

# MACRO- ECONOMICS

RUDIGER DORNBUSCH  
STANLEY FISCHER

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SECOND EDITION

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STANLEY FISCHER

*Department of Economics  
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## **MACROECONOMICS**

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# PREFACE

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## TO THE SECOND EDITION

This second edition presents a substantially revised version of our book. All chapters have been revised to reflect the results of new research, new data, readers' comments and suggestions, and our own attempts to improve the text.

There are major changes in the chapters on aggregate supply (Chapter 11) and on the open economy (Chapters 18 and 19). These chapters have been rewritten both to simplify the exposition and to give more space and emphasis to important developments. Thus Chapter 11 deals more extensively with supply shocks, and the open economy section has an expanded discussion of adjustment problems in inflationary economies. The distinction between real and nominal interest rates has been given more emphasis in this edition, particularly in Chapter 13. Chapter 10 has been expanded to include a description and analysis of the Great Depression of the 1930s.

The result of these revisions, we believe, is a text that is substantially improved over the first edition but one that is recognizably the same book. Our overriding objective is still to explain important points of analysis as carefully, thoroughly, and simply as possible, in order to make clear the relevance of macroeconomic theory to the understanding of the behavior of the economy.

We have been delighted with the success of the first edition and are grateful to the many readers who have given us suggestions for improving the text. Since we have been unable to accept all their suggestions, none of them should be held responsible for the deficiencies—we hope they are few—contained in this edition. Among those who have given advice are: Andrew Abel, Elizabeth Allison, Richard Anderson, Francis Bator, Olivier Blanchard, Thomas Bonsor, Cary Brown, Carl Christ, Allan Drazen, Robert Eisner, George Feiwel, Rendigs Fels, Jeffrey Frankel, Benjamin Friedman, Dennis Hanseman, John Kareken, Edi Karni, David Kendrick, David Laidler, Kathleen Langley, Joram Mayshar, Erwin Miller, Frederic Mishkin, Edward Offenbacher, Lucas Papademos, Don Patinkin, Don Richter, Thomas Russell, Walter Salant, Masaki Shinbo, Robert Solow, Michael Spiro, Richard Startz, Houston Stokes, Larry Summers, Peter Temin, and Michael Veall. We benefited, too, from comments and suggestions made by reviewers of the second edition: James Dugan, Michael Edgmand, Hajime Miyazaki, Aris Protopapadakis, and Stephen Van der Ploeg.

A totally revised version of the *Instructor's Manual*, prepared by us, is available on request from McGraw Hill.

A *Study Guide* prepared by Richard Startz of the University of Pennsylvania is now available to accompany this edition. The *Study Guide* contains a wide range of questions, starting from the very easy and progressing in each chapter to material that will challenge the more advanced student. It is a great help in studying, particularly since active learning is so important.

We have once more been fortunate in the assistance we have had. David Modest provided outstanding research assistance and moral support. Carolyn Dedutis did most of the typing.

*Rudiger Dornbusch*  
*Stanley Fischer*

# **PREFACE**

## **TO THE FIRST EDITION**

Our aim in writing this book has been to explain how modern macroeconomics is used in understanding important economic issues, and to help the reader analyze macroeconomic problems for her or himself. The book provides full coverage of basic macroeconomics, such as national income accounting, aggregate demand, and IS-LM analysis. It goes beyond the standard coverage in presenting also the theory of aggregate supply, the interesting and vitally important topics of inflation and unemployment, and a detailed treatment of basic open-economy macroeconomics. No important topic has been omitted because it is too difficult, but we have taken great pains to make nothing more difficult than it need be.

The book is policy- and issue-oriented, and this orientation is emphasized in a number of ways. Any presentation of macroeconomics and economic policy has to ask why, with all the theory we have at our disposal, recent economic performance has been so poor. We discuss problems of economic policy making directly in Chapters 9 and 15. Then in Chapters 10 and 16 we apply our basic macro theory to study the behavior of the economy in the 1960s and 1970s, respectively. Policy making and its problems are also emphasized by our continual references to economic events, issues, and dilemmas in the postwar United States economy, as we elucidate the relevance of the theoretical material. Finally, policy considerations are emphasized in that a full chapter is devoted to a discussion of the public sector budget and its financing. That chapter discusses not only the facts about government spending, taxes, and the national debt but also considers how the debt is financed, the meaning of the burden of the national debt, and the relationship between government budget deficits and inflation.

