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Volume Author/Editor: Geoffrey H. Moore

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Chapter Author: Geoffrey H. Moore

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Chapter 21

Why the Leading Indicators Really Do Lead

In August 1972 a headline proclaimed that 43 percent of the public believed that the country was no longer in a recession. For the first time in two years more people believed the country was not in recession than believed it was. The verdict was correct, but it took a long time to reach it, and even then the margin was only 43 to 41 percent. Meanwhile, an index of leading indicators, especially designed to tell when a recession is over, had been rising vigorously ever since October 1970. Most of the citizens participating in the survey had, of course, never heard of this index, and still fewer were aware of the reasons for relying upon what it had been saying.

That was 1972. Today, the leading index is much more widely known, but the reasons for its performance in anticipating recessions and recoveries still are probably obscure to many. Why do the leading indicators lead?

The most familiar type of indicator is what we call "coincident." These are measures of economic performance, such as gross national product, industrial production, employment, unemployment, personal income, and retail sales. They show how well the economy is faring, because they measure aggregate economic activity. They rise and fall more or less together, in roughly coincident fashion, and tell us whether the economy is currently experiencing a recession or a slowdown, a recovery or a boom. They are used to identify and date, after the fact, the peaks and troughs in the business cycle.

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The leading indicators, on the other hand, anticipate movements in the coincident. Their function is to consistently provide advance warning of changes in economic activity. Many of them reflect commitments to activity in the near future: new orders for machinery or housing starts are examples. The placing of an order implies some future activity, as does starting construction on a new house.

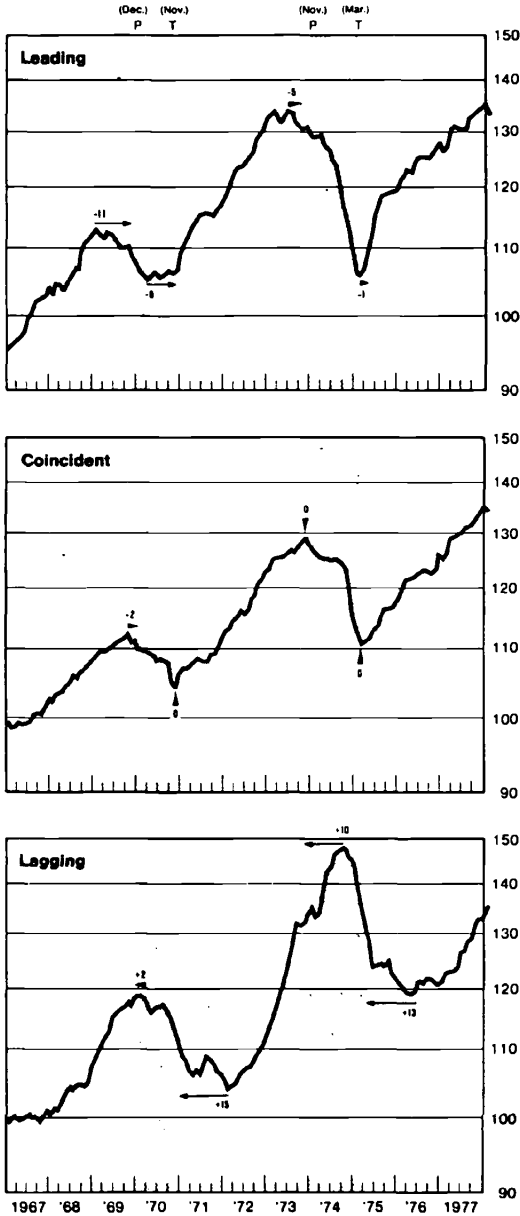
Still another type of indicator is described as "lagging," because their fluctuations usually follow those of the coincident indicators. Examples are labor cost per unit of output, the level of inventories, and interest rates on mortgage loans. They are not mere followers, however. Cost factors, as we note below, have significant implications for the subsequent performance of the leading indicators. Many of the indicators classified in this group can, in economic terms, be described as measures of excesses and imbalances.

