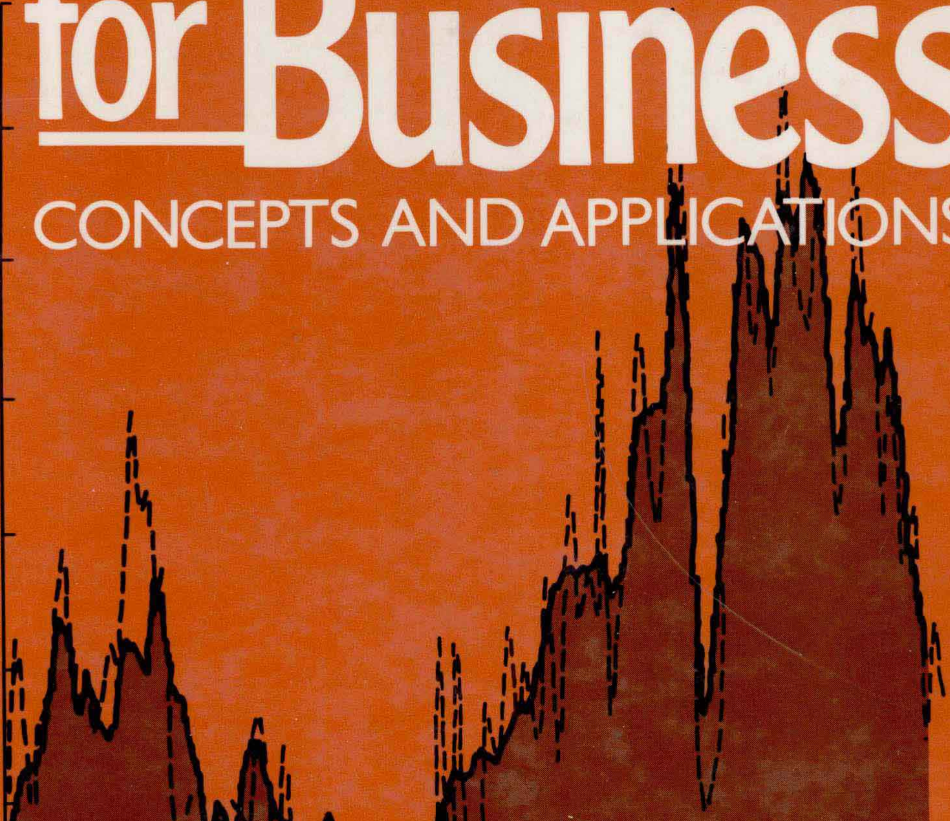
Economic Forecasting for Business

CONCEPTS AND APPLICATIONS



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ECONOMIC FORECASTING FOR BUSINESS:
Concepts and Applications

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To Kath

PREFACE

Economic forecasting has attained increasing importance in business management since the 1960s. This evolution has provided a rich opportunity for economists to apply both economic theory and expert judgments on economic conditions to the construction of forecasts of future economic developments, which in turn serve as inputs to management decisions. While the demand and opportunities for economic forecasters in business have been growing for more than two decades, academic training specifically aimed at this role is a more recent development.

I have observed the split between conventional economic training and the needs of the novice business economic forecaster from two vantage points. Fifteen years of experience as a business economic forecaster has highlighted the need for—and difficulty of—bridging the gap between academic theory and economic forecasting in a business setting. At the same time, ten years at Fordham University, teaching applied macroeconomics and forecasting to undergraduates intent on a business career, have refined my views on how this gap has been narrowed.

This book is intended to provide the aspiring business forecaster with both a conceptual framework of the process of economic forecasting in a business environment, and with practical examples of how the principal types of business forecasts are prepared. Existing books on forecasting have often been of two extreme types, which this book attempts to link. One extreme consists of anthologies of articles on aspects of forecasting. While these books provide useful supplementary material, the lack of a unified theme makes them less useful as a core text. At the other extreme are texts on applied econometrics, which are strong on theory, but fail to provide a methodological approach to its application. A distinctive feature of this text is that, using standard economic theory and statistical techniques, it takes the reader through a series of real-world forecasts. Moreover, the need to keep models simple—in particular, to economize on the use of explanatory variables, which have themselves to be forecast—is stressed. In addition, it is strongly emphasized that forecasting is not a mechanistic application of statistical and econometric techniques to economic theory. By using actual forecast examples (largely for 1982 and 1983), the existence and size of errors between forecast and actual values are vividly shown. The special role of the economist's judgment in modifying forecast model results is, thus, stressed again and again. No text can demonstrate error-proof forecasting methods for all situations under all economic conditions. More important, I have found that students—and, indeed, practicing forecasters—may learn more from forecasts that are less than perfect than from made-up examples that never err.