Macroeconomics is less cut-and-dried than microeconomics. That makes it unsatisfying if you are looking for definite answers to all economic problems, but should also make it more interesting because you have to think hard and critically about the material being presented. We have not hesitated to indicate where we think theories are incomplete. We unfortunately cannot guarantee that you will not at some future time have to unlearn something you learned from this book, but we hope you will have been warned.

Because the state of macroeconomics is not settled, and because it is so intimately tied up with policy making, the field is often seen as one in which anything goes and in which opposing Monetarist and Keynesian schools contend on almost every point. That is simply untrue. There are substantial areas of

agreement among almost all macroeconomists—but it is less interesting to discuss points of agreement once you have understood them than to argue about disagreements. However, we do not emphasize the Keynesian-Monetarist debate in this book, preferring to discuss substantive matters and mentioning alternative views where relevant. Some prepublication reviewers of the book labeled us Keynesians and others called us Monetarists. We are quite happy to be known as neither or both.

## HOW TO USE THE BOOK

### To the Student:

Because we have not shied away from important topics even if they are difficult, parts of the book require careful reading. There is no mathematics except simple algebra. Some of the analysis, however, involves sustained reasoning. Careful reading should therefore pay off in enhanced understanding. Chapter 1 gives you suggestions on how to learn from this book. The single most important suggestion is that you learn actively. Some of the chapters (such as Chapter 9) are suitable for bedtime reading, but most are not. Use pencil and paper to be sure you are following the argument. See if you can find reasons to disagree with arguments we make. Work the problem sets! Be sure you understand the points contained in the summaries to each chapter. Follow the economic news in the press, and see how that relates to what you are learning. Try to follow the logic of the budget or any economic packages the administration may present. Occasionally, the chairpersons of the Federal Reserve Board or the Council of Economic Advisers testify before the Congress. Read what they have to say, and see if it makes sense to you.

## ACKNOWLEDGMENTS

The debts incurred by authors are among the nicest there are, and we are fortunate to have acquired many in a short time. We want first to thank colleagues and present or former students who used the book and/or advised us about it: Richard Anderson, Yves Balcer, Olivier Blanchard, Cary Brown, Robert Bishop, Jacques Cremer, Allan Drazen, Jeffrey Frankel, Paul Joskow, Roger Kaufman, Charles Kindleberger, Mark Kuperberg, Frederic Mishkin, Mary Kay Plantés, Paul Samuelson, Steven Sheffrin, Robert Solow, Charles Steindel, and Hal Varian.

We were fortunate to receive detailed comments on the book from Professors Lloyd Atkinson (American University), Alan Deardorff (University of Michigan), Don Heckerman (University of Arizona), Thomas Mayer (University of California at Davis), William Poole (Brown University), and Steven Shapiro (University of Florida). Their suggestions have led us to make extensive revisions that have clarified, simplified, and sharpened the exposition, and we are very grateful for the encouragement and enthusiasm they have shown. We appreciate also the critical comments on early portions of the manuscript that we received from



Professors Michael Babcock (Kansas State University), Arnold Collery (Amherst College), William Hosek (University of New Hampshire), Timothy Kersten (California Polytechnic State University), Charles Knapp (Department of Labor), Charles Lieberman (University of Maryland), Andrew Policano (University of Iowa), and from some anonymous reviewers.

We have not hesitated to impose on our friends and wish to acknowledge helpful suggestions from Jacob Frenkel (University of Chicago), Ronald Jones (University of Rochester), Edi Karni (Tel Aviv University), David Levhari and Don Patinkin (The Hebrew University), Don Richter (Boston College), and Michael Rothschild (University of Wisconsin).

Stephen Dietrich, McGraw-Hill economics editor, provided us with unfailing support and assistance. It has been a pleasure to work with him and the other members of the McGraw-Hill staff. Carl Shapiro, research assistant extraordinary, Nancy Johnson, and Barbara Ventresco were indispensable in the production of the manuscript(s). Their efficiency, cheerfulness, and willingness to work long hours helped keep us going and are deeply appreciated.

