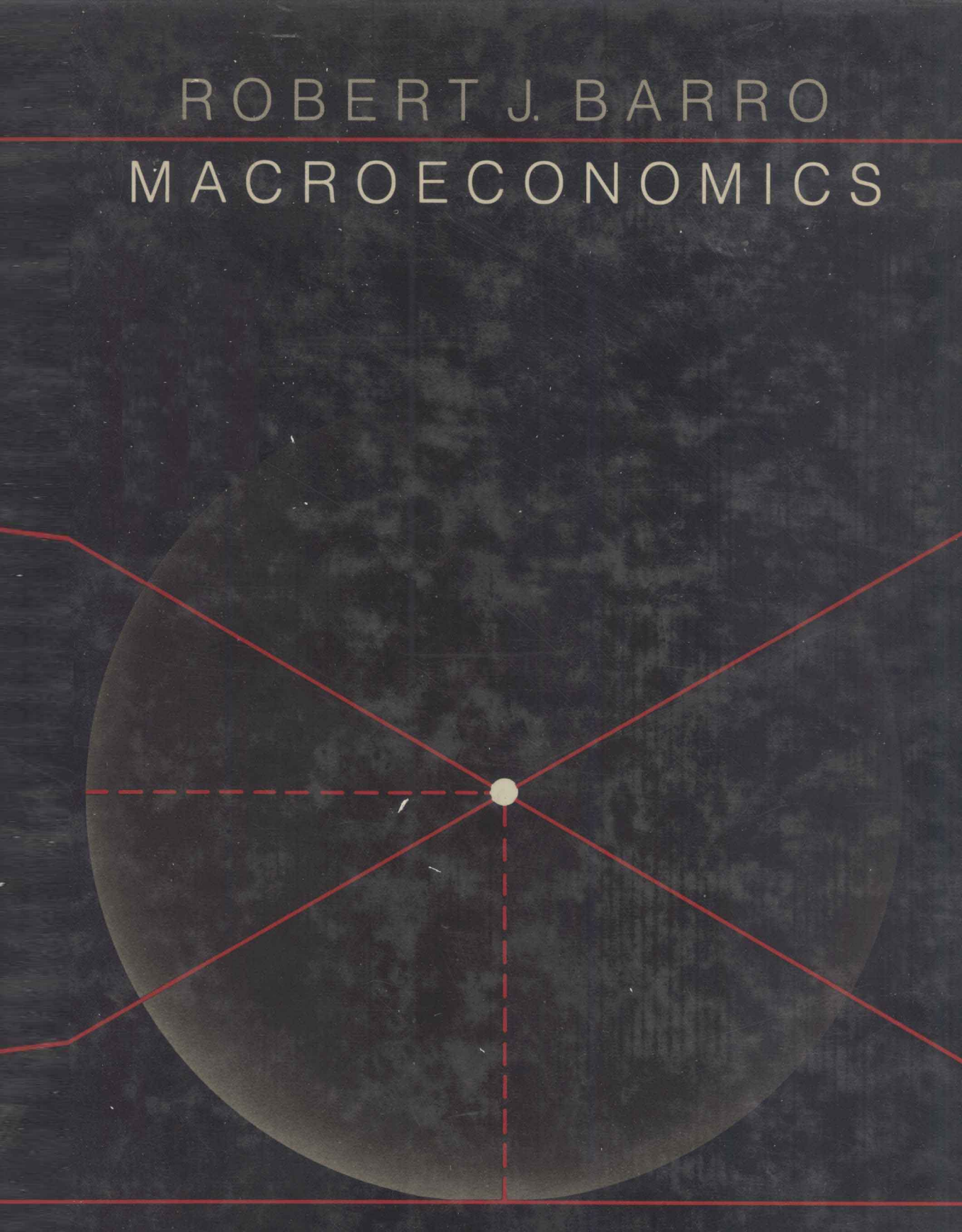
ROBERT J. BARRO

MACROECONOMICS



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To Jason–
I hope this book makes him rich.

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ABOUT THE AUTHOR

Robert J. Barro was born in New York City, and graduated from Cal Tech in 1965. In 1969 he completed his dissertation in economics at Harvard University. Since that time, Professor Barro has held academic positions at Brown University and the University of Rochester, and is presently Professor of Economics at the University of Chicago, and a Research Associate at the National Bureau of Economic Research. A co-editor of the *Journal of Political Economy,* Professor Barro has also served in an editorial capacity for the *Journal of Monitory Economics, American Economic Review,* and *Econometrica*.