The text is mainly aimed at advanced undergraduates and graduate students who will shortly embark on business careers. While stressing the role of the business economic forecaster, it is hoped the text will also help future business managers, who will use the economic forecasts of others, to understand and implement them more effectively. It is also hoped that the book will be useful to active economists and managers who have lately felt the need to understand in a more systematic way the process of economic forecasting. The student should have had at least two semesters of economic theory—both macro- and microeconomics—and, preferably, at least one semester of intermediate macroeconomics. In addition, two semesters of statistics and/or econometrics would be useful. Familiarity with, and access to, a computer is also desirable.

Part I of the text provides the reader with an introduction to the fundamental concepts of economic forecasting. Chapter 1 discusses why, what, how, and for whom business economists forecast. Chapter 2 offers a brief discussion of the theoretical underpinnings of economic forecasting. This chapter is not intended to be a substitute for macro- and microeconomic course work. Experience has shown, however, that while students may be well prepared in their theory courses, they are often unsure of how to translate theory to the actual workings of the economy. Thus, reviewing the most essential aspects of theory at the outset of the text allows this material to be integrated into the applications chapters more easily. In addition, this chapter stresses the importance of a theoretical model as the basis for *economic* forecasting. Chapter 3 offers a detailed discussion of the sources and nature of the main measures of macroeconomic activity. A detailed knowledge of the composition and features of economic measures is necessary if one is to forecast them. Moreover, experience using this material in the management training program of the Capital Markets Group at Chemical Bank has demonstrated its value to the general business manager who may have to react to economic announcements in an operational setting. Chapter 4 offers an overview of statistical methods in forecasting, including analysis of time series, simple regression analysis, multiple regression analysis, and error analysis and forecast evaluation. As is the case with Chapter 2, this chapter is more a review than an exhaustive treatment of these topics. Nevertheless, a review of the key topics is likely to be of help to the student and provides a framework within which to discuss applications in the rest of the text. These fundamental concepts are applied to five important types of economic forecasts used in business in the remainder of the text. These seven chapters should be viewed as parts of an integrated whole. Part II, consisting of Chapters 5, 6, and 7, examines forecasts of the main measures of specific economic activities. Extensive attention is paid to analysis of each economic process and the appropriate technique for forecasting the process. In many businesses, a forecast of a specific indicator may be vital to forecasting the firm's basic activity. A broader use of indicator forecasting is to derive inputs to a general macroeconomic forecast.

Part III looks at more fully integrated macroeconomic forecasting over longer time horizons. Chapter 8 addresses the topic of medium-term macroeconomic forecasting. The approach follows a sequential, recursive forecast model of the Gross National Product and its major components. Chapter 9 is concerned with financial forecasting. An extensive discussion of the financial sectors, their interrelationships, and the role of monetary policy is followed by a cross section of financial forecasting approaches. An example of an interest rate forecasting model is then developed. Chapter 10 deals with long-term forecasting, its differences from medium-term forecasting, and its uses. A basic long-term forecasting model is then described.

Chapter 11 discusses firm and industry forecasting. The chapter first establishes some guidelines to insure economic forecasts will be useful to management. Six varied case studies of industry-specific forecasts are then discussed. This discussion reinforces the role of an overall macroeconomic forecast as the basis for forecasting those measures of greatest interest to a particular firm. The cases provide examples of the range of interests of different types of business. Finally, the chapter concludes with guidelines on forecast presentation.

