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STANLEY FISCHER

MACRO-
ECONOMICS

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MACROECONOMICS

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Preface

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 1960's and 1970's, 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.

To the Instructor:

An *Instructor's Manual*, written by Steven Sheffrin of the University of California at Davis, is available. It includes suggestions for different ways

of using the book, particularly for organizing a one-semester or quarter course. Beyond suggestions for organizing different course requirements around this book, the manual contains further bibliographic indications and other course material.

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.

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*Rudiger Dornbusch
Stanley Fischer*

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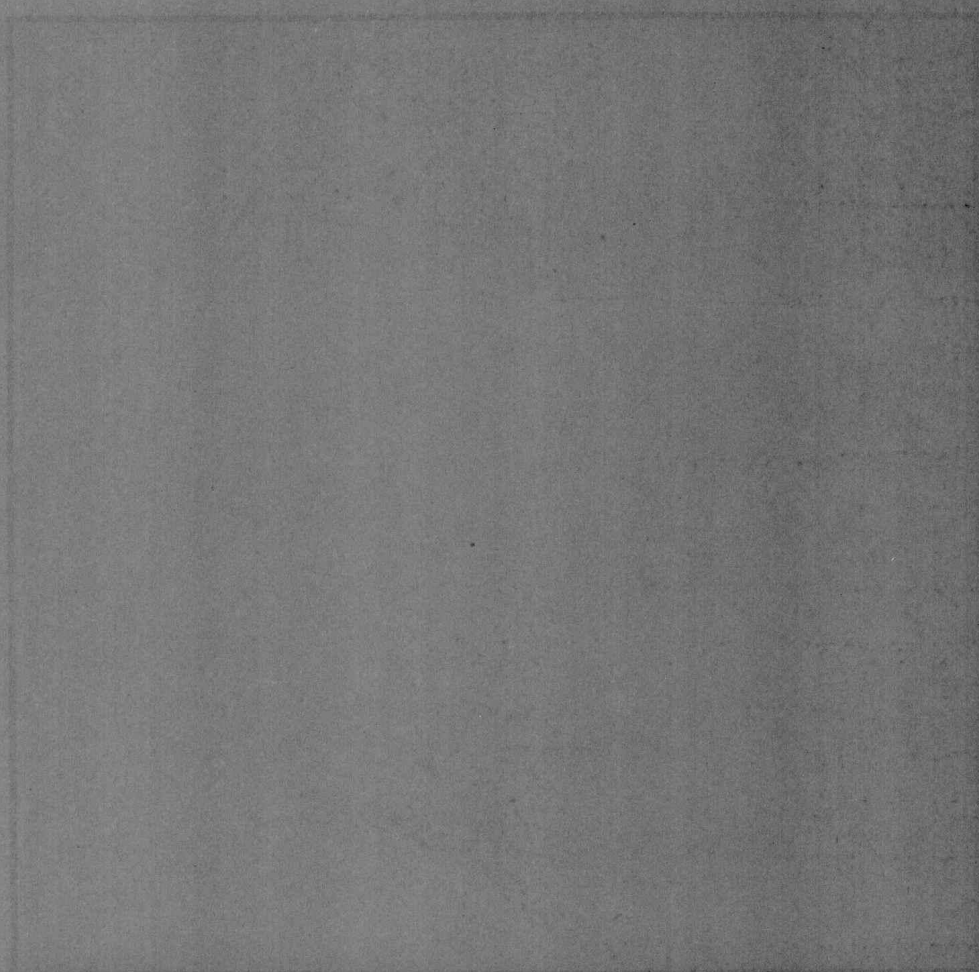
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PART



1

Introduction

Macroeconomics 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 which 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 interesting, too, because it is fascinating and challenging to reduce the 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 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 instance, agricultural price rises in early 1973 had a significant effect on inflation and unemployment, but few macroeconomists 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 Chicago, Franco Modigliani of

MIT, and James Tobin of Yale, have all had a keen interest in the applications of macrotheory, especially 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 1970s. We also refer continuously 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 non-monetarism, 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 non-monetarists, but much more 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 Sec. 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 Sec. 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. In 1975, GNP in the United States economy was \$1,516 billion, or a little over \$7,000 per person. In 1955, GNP was \$399 billion, or about \$2,400 per person (per capita, or per head, is the usual expression). The primary task of macroeconomics is to explain what determines the level of GNP and its growth over time. Why did GNP grow by over 275 percent over those twenty years, or at an average annual rate of growth of 6.9 percent?