The leading indicators have a noteworthy record. The composite index of twelve indicators now published by the Department of Commerce has turned down before every business cycle peak and turned up before every business cycle trough since 1948. Further, if the definition of a recession is extended to include retardations in growth, then the leading index shows a one-to-one match at every peak and trough since 1948; it leads at nearly every turning point and does not lag at any. Thus, while a sustained decline in the leading index has always signaled a weakening of the economy, sometimes these signals have been followed by retardations in growth rather than by recession (see Figure 21-1). It is also to be noted that the 142 peaks and troughs in the twelve individual series that are used to compile this index led the business cycle peaks and troughs in 92 percent of the instances between 1948 and 1975.

The scientific method requires that systematic empirical behavior be supported by a convincing explanation if it is to be credible. We must therefore ask not only what the leading indicators forecast and how well they do it but also why they have this capacity? If we know the reasons, we can have more confidence in their future performance. We can also set the stage for observing the conditions that, in effect, lead the leading indicators.

One major reason why the leading indicators successfully anticipate changes in the economy is that many of them represent the decisions or commitments to economic activity in the months ahead, and economic decisions take time to work out their effects. For example, new orders for machinery and equipment, a leading indicator, reflects decisions of business firms to buy new machinery. It takes time to convert the orders into machines. Hence, such orders

Figure 21-1. Indexes of Leading, Coincident, and Lagging Indicators
 (index: 1967 = 100; ratio scale).



Note: Shaded areas represent the business recessions of December 1969–November 1970 and November 1973–March 1975. Numbers and arrows represent leads or lags in months.

Source: U.S. Department of Commerce.

tend to precede, or lead, machinery production, as well as the production of the goods the machinery later helps to produce.

A similar kind of decision is reflected in obtaining a permit to build a house. After a permit is taken out, the building can be started and is eventually completed and sold. This sequence of events takes time. Hence new building permits and housing starts lead residential construction expenditures (see Figure 21-2, panel 1). Similarly, a decision to start a new business often involves an application to a state office for permission to incorporate. Since establishment of a new business is, in turn, followed by new hirings and purchase of new equipment, series on new incorporations also tend to lead employment and investment expenditures. Again, the decision to construct a new commercial or industrial building usually involves a construction contract and new orders for equipment. Consequently, contracts and orders for plant and equipment lead commercial and industrial construction expenditures (see Figure 21-2, panel 2). The earliest phase of the sequence of events given in these examples is represented by a leading indicator and the final phase by some measure of economic performance such as production, sales, or employment.

These are the kinds of everyday relationships that are taken advantage of in other walks of life. For example, we know that heavy snowstorms reduce both maneuverability of automobiles and the road space available for driving and that, therefore, traffic jams follow snowstorms. This timing relationship can be explained in a straightforward manner and does not need to be built into a complex theory of traffic engineering. Hence, when snowstorms are predicted, alert city managers activate prompt snow removal and often prevent or at least reduce the traffic jams that would otherwise occur. In economics, also, we can rationalize familiar patterns of behavior and modify the usual sequences by appropriate and well-timed economic policies.

The explanation of the lead in some economic indicators, however, is more complex. For example, the series on the average workweek tends to lead the employment series. A reasonable hypothesis is that employers can increase hours of work more promptly than they can hire new employees. While overtime work costs more, there is no long-term commitment, and the decision is easily reversed. Experience has shown that this reasoning is borne out in most manufacturing industries: the average length of the workweek usually begins to increase or decline before the number of workers employed follows suit (see Figure 21-2, panel 3). However, this relationship is

