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# BUSINESS CYCLES



*Theory, History,*



*Indicators, and*



*Forecasting*

**VICTOR ZARNOWITZ**

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# Business Cycles



**Studies in Business Cycles**  
**Volume 27**

**National Bureau of Economic Research**  
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# Business Cycles

Theory, History, Indicators,  
and Forecasting

Victor Zarnowitz



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*(Resolution adopted October 25, 1926, as revised through September 30, 1974)*



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To my colleagues  
in the NBER program  
of research on business cycles,  
1952–1991



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Acknowledgments to others who helped with particular papers are stated at the beginning of most of the chapters.



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## Preface

This book originated several years ago as a proposed collection of a few of my older articles and some more recent papers in the general area of business cycles, indicators, and forecasting. It ended up consisting largely of new chapters and some recently published and updated material. As happens so often, writing took more time than expected, in part because of the extension of my plans and in part because of delays caused by teaching and other research responsibilities.

How well scientific papers stand up to the test of time is a question that should always be faced when it comes to reprints. All research results exist to be challenged, tested, and either invalidated or tentatively confirmed. But the threat of obsolescence is much greater in some fields than elsewhere. Here the risk is made acute by the present highly unsettled and active state of the theory of business cycles (although the reasons for this situation are probably in large part inherent in the subject and shared with much other work in economics). New theories try to replace the old ones, in most instances unsuccessfully. This is common in subjects where models proliferate but few are systematically tested and many are not even testable at all.

Not only models but also data and techniques of economic analysis and forecasting continually evolve and multiply. Huge advances in research technology and the accumulation of new information favor new work. Yet the changes are not always for the better. For example, some useful time series have been discounted, forcing alterations in the composite indexes of leading indicators. The computer has enormously facilitated the calculation of economic data and model parameters, but ease of estimation often increases the quantity rather than the quality of the estimates; it certainly does not compensate for inadequate theory or erroneous measurement.

These considerations argue, not simply for the new and against the old, but rather in favor of selectivity and synthesizing what appears to be valuable or

promising in both. I decided not to use several of the originally considered articles but use some of the material in updated form in five newly written chapters. My purpose was to reexamine some of my earlier research as well as introduce the themes of the book against the background of recent developments in the literature and history. Chapters 1, 6, 10, and 13 serve partly as previews or overviews to the four parts of the volume: I. Theories and Evidence; II. History and Measurement; III. Indicators; and IV. Forecasting.

As reworked in its final form, the book consists of 18 chapters, 8 of which (the 4 just listed and chapters 3, 4, 8, and 11) have not been published elsewhere. Most of these, whether addressing problems of theory, evidence, indicators, or prediction, are rather comprehensive in scope. This reflects a gradual expansion of my research interests from particular cyclical processes, events, and hypotheses to the long history and modern evolution of business cycles, the range of their theoretical interpretations, and the record and prospects of cyclical indicators and forecasts.

My work on business cycles started at the NBER in 1952, but the earliest two essays included here go back to 1972. One, on business cycle studies of NBER from 1920 to 1970 (chapter 5) will, I hope, be useful as an interpretation of a large and important body of literature in its relation to other concurrent work in the same area. It is a slightly revised and strongly abbreviated version of sections from my introductory chapter to volume 1 of the NBER 50th Anniversary Colloquium (*The Business Cycle Today*). The other (chapter 9), from the same volume, sums up the results of a large NBER project on econometric model simulations of cyclical behavior (reported in Hickman 1972 and followed by much related research; see Klein and Burmeister 1976). This study shows that random shocks failed to generate movements with observable cyclical characteristics in several well-reputed quarterly models. The evidence, confirmed elsewhere, contradicts the still often repeated assertion that macroeconomic estimates demonstrate the high likelihood of small random shocks alone being the source of business cycles.

The other published papers used in parts I and II are "Recent Work on Business Cycles in Historical Perspective" (1985) and "Business Cycles and Growth" (1981). The first of these is complemented by three new chapters dealing with aspects of continuity and change in cyclical behavior and analysis, the treatment of endogenous and exogenous elements, and the relation of movements in real and nominal variables. The second is accompanied by two new chapters on how trends and fluctuations are observed and modeled and how regular (or irregular) the historical business cycles have been.

Part III includes "Major Macroeconomic Variables and Leading Indexes: Some Estimates of Their Interrelations" (1990), a report on a study of vector autoregressive models using recent and historical data. The first of two unpublished chapters on cyclical indicators discusses the systematic aspects of their behavior, distinctions concerning economic process and timing, and analytical meaning and functions. The second is a comprehensive study of the com-



posite indexes of leading, coincident, and lagging indicators: their objectives, standards, assessments, composition, performance records, and conventional as well as new uses in forecasting.

