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CHAPTER 1

Basic Research and the Analysis of Current Business Conditions

Solomon Fabricant

NOW and then one of the friends of the National Bureau urges us to spend some of our energy on the analysis of current business conditions. This interest in the state of the economy is understandable, especially at a time like the present. The direction in which the economy is moving currently is a matter of serious concern to all persons charged with the management of affairs, large or small. Any clue we could provide to the course of events during the weeks and months ahead of us would be of immediate practical value.

Yet the National Bureau holds fast to the program of basic research mapped out at its inception. We continue to devote ourselves largely to broad, persistent economic questions. Our object is to ascertain important economic facts, to uncover fundamental principles of economic behavior—facts and principles that will be of use in dealing with every major problem of policy. And such results cannot be secured easily. By their very nature, the studies we undertake cannot promise quick guidance to those who must make their decisions today.

It goes without saying that we would like to be of immediate help to those around us. We are irked no less than others by the slow pace of our work. At least as keenly as they, we are aware of the “general” character of our results and the frequency with which we label them “tentative.” It is not indifference to the importance of current economic analysis that leads us to resist the pressures to take a hand in it. Nor is it because we wish to keep above the heat and dust of the life about us, for the pressures come also from within ourselves.

We concentrate on basic economic research because we believe that in this way we can make the best contribution of which we are capable to the analysis of current business conditions—not immediately, to be sure, but in the long run.

In support of this belief there is the lesson of experience. The basic work we have done in the past is being widely used by others in their day-by-day analysis of business conditions. The value these applications

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I am greatly indebted to my colleagues for helpful suggestions in the preparation of this report.

PART ONE

now yield and may continue to yield in the future could not have been realized had we diverted our attention in the past to the immediate questions of those days.

There is a second reason. The ability of men to judge the present state of the economy and trace its tendencies into the future is far from satisfactory. This, perhaps, is why we are asked to join in that difficult task. But the implication we draw is not that of prompt acceptance of the request. There is painfully much still to be learned about the basic features of our economy. We have a staff experienced in such work and devoted to it. Whatever we can do today to expand tested economic knowledge is an investment that, with all its risks, is likely to pay larger social dividends than any current analysis that might engage our energies.

Let me illustrate our experience with an example or two of the uses being made of our work in current business analysis. . . . During the winter of 1937-38 it became clear that the climb out of the depths of the great depression had come to a halt and that the interruption was more than a minor setback. The shrinkage in business activity that had been taking place during the summer and fall had reached serious proportions. There was considerable anxiety as to how far the contraction would go and what signs might indicate its end.

It was then that a public agency requested the National Bureau to prepare a memorandum on statistical indicators of cyclical revivals. The request was urgent, the time short. Little of significance could be expected from information quickly thrown together and analyzed by impromptu methods. It was necessary to have some capital to exploit.

When its initial work on national income had been completed [in the early twenties], the National Bureau had turned a major part of its energies to another piece of basic research—business cycles. This subject, too, was “one of great importance to all classes in the community,” as our annual report mentioned at the time. It was a subject, also, in which quantitative methods could be used to advantage. No one else was planning a comprehensive survey of the whole subject. The staff “seemed” qualified by experience and interest to fill the want. And much of the knowledge gained in studying fluctuations in the national income would be usable here.

By 1937 the National Bureau had a large collection of statistical materials at hand. These had been subjected to considerable analysis and the staff had thought deeply about their meaning. This investment could be mobilized to yield something useful about indicators of cyclical revivals even in the brief time available. The Bureau took on the assignment.

Almost five hundred American monthly or quarterly series in our

SELECTION AND INTERPRETATION OF INDICATORS

possession—series on production, employment, prices, security issues, orders, and the like—were examined by Mitchell, Burns, and their co-workers, and for each the timing of its changes in relation to business revivals was determined. From this list were selected the series that had been tolerably consistent in their timing and were of “sufficiently general interest to warrant some attention by students of current economic conditions.” These, numbering seventy-one, were listed in an elaborate table showing the average lead or lag for each series; and to help its users, Mitchell and Burns added information on the variability of timing—for “tolerable” hardly meant “perfect” consistency—and on such other characteristics of each series as might be needed in judging the significance of its changes.