*Rudiger Dornbusch*  
*Stanley Fischer*



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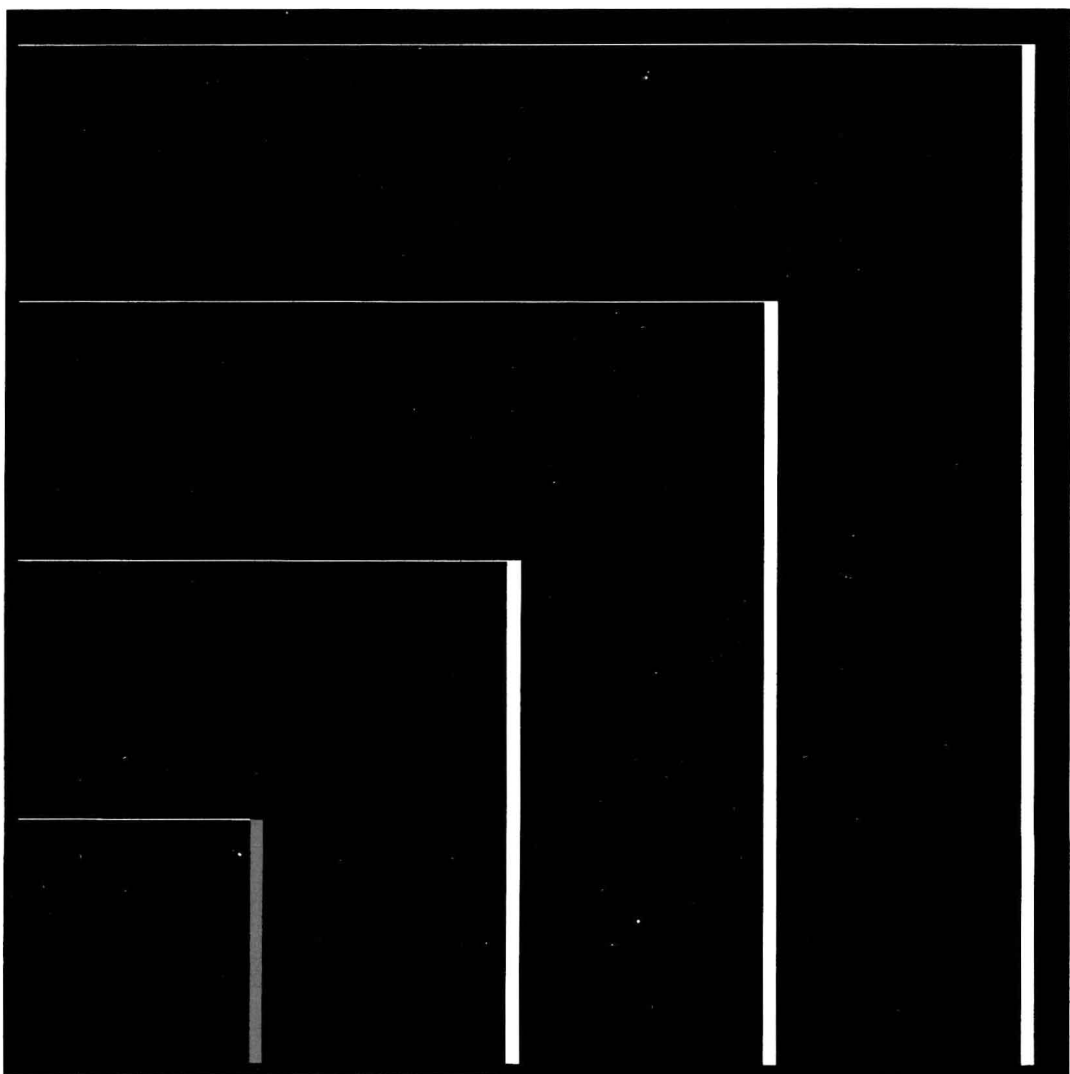
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# 1

