 peak in general business.

In the 1969-1970 reference cycle, four of the six lagging indicators in the short list did not reveal a definite turning point at either the peak or the trough date, according to Appendix F in the November 1971 *BCD*. As indicated in a footnote to Appendix F, however, the choice of specific turning points is a subjective matter that could differ among individual

analysts. One might, for example, conclude after analyzing the data that one or more of the four series did exhibit a turning point using different standards in selecting significant peaks and troughs.

ANTICIPATION AND INTENTION SURVEYS

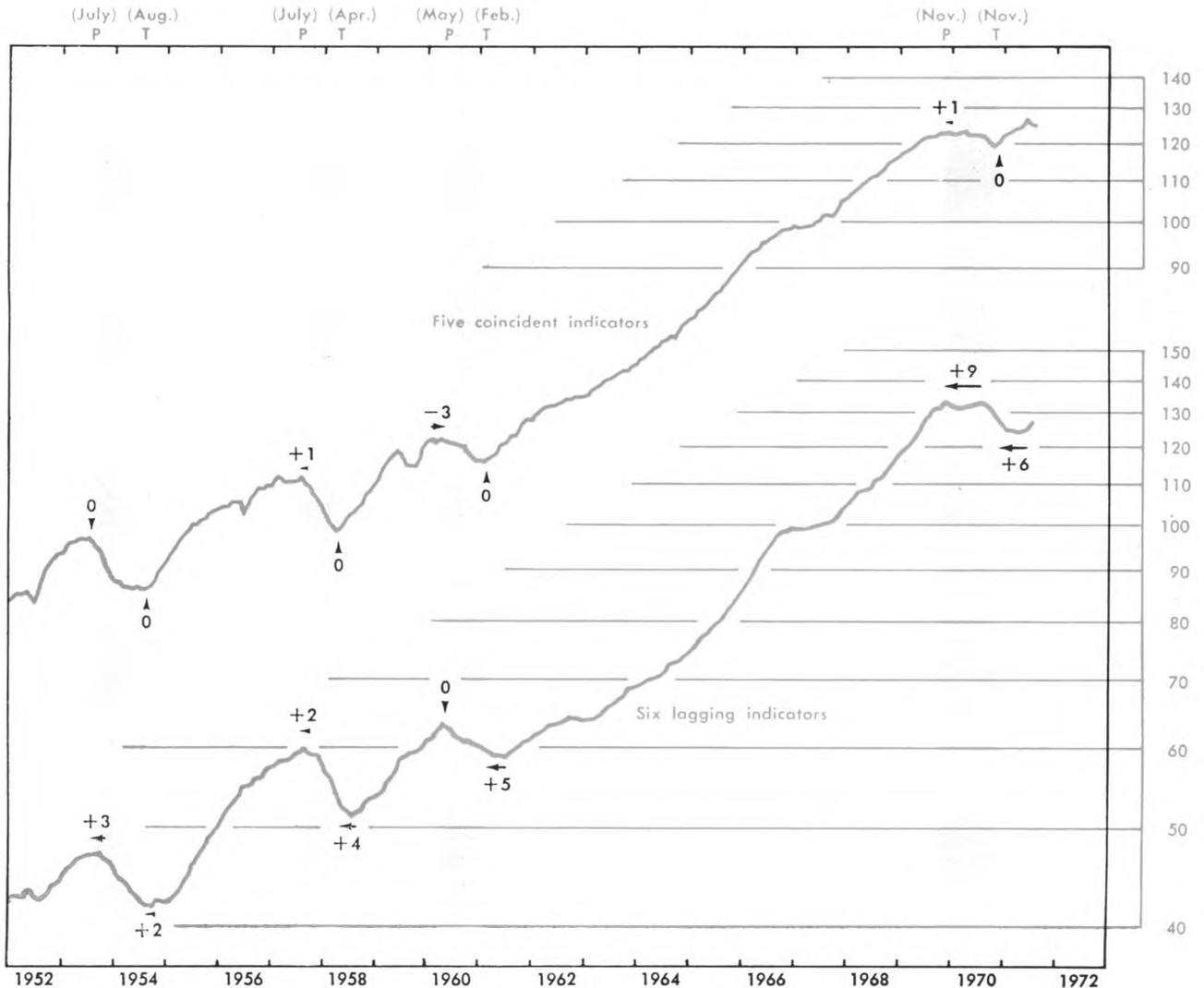
One relatively new technique for predicting future business conditions in the U. S. is direct surveys of attitudes and buying plans of consumers and business firms. The most widely publicized surveys to date have been the Office of Business Economics—Securities Exchange Commission (OBE-SEC) surveys of business plans and anticipations, the reports on consumer attitudes and buying plans of the Survey Research Center of the University of Michigan,

the Census Bureau reports on consumer buying plans, the Conference Board (formerly National Industrial Conference Board) reports on new and unspent capital appropriations, and the McGraw-Hill investment intentions surveys.