They did not stop there. From the list of seventy-one series, a further selection was made of the most trustworthy indicators. Attention was given to the length of average lead, uniformity of lead, frequency and intensity of erratic movements, length of the record, and other criteria. None of the series could meet all the criteria well; Mitchell and Burns selected twenty-one that fared best, on the whole. And to their lists of indicators, Mitchell and Burns added a carefully prepared list of “cautions” for the guidance of those who must chart our position in the business cycle at any specific time. These were at least as valuable a part of their memorandum as the selection of series indicating cyclical revival.

We have become so familiar during the past eighteen years with the statistics and characteristic cyclical behavior of many economic processes, that it is difficult to remember the impact of this memorandum—published as a Bulletin in May 1938 [and reprinted here, Chapter 6]—on economists and business analysts at the time. Here for the first time was an analysis of a large body of statistics that was at once penetrating and comprehensive, that sought uniformities of behavior but did not ignore variability, that revealed sharp awareness of the day-to-day problems of business analysis as well as a deep understanding of the complexities inherent in the scientific analysis of business cycles. The paper must have seemed a revelation to its readers.

Since publication of the memorandum the National Bureau has extended the analysis of cyclical indicators in various directions. Before I report the sequel, let me underscore the large amount of unhurried work that built the basis for the memorandum.

First, techniques of measuring business cycles had to be devised in the light of hypotheses concerning their nature, study and comparison of existing statistical methods, review of available statistical data, and experience with the methods tentatively selected. The chapters in Mitchell's 1927 volume constituted a major step in this task; the two reports that Mitchell wrote at different stages of his progress in applying

PART ONE

the techniques—reports he called “experimental” and decided not to publish—another step; the 1935 Bulletin by Mitchell and Burns on the National Bureau’s measures of cyclical behavior, a third. Still other stages preparatory to the analysis of cyclical indicators, and following it, are hidden in the large volume on *Measuring Business Cycles* that Burns and Mitchell published in 1946.

Second, a vast quantity of statistical data had to be gathered, if the various economic processes involved in business cycles were to be properly studied. This meant more than copying ready-made series out of standard sources. Frequently it meant piecing together series from the individual issues of business periodicals, which in turn required a search through possible sources; and sometimes it meant also the elaborate calculations and careful judgment that Macaulay and then Durand put into the preparation of their widely used series on bond yields. In addition, it was necessary to determine, so far as possible, the precise nature of the process reported by each series and the reliability of the information provided—which might mean seeking explanations for differences between one source and another, or one series and another. All this work had to be checked. Nor did this essential step end when the figures were neatly arrayed. Charting each series and putting it through the analysis frequently raised further questions as to its meaning and reliability, and these had to be cleared up.

Third, a set of reference dates had to be determined—dates with which the timing of individual series could be compared. Thorp’s study of business annals was part of this task; determination of the month around which the cyclical upturns in the various series clustered was another. The few pages on dating business cycles in *Measuring Business Cycles* do not indicate the magnitude of the task. . . .

Fourth, each series to be analyzed had to be examined for seasonal fluctuations; and when these were found—as was usually the case—they had to be removed to permit cyclical changes to stand out clearly. This was a large task, not only because of the amount of arithmetic that goes into determining and removing a seasonal change; but also because more than one method sometimes had to be tried. The easy device, frequently favored by businessmen and journalists, of comparing the current month with the corresponding month of last year could not be used because it is inefficient and can be misleading. Matters may be worsening even when current levels exceed those of last year. They may be worsening also when the excess this month is greater than that of the previous month—because of a changing seasonal, or because an interruption to expansion which proved to be minor a year ago may not prove so again. Recently we have been experimenting with electronic calculators for the purpose of determining seasonal fluctuations, and we hope to

SELECTION AND INTERPRETATION OF INDICATORS

extend these experiments in the coming year—an interest that indicates how burdensome the removal of seasonals is at present.