## PART

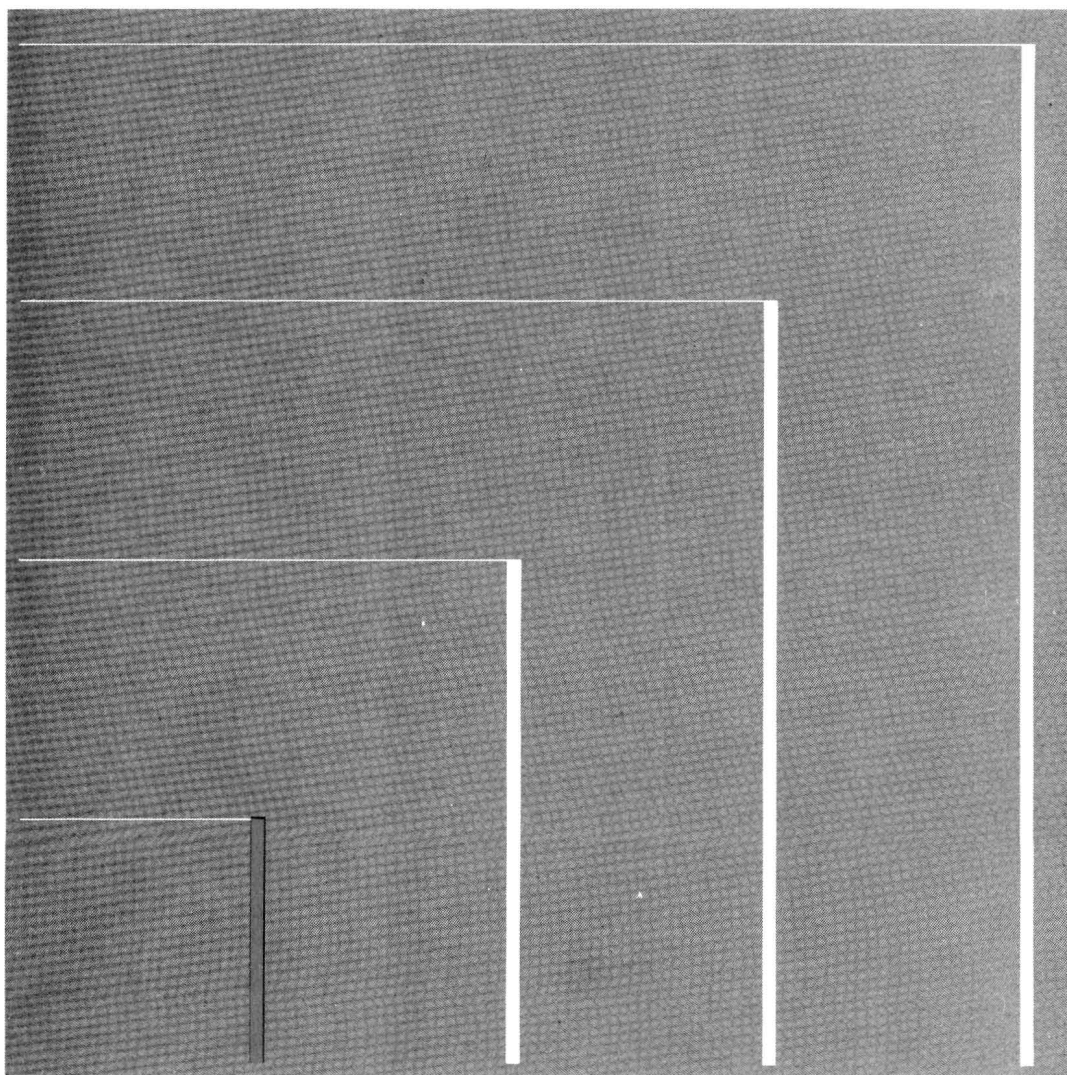




# 1

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## INTRODUCTION



**M**acroeconomics is concerned with the behavior of the economy as a whole—with booms and recessions, the economy's total output of goods and services and the growth of output, the rates of inflation and unemployment, the balance of payments, and exchange rates. To study the overall performance of the economy, macroeconomics focuses on the economic policies and policy variables that affect that performance—on monetary and fiscal policies, the money stock and interest rates, the public debt, and the federal government budget. In brief, macroeconomics deals with the major economic issues and problems of the day.

Macroeconomics is interesting because it deals with important issues. But it is fascinating and challenging too, because it reduces complicated details of the economy to manageable essentials. *Those essentials lie in the interactions among the goods, labor, and assets markets of the economy.*

In dealing with the essentials, we have to disregard details of the behavior of individual economic units, such as households and firms, or the determination of prices in particular markets, or the effects of monopoly on individual markets. These are the subject matter of microeconomics. In macroeconomics we deal with the market for goods as a whole, treating all the markets for different goods—such as the markets for agricultural products and for medical services—as a single market. Similarly, we deal with the labor market as a whole, abstracting from differences between the markets for, say, migrant labor and doctors. We deal with the assets markets as a whole, abstracting from the differences between the markets for AT&T bonds and Rembrandt paintings. The cost of the abstraction is that omitted details sometimes matter. For example, agricultural price rises in early 1973 had a significant effect on inflation and unemployment, but few macroeconomists had paid attention to the details of agricultural developments before that time. (But they have since!) The benefit of the abstraction is increased understanding of the vital interactions among the goods, labor, and assets markets.