The OBE-SEC survey is designed primarily to enable more accurate prediction of nonfarm business fixed investment, a major component of GNP. Quarterly questionnaires are sent to all registered corporations by the SEC, and a sample survey of unregistered corporations is conducted by the OBE. Participating firms are asked to state both their investment in the previous time period and their investment intentions for each of the next two quarters and the calendar year. Results of the surveys are

COMPOSITE INDEXES OF ECONOMIC INDICATORS

Index: 1967 = 100



Source: U. S. Department of Commerce, *Business Conditions Digest*, September 1971.

released on a quarterly basis and on a yearly basis in March.

Predictive accuracy of the OBE-SEC survey has been impressive in the postwar period. An analysis of the accuracy of this survey, which uses a naive model,¹ shows that the OBE-SEC survey has been quite useful in determining future investment expenditures. Primarily because of construction and delivery delays and the inability of firms to predict precisely the turning points of business conditions, yearly surveys have been more accurate than quarterly surveys.

The McGraw-Hill investment anticipations for the coming year are released in the first November issue of *Business Week*. Because the figures are the first to be released, their performance record has been somewhat inferior to that of the OBE-SEC. In fact, evidence suggests that a naive model, which states that the increase in investment next year will be equal to the yearly average over the postwar period, has been more accurate than the results derived from the McGraw-Hill survey.²

The Conference Board survey reflects formal decisions made by large manufacturing firms to acquire capital over future periods of time. The underlying assumption of this method is that current planning decisions to spend precise amounts, as shown in capital budgets, will be reflected in future expenditure patterns of individual firms. Results from the Conference Board surveys have varied considerably from year-to-year, primarily because revisions of present capital spending plans by participating firms have been frequent in some years.

Surveys designed to determine consumer attitudes and intentions had their beginning in World War II. One of the most widely followed surveys in recent years has been the survey designed by the Survey Research Center (SRC) of the University of Michigan. Two basic types of information are gathered from the survey: (1) the consumer's general attitude about business conditions and (2) the consumer's buying plans in the months immediately ahead. The performance record of the SRC survey suggests that the index of consumer attitudes is more reliable than the index of buying plans. Further, the results indicate that consumers change buying plans rapidly and frequently make "spur of the moment" purchases. Recent analyses of the SRC survey show that the results are not reliable in fore-

casting future consumption patterns but are very useful for gathering other important consumer information such as liquid asset holdings, income levels, family debt, and other data useful in analyzing consumer spending patterns.

Another closely watched consumer survey is one conducted quarterly by the Bureau of the Census. This survey is designed to measure actual and anticipated household spending on houses, cars, and other major durable consumer goods. In the survey, households are requested to report their expected purchases during the next six, twelve, and twenty-four months.

DIFFUSION INDEXES

A diffusion index is designed to reflect the overall behavior of a group of economic time series. The index measures the percentage of series rising within a specified group; thus, the range of each diffusion index extends from 0 percent (all series falling) to 100 percent (all series rising).

Diffusion indexes are used to determine how widely spread particular economic movements are within a particular industry or from one industry to another. For example, *BCD* reports a diffusion index on industrial materials prices that includes thirteen specific industrial materials. It also reports industry-to-industry diffusion indexes, such as the average workweek of production workers in manufacturing that shows in how many of twenty-one different industries the workweek is increasing.

Most diffusion indexes change direction before their corresponding aggregate measures, for reasons similar to those that explain why the change in a series reaches a peak prior to the absolute value of a particular series. The industrial production index, for example, is a roughly coincident indicator; however, the diffusion index of the industrial production index for twenty-four industries has been a reliable leading indicator in the postwar period.

CONCLUSION

The purpose of this article has been to familiarize the reader with some of the major indicators of economic activity. Most of the indicators discussed are readily available on a monthly basis through *BCD*. Several other useful series, such as foreign trade and payments, Federal Government activities, and price movements are also reported in *BCD*. These indicators, used with soundly based economic models, can be extremely helpful to the forecaster and policymaker in analyzing prospective economic conditions.

Clyde H. Farnsworth, Jr.

¹ Naive models are frequently used to determine the usefulness of anticipations data and forecasts. They generally assume either (1) no change from the previous period or (2) the change during this period will be equal to last period's change.

² Michael K. Evans, *Macroeconomic Activity: Theory, Forecasting, and Control* (New York: Harper & Row, Publishers, Inc., 1969), pp. 455-60.

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