Finally, almost an equal amount of labor went into determining, for each of the five hundred series, its average lead or lag, the variation about the average, and the other characteristics of cyclical behavior mentioned earlier.

Spelling out these steps can only suggest how the information at the disposal of Mitchell and Burns in 1937 had been accumulated. It may also serve, however, to indicate what is generally involved in the application of quantitative methods to economic analysis and why scholars working by themselves are under a serious handicap in dealing effectively with many economic questions.

Shortly after the war we decided to turn back to the question of statistical indicators. It had not been neglected in the interim, for Mitchell and other members of the staff were working steadily on the determination and explanation of the characteristic cyclical behavior of various economic processes; but the Employment Act of 1946 had been passed and another close look at the sequence of changes that take place at turning points in business promised a useful guide to those who would have to bear the responsibilities imposed by the Act.

Moore, who was in charge of the task, not only extended the analysis through the business cycle of 1933–38, but also took advantage of the fact that the Bureau had added many series to its collection—by that time eight hundred in number—and had improved the measures of cyclical behavior. He revised the indicators of revivals, paying more attention to coinciding and lagging series (following up suggestions in the Mitchell-Burns paper) as a valuable confirmation of the indications of the leaders; applied the analysis also to recessions; and experimented with other techniques of analysis. The results appeared in his Occasional Paper, published in 1950, which has attained a degree of popularity unusual for National Bureau publications. [Reprinted here, Chapter 7.]

The list of indicators of cyclical revivals (and recessions) that he presented differed from the earlier selection for a number of reasons, two of which are of interest here. One was the appearance of series not available before—gross national product, personal income, and consumer instalment debt, among others. Another was the guidance he obtained from cyclical analyses carried on at the National Bureau after 1938—Mitchell's, of course, and Abramovitz on inventories, Barger's on corporate profits and personal income, Burns' on construction, Evans' on incorporations, Haberler's on consumer instalment credit, and Hultgren's on transportation. Moore's list reflected less the mechanical sifting of time series that Mitchell and Burns had been compelled to rely on to some

PART ONE

degree, and more the reasoned choice that study of the chain of events during business cycles makes possible.

With the passage of time, generalizations derived from the experience of one period can be checked against later experience. Moore was able to test the twenty-one indicators selected by Mitchell and Burns against their timing in 1938; and later he took advantage of the postwar experience to test his own list, since it was derived from information available only through 1938. Despite the substantial secular and structural changes that we know have occurred in the economy, and the fact that every business cycle is influenced by special factors that distinguish it from its fellows, the tests were encouraging. They showed a family resemblance between the later cycles and those of earlier years. In this respect, there has been no obvious alteration in the nature of business cycles.

The comparison may be illustrated with the behavior of the indicators during the revival centered at August 1954. Among the series that presage turns in general business are the financial processes, investment commitments, and other sensitive factors that generally initiate and respond to the very beginnings of revival or recession and contribute to its spread—processes represented among the indicators by liabilities of business failures, industrial common stock prices, residential building contracts, new orders for durable goods, contracts for commercial and industrial building, new incorporations, hours worked, and sensitive prices of basic commodities. At the beginning of 1954 half of these eight series were rising, and in May—three months before the trough in business—all were going up. Generally coinciding or nearly coinciding with business cycle turns are, as one would expect, turns in such broad measures of business activity as employment and unemployment, gross national product, industrial production, bank debits outside New York City, freight carloadings, corporate profits, and wholesale prices (excluding farm products and processed foods). During 1953–54 these behaved as in earlier cycles, on the whole. Through the fall, winter, and spring of 1953–54, all or most of these indicators were falling, except between one pair of months in the spring. By July half were falling, half rising. In October all were rising. As for the group that usually lags turns in general business conditions (personal income and retail sales, consumer instalment debt and manufacturers' inventories, and bank rates on business loans), four out of five were falling as late as August of 1954. Not until October were more than half of them rising.¹

¹ Computations are based on directions of change in centered moving averages applied to each seasonally adjusted indicator. The period of the average depends on the extent of erratic changes: it is six months at the maximum (e.g. for liabilities of failures). For a few series the directions of change are on a month-to-month basis.