Despite the contrast between macroeconomics and microeconomics, there is no basic conflict between them. After all, the economy in the aggregate is nothing but the sum of its submarkets. The difference between micro- and macroeconomics is therefore primarily one of emphasis and exposition. In studying price determination in a single industry, it is convenient for microeconomists to assume that prices in other industries are given. In macroeconomics, where we study *the* price level, it is for the most part sensible to ignore changes in relative prices of goods among different industries. In microeconomics, it is convenient to assume the total income of all consumers is given and to ask how consumers divide their spending out of that income among different goods. In macroeconomics, by contrast, the aggregate level of income or spending is among the key variables to be studied.

The great macroeconomists, including Keynes, and modern American leaders in the field, like Milton Friedman of the University of Chicago,

Franco Modigliani of MIT, and James Tobin of Yale, have all had a keen interest in the applications of macrotheory to problems of policy making. Developments in macrotheory are closely related to the economic problems of the day. Indeed, the study of macroeconomics does not yield its greatest rewards to those whose primary interest is theoretical. The need for compromise between the comprehensiveness of the theory and its manageability inevitably makes macrotheory a little untidy at the edges. And the emphasis in macro is on the manageability of the theory and on its applications. To demonstrate that emphasis, this book uses the theories we present to illuminate recent economic events from the early 1960s through the end of the 1970s. We also refer continually to recent economic events to elucidate the meaning and the relevance of the theoretical material.

Modern macroeconomics is often seen as the battleground for conflict between two implacably opposed schools of thought—monetarism, represented by its champion, Milton Friedman, and “Keynesianism,” or nonmonetarism, or fiscalism, represented by economists such as Franco Modigliani and James Tobin. This view is seriously misleading. There are indeed conflicts of opinion and even theory between monetarists and nonmonetarists, but much more important, there are major areas of agreement: there is far more to macroeconomics than the topics on which monetarists and fiscalists disagree. We do not emphasize the monetarist/fiscalist debate in this book, preferring to discuss substantive matters while mentioning alternative views where relevant.

We shall now in Section 1-1 present an overview of the key concepts with which macroeconomics deals. Section 1-2 presents a diagrammatic introduction to aggregate demand and supply, and their interaction; it gives a very general perspective on the fundamentals of macroeconomics and the organization of this book. Then, in Section 1-3, we outline the approach of the book to the study of macroeconomics and macropolicy making, and present a preview of the order in which topics are taken up. Section 1-4 contains brief remarks on how to use the book.

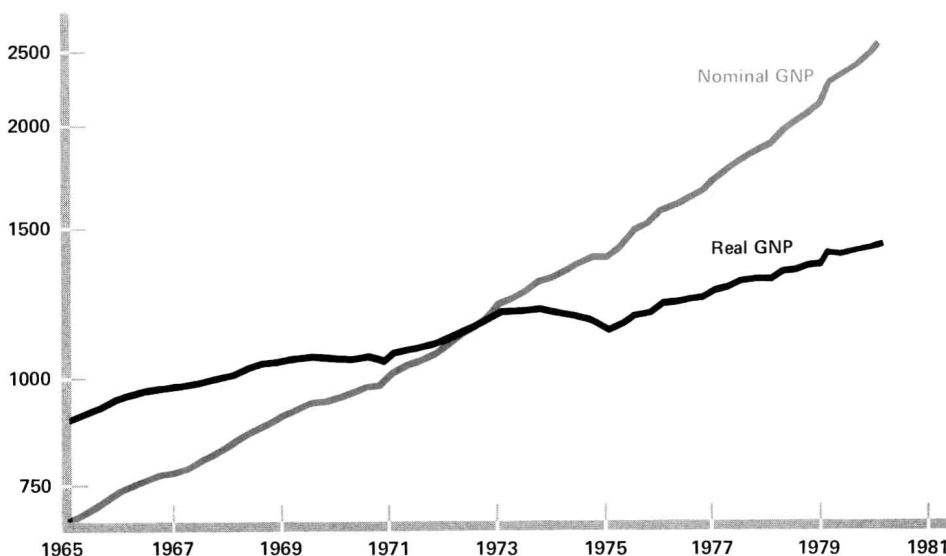
## 1-1 KEY CONCEPTS

### Gross National Product

*Gross national product* (GNP) is the value of all goods and services produced in the economy in a given time period. GNP statistics are prepared on a quarterly basis. Chart 1-1 shows two measures of GNP—*nominal*, or *current dollar*, GNP and *real*, or *constant dollar*, GNP.<sup>1</sup> Nominal