There are three factors making up GNP growth. First, GNP can in-

crease because prices rise. The prices of most goods produced in the economy were higher in 1975 than the prices of the same goods in 1955. For most purposes we are interested in the physical production of goods and services, rather than the dollar value of the production. For that reason we distinguish between *nominal* GNP, which measures GNP in the prices of the year in which the goods are produced, and *real* GNP. Real GNP measures the value of output in different years using the prices of a common *base* year. At present the base year for measuring real GNP is 1972. The choice of the base year is a matter of convention, and no particular significance attaches to 1972. We refer to nominal GNP alternatively as GNP at current prices or *GNP in current dollars*. We refer to real GNP as GNP at 1972 prices (if 1972 is the base year) or *GNP in constant dollars*. The term *constant dollars* signifies that we measure GNP in dollars with constant purchasing power.

Table 1-1 shows real and nominal GNP in 1955 and 1976. The 1955 real GNP of \$655 billion is higher than the nominal GNP of \$399 billion. But the 1976 real GNP of \$1,265 billion is lower than nominal GNP of \$1,692 billion. Is there a puzzle? No, the table simply reflects the continuing rise in the price level from 1955 to 1976. Thus using the (higher) 1972 prices to value 1955 output gives us a larger GNP than we obtain from using 1955 prices. It follows that 1955 real GNP exceeds 1955 nominal GNP. Furthermore, because prices rose between 1972 and 1976, using 1972 prices to value 1976 output gives a real GNP number that is less than 1976 GNP measured at current 1976 prices.

Real GNP in 1976 is 93 percent higher than real GNP in 1955. The average annual growth rate of real GNP over that twenty-year period is 3.2 percent. Nominal GNP over the period grew at an annual average rate of 7.1 percent. The difference between growth in nominal and real GNP is purely a result of price level changes. We can conclude therefore that, over the period, prices increased at an average annual rate of 3.9 percent ($= 7.1 \text{ percent} - 3.2 \text{ percent}$). Thus over half the growth in nominal GNP from 1955 to 1976 was the result of price increases or *inflation*.

The second reason GNP changes over time is that the amount of resources available in the economy for production changes. The resources are conveniently split into labor and capital. The labor force, the number of people either working or looking for work, grew from 68 million in 1955

TABLE 1-1 REAL AND NOMINAL GNP

	1955 \$	1976 \$	Average annual percentage change, %
Nominal GNP	399	1,692	7.1
Real GNP (1972 prices)	655	1,265	3.2

Source: *Economic Report of the President, 1977* and *Economic Indicators*, March 1977.

to nearly 97 million in 1976. The capital stock, the buildings and machines available for use in production, also grew over the period. Increases in the availability of *factors of production*—the labor and capital used in producing goods and services—account for part of the increase in real GNP.

The third reason GNP changes is that the employment of the resources available for production changes. Not all the labor and capital available in the economy is actually used in production. The *unemployment rate* (of labor) in 1955 was 4.4 percent, meaning that 4.4 percent of the then available 68 million workers were not working. In 1976 the unemployment rate was 7.7 percent—among the highest since the thirties. Given the total availability of factors of production, GNP changes when the employment of those factors changes.

Potential Output

One of the key macroeconomic policy concepts that we shall be using repeatedly is *potential real GNP*, or *potential output*. Potential output is shown along with actual output in Chart 1-1. It represents a measure of the level at which real GNP would be if there were full employment. The official measure of full employment underlying the potential output series shown in Chart 1-1 is an employment level of 96 percent of the labor force or 4 percent unemployment. Thus, potential output is a measure of what real GNP would be if unemployment was 4 percent.

An unemployment rate of 4 percent served as a bench mark for measuring potential output throughout the sixties and early seventies. That number has, however, been increasingly questioned and it is believed that a figure of about 5 percent is now more realistic. Indeed, this view has been taken in the 1977 *Economic Report of the President*. The exact concept and measurement of potential output remains a live issue of debate and research.¹ It is an important issue because, as we shall see, it defines the target that policy makers should set for the performance of the economy.

This point is brought out by comparing the *GNP gap*, that is, the difference between actual and potential output, under the old and new measures of potential output. In Table 1-2 we show actual output and the old and new measures of potential output for the 1968–1976 period. It is immediately apparent that the new measure—based on about 5 percent unemployment—shows a consistently smaller GNP gap. It thus suggests that policy performed better than the alternative measure would lead us to believe. In this book we generally use the old measure of potential output (at 4 percent unemployment) primarily because data are more conveniently available on that basis, but also because a new consensus has not yet developed.