SELECTION AND INTERPRETATION OF INDICATORS

In a word, then, the three groups of indicators behaved during the revival of 1954 as they had been found to behave during earlier revivals. This is especially interesting because the recession from 1953 to 1954 had been exceptionally mild—far milder than the “average” cycle of prewar experience. Of course, there had been occasional mild recessions in the prewar period also. During such recessions a number of the indicators—especially the lagging series—showed no obvious response to the decline in business. The 1953–54 recession resembled these earlier episodes in that respect: personal income and instalment debt did not decline appreciably after 1953.

Moore has developed further the diffusion indexes first used in *Measuring Business Cycles*. These measure the proportion of series moving up or down and thus provide a simple picture of their consensus. Together with the diffusion indexes provided by Hultgren in his paper on profits and by Burns in his “New Facts on Business Cycles” [reprinted here, Chapters 11 and 2], they reveal in a striking manner that cycles in different activities, or even in different firms engaged in the same activity, do not follow the same temporal course. During an expansion the maximum identity of movement—hardly ever 100 per cent—is reached some time before the peak in aggregate activity appears. Months before aggregate activity reaches its peak the proportion of expanding industries or firms is already declining. Months before the aggregate reaches its trough the proportion of expanding activities is already rising. The diffusion indexes thus constitute another leading group of indicators. They have even more interest in indicating how cross currents grow in importance during the complicated series of events we call recession and revival.

More recently, the indicators and diffusion indexes have been put on a current basis—that is, the turns are being calculated not from observations of the whole cycle, including developments after the turns themselves, but only from observation of developments up to the month under consideration. Once one moves from hindsight to contemporary observation, cyclical turns become far more difficult to identify. Changes that soon reverse themselves and therefore represent only temporary interruptions to cyclical expansion or contraction appear to occur frequently. This too has considerable scientific interest, as Ruth Mack’s book on the shoe-leather-hide industries demonstrates. Any explanation of how business cycles are generated must take account of the incessant change that surrounds businessmen and the effects this must have on their outlook and behavior.

How helpful the indicators of cyclical recession and revival will be to those who wish to detect the drift of business conditions remains to be seen. The “current-basis” indicators should aid in the experiment. It is safe to say that anyone who uses them to the exclusion of other

information and ignores the reservations with which Mitchell and Burns first surrounded them is bound to be disappointed.

It is well to repeat some of these cautions, just as Moore did, for the indicators cannot provide the simple key to the future that folk seek.

Mitchell and Burns mentioned the difficulty of distinguishing an erratic fluctuation from a cyclical turn in a particular process. It is prominent in the charts of the current-basis indicators already mentioned. There is danger, therefore, in trusting the indications of single series. It is necessary to search out the consensus of groups of series, not confining attention to the twenty-one indicators alone. And this is important also because the cyclical timing of a particular series may vary from time to time—sometimes irregularly, sometimes secularly or structurally. There is need, consequently, to be alert to the latter and aware of the former.

The occasional appearance of “incipient revivals which suffer a relapse” poses another problem not to be ignored. An example appeared during the deep depression of the thirties, when the revival that seemed under way at the middle of 1932 petered out in the fall with a serious falling-off of business to another low in the spring of 1933. Such a reversal in direction might be encountered at other stages of expansion and contraction also, as our experience in 1951–52 illustrates. In her study of the shoe-leather-hide industries, Ruth Mack gave special attention to the phenomenon as it appeared in those branches of business. She is exploring the matter further in the study of short cycles.