This project, like most, turned out to be lengthier and more challenging than I had forecast at the start. Its completion was aided by many people, all of whom deserve thanks. My past students at Fordham University have willingly suffered the role of preview audiences and enjoyed the role of critics. In particular, Margaret Millard and Verna Challenger made many helpful suggestions. Dominick Salvatore, Chairman of the Department of

Economics at Fordham University, has provided guidance and support. I owe a debt to former teachers, particularly Eugene Diulio and Edward Dowling, S.J., at Fordham; Frank McGrath, now at Iona College; and Emily Sun at Manhattan College. For the past eleven years, Frederick W. Deming, Senior Vice President and Chief Economist at Chemical Bank, has acted as a mentor, for which I am grateful. Other colleagues at Chemical whose patience and help has been great and whose criticisms were appreciated, in the end, are Carl A. Batlin, Steven Edelson, Jeffrey R. Leeds, Robert D. Sbarra, Thomas J. Spitznas, Karen Wasserman, and Robert B. Wooster. Former colleagues who allowed me to pick their brains include M. Desmond Fitzgerald, now at the City University of London; Thomas W. Moore, now at Tampa Electric Co.; Michael P. Niemira, now at Paine Webber; Thomas P. O'Toole, now at City Federal Savings and Loan; and James P. Winder, now at The Bank of New York. Nereida Gonzalez provided able (and cheerful) research assistance. Mrs. Shalane Kinney and Johnny Rivera did a superb job of transforming scribbles into a manuscript. The suggestions of outside reviewers Robert A. Meyers, Professor and Associate Dean at the University of California at Berkley; Professor David T. Levy at Rutgers University; and Ronald F. Rost at the Board of Governors of the Federal Reserve System made this a better book than it otherwise would have been. Linda Frascino and Susan Fisher at Prentice-Hall saw the project through to completion.

Finally, because not least, my wife Kathryn Felton McAuley fulfilled the roles of economic colleague, reviewer, critic, and supporter, for all of which I am grateful.

John J. McAuley

CONTENTS

PART II: APPLICATIONS: INDICATOR FORECASTING

PART III: APPLICATIONS: COMPREHENSIVE ECONOMIC FORECASTING

PART I Concepts of Forecasting

1

OVERVIEW

Why, what, how, and for whom business economists forecast

Economic forecasting plays an important role in the process of business management. One of management's most difficult tasks is to make decisions about the conduct of a business in the uncertain future. Consider three situations.

I. A bank wishes to settle on the best funding strategy for the next six months so as to maximize the spread between the interest rate(s) at which it borrows and the interest rate(s) at which it lends.
II. A carpet manufacturer desires to know the number of new homes that will be built in the coming year because experience has shown there is a close relationship between new home building and the demand for carpets.
III. An electric company must determine the growth in demand for electricity in its service area over the next decade in order to plan its capital expansion.

Each of these situations shares a need to know something about future economic conditions in order to make operational decisions. Thus, a forecast of relevant economic conditions should be an important input to the decision making process. A forecast is not simply a prediction, however, but rather is a statement about future conditions based on a number of explicit assumptions. This distinction is important; by stating that some outcome results from certain other assumed conditions, the forecaster is supplying the user of the forecast results—the person who has to reach a business decision based on the forecast—with the criteria for accepting, rejecting, or modifying the forecast. A prediction, on the other hand, presents the decision maker with a take it or leave it choice: there are no bases for believing the outcome, or for making minor changes.

The three situations described above show the extent to which forecasts can vary in terms of detail, time horizon, and specificity. In the first case, a detailed macroeconomic forecast with explicit assumptions about monetary and fiscal policy is required. While the amount of forecast detail is great the time horizon is short. The focus of the carpet manufacturer is narrower; a variety of macroeconomic forecasts may result in the same level of housing starts over the next year, and thus, differences in many other details can be ignored. Indeed, the economist may accept a macroeconomic forecast prepared by another individual or group to derive a specific forecast for carpet demand. In evaluating the carpet demand forecast the final user (the decision maker) can examine the underlying economic forecast to question its reasonableness. The case confronting the electric company is different in two ways. First, the forecast horizon is much longer. This lessens the importance of short-term policy changes, but also results in a less detailed forecast. Second, since the forecast relates to a region, a national macroeconomic forecast will be of only limited help. A national forecast solution may be helpful, however, in highlighting the differences between the national and regional economies. It should be noted that in all three of these cases the economic forecast is only one input into the business decision making process. A forecast is not an end in itself, but rather a means to an end—a policy decision.