Part IV opens with a new introductory chapter on who forecasts what, when, how, and how well, that is, on sources, targets, methods, and accuracy of short-term, aggregative economic predictions. The next chapter is a comparative analysis of the properties and performance from 1947 to 1976 of annual and quarterly multiperiod forecasts of nominal and real GNP growth and inflation (1979). The remaining four chapters are all recent (1984–87). One compares the accuracy of a large number of individual forecasts with group average forecasts from the quarterly Economic Outlook Survey conducted jointly by the NBER and the American Statistical Association (ASA). I have reported on and evaluated the results of the NBER-ASA survey from its inception in 1968:4 through 1990:1. Another chapter looks at the hypothesis of rational expectations and applies tests for bias and serially correlated errors to diverse forecasts by survey participants and group means. The next presents and discusses measures of consensus and uncertainty based on point and probabilistic forecasts from the surveys. Finally, I offer a general assessment of the record and improbability of macroeconomic forecasting.

The findings of this work are reported in the introductory chapters and in concluding sections elsewhere. Here I will only outline some overall views that seem consistent with these results.

1. Growth in the United States (and other developed market-oriented economies) proceeded through nonperiodic but recurrent sequences of business expansions and contractions. The cycles moderated in recent times and now show up more regularly in growth rates than in levels of total output and employment. This is due to profound structural, institutional, and policy changes. However, on the presently available evidence, there are still no good reasons to assert or project the demise of the business cycle in its classical form (which needs to be distinguished from the growth cycle, i.e., a sequence of high and low positive growth phases).

2. Business cycles are characteristically persistent and pervasive, interact with the longer growth trends, and show many important regularities of comovement, relative timing, and relative amplitude of different economic variables. They are not mere transitory deviations from an independently determined long-term growth trend.

3. Although the economy is always exposed to and affected by a variety of external disturbances, its major fluctuations are not simply aberrations due to these random shocks. Instead, they are to a large extent of endogenous nature. Important interactions and cyclical movements occur among all of the following variables: output prices, input costs, and profits; productivity and investment; money, credit, and interest rates. These relationships are dynamic, involving distributed lags and probably also some essential nonlinearities.

4. Although they have some major elements in common, business cycles

are not all alike and cannot be ascribed to any single factor or mechanism. Real, financial, and expectational variables all participate and interact; no monocausal theory has explained these movements or is likely to succeed.

5. The comprehensive and evolutionary view of business cycles which I hold owes much to the thinking that prevailed in a long sequence of NBER studies directed first by Wesley Mitchell and then by his successors Arthur Burns, Solomon Fabricant, and Geoffrey Moore. Other pioneers in the field, such as Joseph Schumpeter and Gottfried Haberler, adopted a similar position, although differing in many other respects. It is important to note that this conception of business cycles does not by any means imply that contractions in general economy are inevitable or must recur with any frequency. In periods and countries with strong growth trends, recessions are typically short and mild; indeed, they are often replaced by retardations of real growth. Thus, it is possible (as well as obviously very desirable) for a market-oriented economy to achieve both higher and more stable growth.

6. More recent research, at the National Bureau and elsewhere, focused greater attention on the random elements in business cycles and the effects of government activities and policies. This can serve two major purposes. First, there is need to study what shocks impinge on the economy at various times, with what frequency, persistence, and repercussions. Second, it is critically important to learn which policies can reduce and which can aggravate the cyclical instability of the economy, and when and how they do so. But an overreliance on the stochastic approach runs the danger of *assuming* that business cycles are caused only by external disturbances about which little or nothing can be done. Thus the role of internal stresses and imbalances may be neglected or underrated; also, a latent bias may enter the consideration of procyclical and countercyclical policy effects.

7. The cyclically sensitive time series form a system of leading, coincident, and lagging indicators, consistent with long-established timing regularities. To aid macroeconomic analysis and forecasting, the cyclical indicators and indexes are best used in combination rather than individually; in a continual mode rather than sporadically; along with other approaches rather than in isolation. The reasons for the observed behavior of important indicators have significant links to business cycle theories. The leading index has a strong influence on output in equations that also include such major macroeconomic variables as money, fiscal policy, inflation rates, and interest rates.

8. Macroeconomic forecasts must rely on both model and judgment but vary strongly with regard to the relative roles of the two elements. Those based on explicit models are easier to replicate and assess, but they are not on average more accurate than the others as a set. There is no demonstrated superiority of forecasts of some particular theoretical or political orientation, but few professional forecasters follow any single and well-defined model or program consistently. Combining time series of corresponding predictions from different sources and of different types produces smaller overall errors than

those of large majorities of the component individual series. The biases apparent in some forecasts are probably due mainly to insufficient information or instability of the processes that generate the data.

9. The largest errors in forecasts of real and nominal GNP growth, inflation, and the unemployment rate are made in the vicinity of business cycle and growth cycle turning points, particularly peaks. Many forecasts are overly influenced by the most recent events or developments; they rely on the persistence of local trends and are insufficiently cyclical in the sense that they miss the turns and underestimate recessions and recoveries. Leading indicators rarely miss major turns in economic activity, but they now and then err in giving false signals of a recession or (less often) recovery. A forecaster is understandably anxious to avoid predicting a downturn spuriously or prematurely ahead of others, which explains why some indicator warnings are not heeded.



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# I

## Theories and Evidence