Mitchell and Burns emphasized, in this connection, the need to consider “important factors arising outside the realm of business.” This has become increasingly important in recent decades, with the growth of government and such developments as the Employment Act of 1946 and the cold war.

In man’s persistent search for a clue to the future, sequence analysis has long attracted attention. If today we have a better understanding of its possibilities and its limitations, it is because of the basic research that has been done on business cycles. The businessman who must speculate about the future course of economic conditions knows more keenly than before that he must “eschew simple formulas” and study a wide range of data. His watch for the typical sequence of events must be kept in full awareness of the variation that characterizes successive business cycles and the changes that go on within them. He must be alert to structural and secular “changes in the making,” yet resist the tendency to generalize too easily on the basis of recent experience. He must recognize that several possibilities lie before him and that probabilities have to be attached to each of them; and he must stand ready to revise the probabilities, and the judgments and policies he bases on them, as evidence accumulates from month to month. He must be sensitive to the opportunities open to

his own firm, as well as to the general factors that affect business as a whole.

Moore has followed his Occasional Paper with other short pieces dealing with aspects of the subject, one or two of which I have already mentioned. Others of our staff have dealt or are dealing with related questions. I can mention only Hastay's work on businessmen's expectations—which may turn out to be more useful for telling us something about business behavior than for adding to our kit of forecasting tools. We plan to assemble the various contributions into a volume [the present one] that will include also some of the statistical materials we have used, thus making available to the public part of the rich collection of time series that we have accumulated and analyzed over the years. The volume should prove valuable to the many business economists and students of business cycles who are aware of the need to improve the knowledge and techniques which current analysis must use, as well as of the need to use what knowledge and techniques we now have as wisely as possible.

Before leaving this question, I would like to recall a general conclusion of Mitchell and Burns about the way to improve forecasting. It points to the kind of work on which we must concentrate the energies we devote to the subject of business cycles. Mechanical methods of trying to improve prognoses, made on a strictly empirical basis, seemed to them to be less promising than efforts to learn about the interrelations among the cyclical movements of different economic processes. Our recent work on statistical indicators gives every support to this conclusion.

At any moment, analysts of business conditions must perforce apply what knowledge they have of the connections between current changes and the events that precede and follow, uncertain though it may be. A major task of our business cycle studies is to strengthen this knowledge of the connections among events—to forge links where they are now lacking, and to replace weak links with stronger ones, and so to help business analysts judge the significance of the events that unroll before their eyes.

If I had the time I could illustrate this process of construction and reconstruction with our studies of one of the elements of what is popularly referred to as the "cost-price squeeze." I would start with the account Mitchell gave in 1913 of how prosperity breeds depression and recall his hypothesis that "the very conditions that make business profitable gradually evolve conditions that threaten a reduction in profits"; that among these conditions were rising prime costs per unit of product, and counting heavily in prime costs—though more in some industries than in others—were unit labor costs; and that unit labor costs could be expected to rise, especially in the later stages of business expansion, first as a result of the characteristic cyclical behavior of wage rates, and second

PART ONE

because of the probable cyclical behavior of the quantity of labor used per unit of product. I would then go on to show how Mitchell's conjectures guided our work when we began the study of business cycles; what questions were raised about labor costs when Hultgren came to grips with the matter, in so far as it could be analyzed in the records of American railroads; how Mitchell revised his hypothesis in the light of this work and also of the Bureau's studies of labor productivity, Creamer's analysis of cyclical fluctuations in wage rates, and his own preliminary analysis of the figures for manufacturing; what Moore found when he carried the analysis of the manufacturing data a step forward; how the results obtained for the interwar period compare with the recent behavior of wage cost per unit; and what Hultgren is doing to advance the analysis in his current studies of costs in individual industries. Let me merely mention that our studies do show that in manufacturing as a whole, at least, labor cost per unit typically turns upward in the final stages of business expansion. While Mitchell's original hypothesis about unit labor cost requires alteration in certain significant details, its main point is consistent with the facts for certain important industries as we have been able to observe them.

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