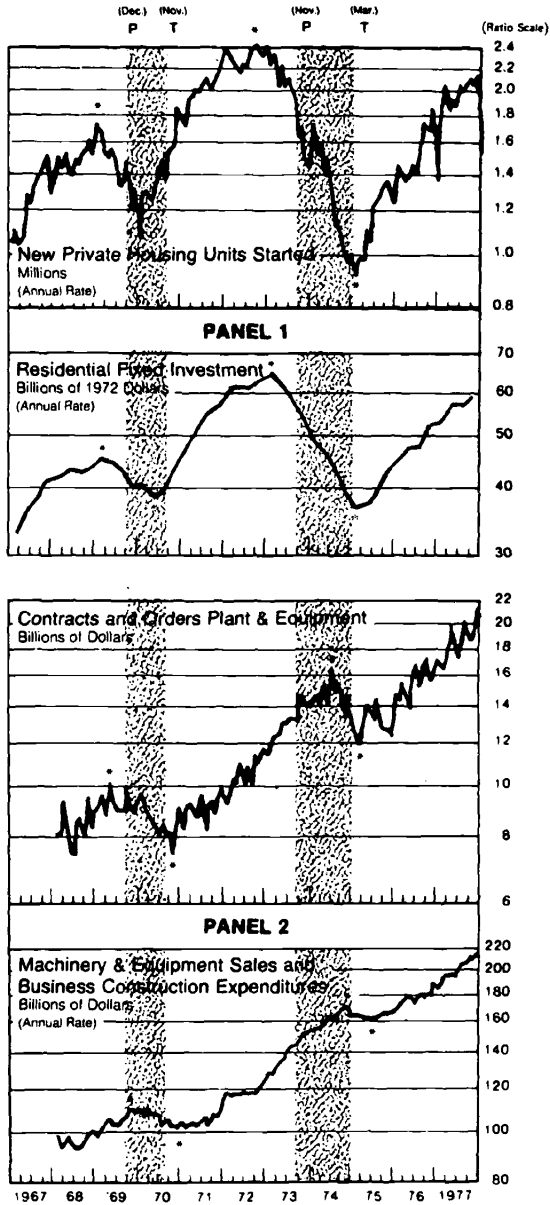
not evident in such industries as construction or retail trade. Hence the workweek for manufacturing is the selected leading indicator. Even though it is limited to manufacturing, it bears a close relation to movements in total employment, in part because of the many economic ties between manufacturing industries and the rest of the economy.

In many ways the most exciting of the leading indicators is stock prices, perhaps because so many Americans own stocks. Another reason is that indexes of stock prices are available hourly and can be followed as closely as baseball or football scores. Preoccupation with hourly or daily fluctuations in individual stocks, however, may hide the consistent lead in the broad stock price indexes (see Figure 21-2, panel 4). Although opinions differ on the reason for this, a plausible explanation of the lead can be constructed from the fact that stock prices are influenced by profits and by interest rates. The tendency for profits to decline prior to a peak in output depresses stock prices and so does the tendency for interest rates to rise briskly under such circumstances.

The fact that profits are a leading indicator does more than help to explain the behavior of stock prices; it helps to explain—and this is more important—how the business cycle itself comes about. For the prospect of profits is, of course, a powerful motivating force in a private enterprise economy. When this prospect dims, business decisions to expand are canceled or postponed. Cost cutting and layoffs become the order of the day. Capital expansion projects are deferred. So it is not hard to see why a decline in profits leads to a decline in investment, production, and employment.

But why does the decline in profits usually begin when business as a whole is still expanding? A major factor is the behavior of a lagging indicator—unit costs of production. A period of prosperity brings with it developments that raise production costs: the tight labor market and rising cost of living lift wage demands, productivity slackens, inventories rise as do interest rates and other costs of holding the inventories, and so on. Although prices go up, they are sometimes constrained by previous commitments, by international competition, or by an intensification of efforts to maintain a share of the market. The upshot is that prices begin to rise less rapidly than costs, putting a squeeze on profit margins. When the squeeze on margins is sufficient to offset the continued rise in output, profits decline. This story has been repeated many times in the history of business cycles. It demonstrates the importance of looking at the lagging indicators—measures of excesses and imbalances—for the first sign of developments that may bring about a reversal in the leading indicators.