<sup>1</sup> Notice that the scale for GNP in Chart 1-1 is not linear. For example, the distance from 600 to 650 is bigger than the distance from 1,450 to 1,500. The scale is logarithmic, which means that equal ratios are represented by equal distances. For instance, the distance from 600 to 1,200 is the same as the distance from 750 to 1,500, since GNP doubles in both cases. On a logarithmic scale, a variable growing at a constant rate (e.g., 4 percent per annum) is represented by a straight line.





Note: Real GNP is calculated using 1972 prices. The scale is logarithmic. The logarithmic scale is explained in footnote 1.

**CHART 1-1** REAL AND NOMINAL GNP, 1965-1980  
(Source: Citibank Economic Database)

GNP measures the value of output at the prices prevailing in the period the output is produced, while real GNP measures the output produced in any one period at the prices of some base year. At present, 1972 serves as a base year for real income measurement.

Chart 1-1 shows that *nominal* GNP was equal to \$2,369 billion in 1979 and \$1,171 billion in 1972. Nominal GNP grew at an average rate of 10.6 percent during that period. If we divide total GNP by population, we obtain *per capita* nominal GNP, which was \$10,700 in 1979 and \$5,600 in 1972. That is, the average value of output produced in the United States economy in 1979 was \$10,700 per member of the population. The chart shows that *real* GNP was \$1,432 billion in 1979 and the same \$1,171 billion in 1972,<sup>2</sup> implying an average annual growth rate of real GNP of only 2.9 percent over the period.

We will next consider, first, why nominal GNP has grown faster than real GNP, and second, the factors that cause real GNP growth. The difference between the growth rates of nominal and real GNP occurs because the prices of goods produced in the economy change over time.

<sup>2</sup> Why are real and nominal GNP the same for 1972? Because we use 1972 prices to calculate real GNP. You may also want to calculate *real* per capita GNP for 1972 and 1979 from the numbers given in the text.

Real GNP calculates the value of goods produced at the prices that prevailed in the base year (1972, in this case), whereas nominal GNP values goods at the prices that prevail when they are produced. Since prices of nearly all goods have been rising, nominal GNP has risen faster—indeed, much faster—than real GNP. Price rises, or *inflation*, at the average rate of 7.7 percent per year for 1972–1979 account for the difference between the growth rates of real and nominal GNP.

With 1972 as the base year for the prices at which output is valued, we observe in Chart 1-1 two implications of the distinction between nominal and real GNP. First, in 1972 the two are equal because, in the base year, current and constant dollars are the same dollars. Second, with inflation, nominal GNP rises faster than real GNP, and therefore, after 1972, nominal GNP exceeds real GNP. The converse is of course true before 1972.

We turn next to reasons for the growth of real GNP. The first reason real GNP changes is that the available amount of resources in the economy may change. The resources are conveniently split into capital and labor. The labor force, consisting of people either working or looking for work, grows over time and thus provides one source of increased production. The capital stock, including buildings and machines, likewise has been rising over time, thereby making increased output possible. Increases in the availability of *factors of production*—the labor and capital used in the production of goods and services—thus account for part of the increase in real GNP.

The second source of change in real GNP is a change in the employment of the given resources available for production. Not all the capital and labor available are actually used at all times. In 1975, for example, a reduction in employment or a rise in *unemployment* showed up as a decline in real GNP. Indeed, in that year unemployment rose to 9 percent, the highest unemployment rate in the post-World War II period. Given factors of production, then, changes in factor utilization change real GNP.

The third reason for real GNP to change is that the *efficiency* with which factors of production work may change.<sup>3</sup> Over time, the same factors of production can produce more output. These increases in the efficiency of production result from changes in knowledge, including *learning by doing*, as people learn through experience to perform familiar tasks better.

### Potential Output

One of the key macroeconomic policy concepts is *potential real GNP*, or *potential output*. Potential output is shown along with actual output in Chart 1-2. It is an estimate of the level at which real GNP would be if there

<sup>3</sup> These efficiency improvements are often called *productivity* increases.