Professor Barro is the author of over 60 professional articles and books dealing with topics in macroeconomics, among them *Money, Employment and Inflation,* (with Herschel Grossman), and *Money, Expectations and Business Cycles*. His early research dealt with the interplay between money and prices during extreme inflationary conditions, and with the Keynesian approach to macroeconomics. Since 1975 his attention has been focused on the equilibrium approach to macroeconomics, the public debt, social security, government expenditures and taxes, monetary standards, and inflation.

PREFACE

Macroeconomics is in a state of flux. The Keynesian model, which was almost universally accepted as the basic paradigm until the late 1960s, has become increasingly less popular. This loss in popularity reflects embarrassments over past economic events—especially the failure of the model to deal satisfactorily with inflation and supply shocks. It also reflects the theoretical and empirical progress of an alternative "market-clearing approach," which is more closely related to the microeconomics that economists use successfully to study the behavior of individual households and businesses. Although some important problems remain, this approach provides a much more satisfactory macroeconomics than the one we had before. By more satisfactory, I mean that the approach avoids internal inconsistencies and also provides a better understanding of the real world.

While the Keynesian model has been subject to increasing skepticism by economists, it has nevertheless continued to reign supreme in the main textbooks. As a result, it has continued to organize the way the subject has been taught to students. Although aspects of the market-clearing model have been presented in textbooks, this model has not been taken seriously when it comes to studying real-world events or policy proposals. Furthermore, the explanatory power of the model has not been fully realized. This gap between textbook material and the knowledge gained in the last 15 years motivated me to write this book.

Here, I present the market-clearing approach as a general method for analyzing real-world macroeconomic problems. In addition, I discuss the material in as simple a fashion as I have found possible, so that the book will be accessible to undergraduate students. Extensive review and class-testing of the material have assured me that it is—my students tell me that the book is easier than I am. This is not, however, an attempt to provide a "balanced" treatment of alternative approaches to macroeconomics. There is no book—and probably could be none of substance—that is balanced in this respect. Although I deal in a serious manner with the Keynesian model in this book, I do not use this model for most of the analyses of economic events or policies. In any case, whatever one's ultimate judgment about the value of the Keynesian model, there is a very good reason not to start the study of macroeconomics with it. The Keynesian theory is an advanced topic that cannot be fully understood and appreciated until the market-clearing analysis has been worked out.

In writing this book I have benefited from an unusual amount of excellent advice, as well as encouragement to carry out the project. Since regular revision is a part of textbook writing, I would also appreciate any suggestions from readers. I am particularly grateful to Mark Rush, who has provided valuable and detailed comments on several versions of the text. Chitra Ramaswami, who is responsible for many of the end-of-chapter problems and the glossary, has also been a great help. I would like to thank for helpful comments my colleagues and reviewers,

including James Barth, Gary Becker, Dave Denslow, William Dougan, Steve Easton, Stan Engerman, Gene Fama, Jacob Frenkel, Peter Garber, Jeremy Greenwood, Herschel Grossman, Sandy Grossman, John Haltiwanger, Bob King, Roger Kormendi, Bob Lucas, Chaipat Sahasakul, Dave Saurman, Jeremy Siegel, Dave Spencer, Dennis Starleaf, Alan Auerbach, Gene Grossman, J. Kirker Stephens, Raburn Williams, John Laitner, Michael Salemi, Tim Roth, John Eaton, Michael Wiseman, George Lamson, John Pettengill, A. Edward Day, Marc Vellrath, Michael Lovell, Stephen LeRoy, and Henry Wan, Jr.

I am also grateful to Neil Howe and Les Lenkowsky, who argued early on that this book was a good idea. Terri Fisher and Janet Mezgolits have cheerfully and efficiently typed a long succession of drafts. I would like to express my appreciation to Rich Esposito. Despite an occasional tendency to get overly excited, he is a first-rate editor and perhaps a promising economist. He in turn would like to thank Alan Stockman and Bob Lucas for first bringing us together. Finally, thanks go to my wife Judy. I am indebted to her for her patience and encouragement, as well as for direct input into many parts of the book. (She thinks that this book is better than some of my previous work.)