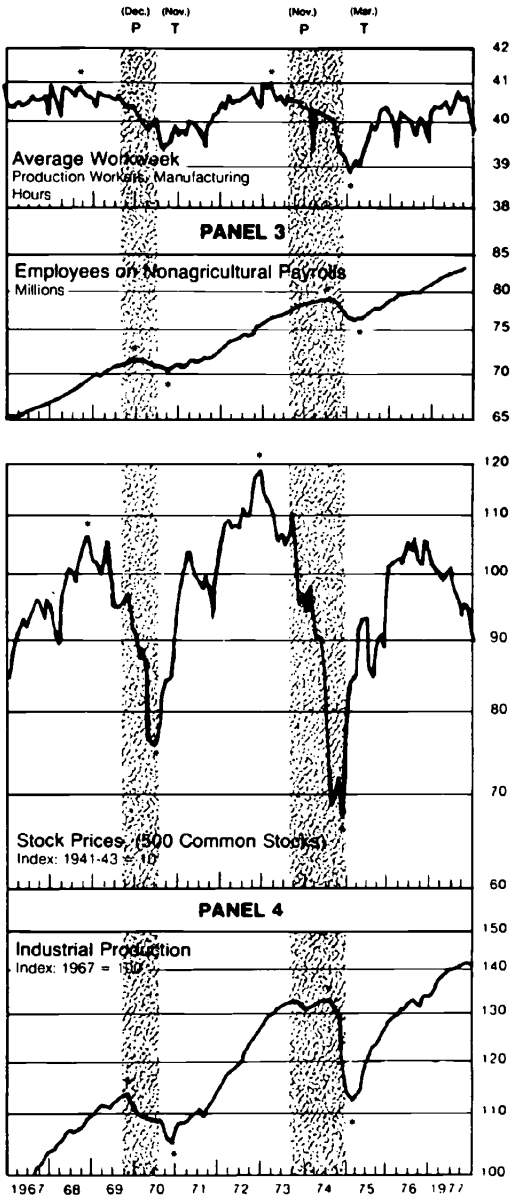
Figure 21-2. Leading Indicators and the Activities They Lead.



Note: Asterisks identify the cyclical peak and trough months for each series. Shaded areas represent the business recessions of December 1969–November 1970 and November 1973–March 1975.

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

Figure 21-2. continued



As this brief analysis suggests, the selection of particular indicators for each of the composite indexes has been guided by our still incomplete understanding of the causes of business cycles. Many different explanations of the underlying causes have been advanced. Some lay primary stress on the relations between investments in inventory and fixed capital on the one hand and final demand on the other. Others assign a central role to the supply of money and credit; or to government spending and tax policies; or to relationships among prices, costs, and profits (as in the preceding example). All these factors undoubtedly influence the course of business activity, and some may be more important at one time than another, but there is no consensus on which is the most important. Hence it is prudent to consider a variety of indicators that reflect all the processes, and the full list of indicators of which we have shown some examples does just that.

An equally important consideration in selecting indicators has been their empirical record. Careful studies of the behavior of indicators over long periods have been conducted before their selection. In addition, repeated studies have been made of the behavior of indicators after they have been selected. Many of the indicators have repeatedly survived such testing. For example, the average work-week, construction contracts, and stock prices were in the original 1937 list as well as in the 1975 list. The same lists of indicators have also been tested by their performance in other countries, notably Canada, the United Kingdom, West Germany, and Japan. Every new recession or economic slowdown provides some additional evidence against which the indicators can be assessed. As a result of this continued examination and reexamination, a large amount of empirical evidence has been accumulated that demonstrates both the value of the indicators and their limitations.

Reading the leading indicators to divine the future is not a simple, straightforward matter. No leading indicator moves on a straight and narrow path, and the coincident indicators are not glued to the leaders. The leading indicator index will, however, aid the observer in this effort. The index is smoother than most of its components, hence easier to follow, and of course, it summarizes their movements. But the components are essential to an understanding of the economic developments under way, because the economic rationale applies to the components rather than to the composite index. In a similar way the coincident and lagging indexes are useful summaries of their components, but an understanding of their interaction with the leading index requires an examination of the components themselves. The indexes are simply aids to this end.

