FORECASTS WITH QUARTERLY MACROECONOMETRIC MODELS
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MACROECONOMETRIC MODELS

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(Resolution adopted October 25, 1926, and revised February 6, 1933.
February 24, 1941, April 20, 1968, and September 17, 1973)

Preface

This monograph presents the e already given rise to a numb are. It is to examine macroe only to advance scientific inquiry techniques and further deve based primarily on models and Economics of the Department of Finance and Commerce.


2 Under a reorganization effective Jan 1972, the Bureau of Economic Analysis in a new Su ever, for the sake of continuity, it is refer
Preface

This monograph presents the end result of a research effort that has already given rise to a number of papers by its authors. Here our purpose is to examine macroeconomic forecasts and models, not only to advance scientific inquiry per se but also to improve evaluation techniques and further development in this area. Our analysis is based primarily on models and forecasts from the Office of Business Economics of the Department of Commerce and the Wharton School of Finance and Commerce.


2 Under a reorganization effective January 1, 1972, the OBE has been redesignated the Bureau of Economic Analysis in a new Social and Economic Statistics Administration. However, for the sake of continuity, it is referred to as OBE throughout this volume.
In Part I we study econometric model forecasts based on observed rather than projected values for the exogenous variables (those determined outside of the model), when no subjective judgment is used to adjust the equations in the model. One of our aims is to see whether the average error in GNP forecasts is larger or smaller than one would expect on the basis of the average errors in the forecasts of GNP's components, and whether the errors in the one-year-ahead forecasts are larger than one would anticipate from the size of the errors in multiperiod quarterly forecasts. In this connection, we are asking whether forecast errors—for different components of GNP in the first case and for different quarters of the year in the second—offset each other or whether they cumulate. In another part of our analysis we compare the magnitudes of the errors in the sample period with those in the forecast period to determine the extent to which error is increased when the model builder does not have the advantage of hindsight in choosing his equations, and when the period of prediction is not the period over which the equations are fitted. We also test equation adjustments based on two formulas to see how these adjustments influence our findings. At the end of Part I we look at the changes in forecast error that result either from adding anticipations variables to the specification of some equations or from altering the statistical method of finding the coefficient values for a subset of equations. Here we are especially interested in the changes in the interrelationships of the model. How much of the variation in forecast accuracy can be attributed to changes in the size and interdependence of errors in the equations and how much to changes in the manner errors are propagated through the relationships in the model?

In Part II we examine econometric models as they are used by an econometrician in a forecasting situation. For each forecast we start with the exact model used for the forecast, and all of the adjustments and values for the exogenous variables used by the forecaster. We present a procedure for decomposing the forecast error for each variable into several components: error in the equation explaining the variable in question; error attributable to the rest of the system, including the feedback of error from the equation explaining the variable; error (or error reduction) due to the forecaster's adjustments of the equations in the model; error caused by the forecaster's incorrect guesses as to the future values for the exogenous variables; and error caused by a mistake in the internally generated values for lagged variables in multiperiod forecasts available to study the nature of forecasters. Finally, we compare models with those derived in mechanical forecasting methods, a section associated with the Federal.

We are deeply indebted to the Department of Commerce and the Department of Commerce for supplying us with data since we needed not only records of past forecasts, our without much personal attention. Especially grateful to Michael Hisch, Lawrence R. Klein, Maurice R. Frank, Ray L. Rees, and Henri Theil of the NBER and the Federal Reserve for their helpful suggestions. Also of the Federal, Paul Taubman, Ta-Chung Li, and staff of the Bureau of Economic Research Committee and Henri Theil of the NBER. To the Bureau of Economic Research for their help in the completion of this study, and for providing us with the necessary data. To Michael Hisch, Lawrence R. Klein, Maurice R. Frank, Ray L. Rees, and Henri Theil of the NBER. For their help in the completion of this study, and for providing us with the necessary data. This study was financed by the Bureau of Economic Research.
model forecasts based on observed exogenous variables (those no subjective judgment is used in the forecasts of GNP's or smaller than one would expect from the size of the errors in multivariate equations) and the one-year-ahead forecasts using the interrelationships of the exogenous variables in multiperiod forecasts. We also use all of the evidence available to study the nature of the adjustments made by econometric forecasters. Finally, we compare forecasts derived from econometric models with those derived in other ways. These include various mechanical forecasting methods, as well as the simple forecasting equation associated with the Federal Reserve Bank of St. Louis.

We are deeply indebted to the Office of Business Economics of the Department of Commerce and the Wharton School of Finance and Commerce for supplying us with information that was vital to this project. Since we needed not only econometric models but also detailed records of past forecasts, our project would have been impossible without much personal attention from the model builders. We are especially grateful to Michael K. Evans, George R. Green, Albert A. Hisch, Lawrence R. Klein, Maurice Liebenberg, and Michael D. McCarthy for the time they devoted to our project. Special thanks also go to Paul Taubman, Ta-Chung Liu, and An-loh Lin of the National Bureau's Staff Reading Committee, to David L. Grove, Charles B. Reeder, and Henri Theil of the NBER Board Reading Committee, and to Geoffrey Moore for their helpful suggestions. We are indebted to F. Thomas Juster for his encouragement in the early stages of this work and to Robert E. Lipsey for his careful reading of the manuscript, and greatly appreciate its thorough editing by Hedy D. Jellinek, as well as the charts completed by H. Irving Forman. We are also grateful to Mary Alice and Glen Hazleton for helping us compile the tables, and to Annia Balon, Carol Wilczynski, Alice Caldwell, Jennie Cashman, and Donna Motyka of the University of Massachusetts secretarial staff for typing the text and tables.

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To Dalia, Sidney, and Josephine

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