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CONTENTS

CHAPTER 1

THE APPROACH TO MACROECONOMICS

In macroeconomics we study the overall or aggregate performance of an economy. For example, we consider the total output of goods and services as measured by the **gross national product (GNP).** Similarly, we look at the aggregates of employment and unemployment, and at the breakdown of GNP between consumer expenditures, investment (which are the purchases of new capital goods), and government purchases of goods and services.

The above terms refer to the quantities of goods or work effort. We shall also be interested in the prices that relate to these quantities. For example, we consider the dollar prices of the goods and services that the economy produces. When we look at the price of the typical or average item, we refer to the **general price level.** But we are also interested in the **wage rate,** which is the price of labor services, and the **interest rate,** which determines the cost of borrowing and the return to lending.

We shall want to know first how the private economy determines the various quantities and prices that we just mentioned. In addition, we want to know how government policies affect these variables. Specifically, we shall consider monetary policy, which involves the determination of the quantity of money and the design of monetary institutions, and fiscal policy, which pertains to the government's expenditures, taxes, and deficits.

The performance of the overall economy is, of course, a substantial concern for everyone. This performance influences our job prospects, our incomes, and the prices that we face. Thus, it is important for us—and even more important for our government policymakers—to understand how the macroeconomy works. Unfortunately, as is obvious from reading the newspapers, the theory of macroeconomics is not a settled scientific field. In fact, there is much controversy among economists about what is a useful basic approach, as well as about the detailed analysis of particular economic events and policy proposals. However, there has been a great deal of progress in recent years in designing a more satisfactory macroeconomic theory. The main objective of this book is to convey that progress to students in an accessible form.

The Behavior of Output, Unemployment, and the Price Level in the United States

In order to get an overview of the subject matter, let's look now at the historical record on some of the major macroeconomic variables for the United States. Figure 1.1 shows the total output of goods and services in the United States from 1870 to 1982. (The starting date is determined by the available data.) The measure of aggregate output is the gross national product, expressed in terms of values for a base year, which happens to be 1972. This measure, which we discuss in a later section on national-income accounting, is called **real GNP.**[1]

Two features of the graph of real GNP stand out. First, there is the general upward trend, which reflects the long-term growth or economic development of the U.S. economy. In particular, the average growth rate of real GNP from 1870 to 1982 is 3.3% per year. Thus, over 112 years, the total output increased 40-fold. If we divide through by population to determine real per capita GNP, then we find that the average growth rate is 1.7% per year. (This figure equals the 3.3% average growth rate of real GNP less the 1.6% average growth rate of population.) Hence, over 112 years, the output per person increased by a factor of 7.

The second striking feature of Figure 1.1 is the recurring ups and downs in real GNP over periods of roughly 1–5 years. These movements are called aggregate business fluctuations or the business cycle.[2] When real GNP falls toward a low point or trough, we describe the situation as a **recession** or an economic contraction. Conversely, when real GNP expands toward a high point or peak, we call it a **boom** or an economic expansion.

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[1]The figure uses a proportionate (or logarithmic) scale on the vertical axis. Hence, each unit on this axis corresponds to an equal percentage change in real GNP.

[2]The term *business cycle* is somewhat misleading, since it suggests a much more regular pattern of ups and downs in economic activity than actually appears in the data. But the term is too entrenched in the economics literature to avoid entirely.

Figure 1.1 The Behavior of Output in the United States, 1870–1982

Sources for Figures 1.1–1.5:

For real GNP and the GNP deflator—Recent values are from the U.S. Commerce Department, *U.S. Survey of Current Business*. Figures back to 1909 are from the U.S. Commerce Department, *National Income and Product Accounts of the U.S., 1929–76*. For 1889–1908, the numbers are based on John Kendrick, *Productivity Trends in the United States*, Princeton University Press, Princeton, N.J., 1961, Tables A-I and A-III. For 1869–88, the data are unpublished estimates of Robert Gallman.

For the unemployment rate—The figures are the number unemployed divided by the total labor force, which includes military personnel. Recent data are from *Economic Report of the President*, 1983, Table B-29, and U.S. Bureau of Labor Statistics, *Handbook of Labor Statistics*, 1980, Table 1. Values before 1940 are from Stanley Lebergott, *Manpower in Economic Growth*, McGraw Hill, New York, 1964. The data from 1933–43 are adjusted to classify federal emergency workers as employed, as discussed in Michael Darby, "Three-and-a-Half Million U.S. Employees Have been Mislaid: Or, an Explanation of Unemployment, 1934–1941," *Journal of Political Economy*, February 1976.