Like other tools for economic forecasting, the leading indicators, and their index, seldom hit the bull's eye. But they have an enviable record.

AN NBER READING LIST ON WHY THE LEADING INDICATORS LEAD

The index of leading indicators released each month by the U.S. Department of Commerce is, according to the usual press notices, "believed to anticipate future changes in the economy." What is the basis for this belief? Since the NBER originated the idea of leading indicators in 1937 and since over the years the Bureau has issued a large number of reports that explain and document their behavior, a classified list of NBER references may be helpful to those who wish to gain a better understanding of why the leading indicators lead.

The following list contains general references that cover a large number of different indicators and explain their interconnections as well as specialized references that explain the behavior of particular indicators. The latter are organized according to the list of twenty-six indicators issued by the Bureau in 1966, which was used by the Department of Commerce from 1967 to 1975, but most of the entries serve equally well to document the 1975 list presently used by the Department of Commerce. The references are limited to reports either published by the National Bureau or prepared by members of its staff for publication elsewhere.

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SPECIFIC REFERENCES, BY TYPE OF INDICATOR¹

LEADING INDICATORS

1. Average Workweek, Manufacturing Industries. Bry, 1959, 1961.
2. Initial Claims, Unemployment Insurance. Moore, 1961a, 1973; O'Dea, 1975.
3. New Business Formation. Evans, 1948; Zarnowitz, 1961a.
- 4, 5. Durable Goods, New Orders; Plant and Equipment, Contracts and Orders. Zarnowitz, 1961b, 1973.

1. The list of indicators is the 1966 list, published in Moore and Shiskin, 1967.

6. Building Permits, Housing. Burns, 1938; Clark, 1934; Grebler, 1960.
7. Inventory Change, Manufacturing and Trade. Abramovitz, 1950; Mack, 1967; Stanback, 1962.
8. Industrial Materials Prices. Mack, 1967; Moore, 1972; Zarnowitz, 1962.
9. Common Stock Prices. Hickman, 1953; Macaulay, 1938; Moore, 1975c; Morgenstern, 1959.
- 10, 11. Corporate Profits; Ratio, Price to Unit Labor Cost. Hultgren, 1965; Moore, 1962, 1975b; Zarnowitz and Lerner, 1961.
12. Consumer Instalment Credit, Change in. Haberler, 1942; Kisselgoff, 1952; Klein, 1971.

ROUGHLY COINCIDENT INDICATORS

- 13, 14. Nonagricultural Employment; Unemployment Rate. Bry, 1959, 1961; Burns, 1969b; Moore, 1961a, 1973; O'Dea, 1975.
- 15, 16. Gross National Product, in current dollars; in constant dollars. Kuznets, 1941, 1946.
17. Industrial Production. Mitchell and Burns, 1936; Zarnowitz, 1973.
18. Personal Income. Creamer, 1956.
- 19, 20. Manufacturing and Trade Sales; Retail Sales. Burns, 1952; Clark, 1934; Friedman 1957; Mack, 1956.

LAGGING INDICATORS

21. Unemployment Rate, 15 weeks and over. Moore, 1973; Moore and Shiskin, 1967; O'Dea, 1975.
22. Plant and Equipment Expenditures. Hastay, 1954; Zarnowitz, 1961b, 1973.
23. Manufacturing and Trade Inventories. Abramovitz, 1950; Mack, 1967; Stanback, 1962.
24. Unit Labor Cost, Manufacturing. Fabricant, 1959; Hultgren, 1965; Moore, 1961a, 1962, 1975b.
25. Commercial and Industrial Loans Outstanding. Moore, 1969; Moore and Shiskin, 1967.
26. Bank Rates on Short-Term Business Loans. Cagan, 1966, 1969; Conard, 1966.

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