This chapter affords an overview of the economic forecasting process in a business environment by providing partial answers to the questions: why, what, how, and for whom business economists forecast.

WHY BUSINESS ECONOMISTS FORECAST

In recent years it has become increasingly apparent that one feature of the more successful businesses is better information. This ranges from information about the best sources of raw material and the most suitable production process to how best to communicate with customers, and to prospects for the future. The key function in modern business is that of the decision maker. That is, the person or group which receives all this information, processes it, and constructs a policy based on it.

Economic forecasts are one vital part of this information flow. The forecast should provide the decision maker with just the information needed to make an informed decision. As noted above, this information involves more than a mere prediction of some "bottom-line" value, such as sales, or price. A complete forecast should also state the assumptions upon which it was based. This permits the user of the forecast to accept, reject, or modify the results based on some specific difference. It also means that, even if the specific forecast results are rejected, the exercise need not have been futile. Quite likely the reason for rejecting the forecast is contained in the underlying assumptions, and altering the assumptions may lead to a new, acceptable forecast result. Indeed, the process of studying a forecast may prove a valuable exercise for management, in that it can focus more clearly on a critical unknown—and the associated risks—in the outlook.

The economist should also be careful to avoid supplying too much information. It must be remembered that the purpose of the forecast is to provide the business manager with the input needed to make an informed decision. Some details that might interest an economist are irrelevant to the decision making process and should be excluded from the reported results. Otherwise, the result is likely to be a confused management, distracted by details and, thus, inhibited rather than helped in reaching a decision.

WHAT BUSINESS ECONOMISTS FORECAST

The subject matter of economic forecasts in business is broad, reflecting the varied needs of business managers. In general, these forecasts cover a variety of economic background conditions and often some more focused concept which may be a general economic variable, or a specific measure of the firm's performance. Some feel for the range of economic forecasts can be gained by considering several types of economic forecasts prepared in a business environment.

The narrowest form of forecasting is *indicator* forecasting. Financial markets react to the announcement of a particular economic measure. For instance, the announcement that the unemployment rate for a particular month declined from 7.1% to 6.8% may be interpreted favorably by stock market participants—as a sign that the economy is growing and will lead to growth in corporate sales and profits. On the other hand, bond market participants may react adversely—regarding the decline in the unemployment rate as a sign that wage costs and, in turn, prices will soon rise rapidly. In either case, firms engaged in these markets as brokers or dealers desire a forecast of the impending announcement. This provides them with a basis for positioning themselves in advance of the announcement. The economist must be quite explicit about the underlying rationale for such an indicator and about the degree of confidence that may be attached to it. Nevertheless, the forecast itself may be expressed as a range of values. As Keynes said, it is often "better to be vaguely right than precisely wrong."

Preparation of *a general macroeconomic forecast* which indicates the current and expected state of economic activity is a function of most business economists. There are three purposes for which such an overall view may be required. First, the economist may use the broad forecast to conduct an ongoing process of informing management of the current state of, and expected changes in, business conditions. This flow of updated information permits management to adapt to a changing environment. Second, the firm may wish to publish its view of economic conditions for the benefit of its customers. This is especially true for brokerage houses and many large banks where the internal economic forecast is shared with clients as an added service. In addition, there are economic consulting firms and publications, the main function of which is to publish such output. Finally, even if the results of an overall forecast are not published outside the economics department, it may be a necessary prerequisite to preparing a narrower forecast. In the example above for carpet demand, while it may be true that carpet demand can be forecast on the basis of one measure alone—say housing starts—in order to derive the expected value of that measure, it may be necessary to prepare an overall forecast. The economist need not derive the overall forecast from scratch; it may be possible to use some published macroeconomic forecast either as is, or with only slight modification.

The narrower *firm or industry forecast*, referred to just above, has grown in importance in recent years in business management and planning. The focus of these forecasts is usually restricted to measures of the firm's or industry's performance. In particular, determining the potential demand for the firm's products is crucial to deciding how much to produce and at what