¹For details on the construction of potential output series, see *Economic Report of the President*, 1977.

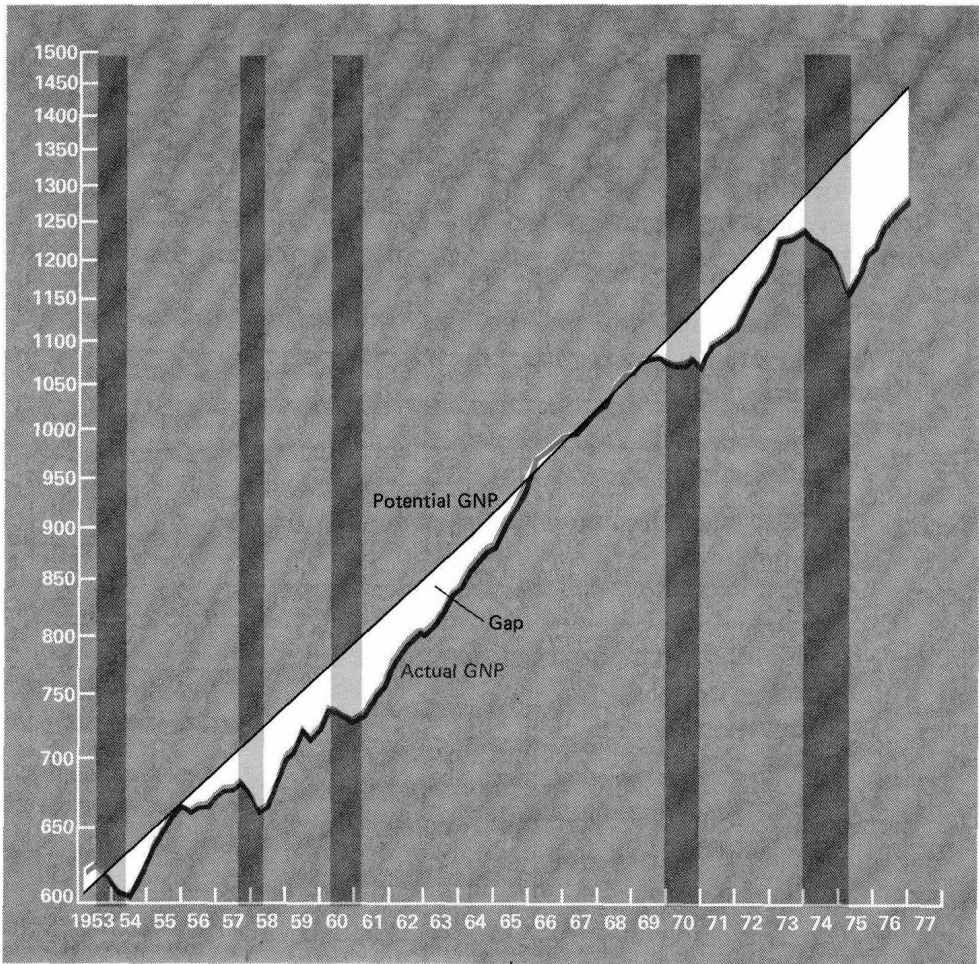


CHART 1-1 ACTUAL AND POTENTIAL
GNP. (Source: *Current Business*
Conditions, September 1976)

Potential output, or potential GNP, changes over time because the labor force grows and also because the average output of an employed person grows over time. The typical American worker today produces more, in the same amount of time, than the typical worker of twenty years ago. This increase in output per worker is called *productivity increase*. There are two reasons for the increase in productivity. The first is that the typical workers have more capital—machines and factory space—with which to work now than they did then. The second is that there is *technical progress*—workers are better educated and machines are more sophisticated. (Think of pocket calculators!) As a result of productivity in-

TABLE 1-2 ACTUAL AND POTENTIAL OUTPUT, 1968-1976 (*In billions of 1972 dollars*)

	Potential GNP		Actual GNP
	Old	New	
1968	1,040.9	1,031.7	1,051.8
1969	1,081.6	1,068.3	1,078.8
1970	1,124.9	1,106.2	1,075.3
1971	1,169.9	1,145.5	1,107.5
1972	1,216.7	1,186.1	1,171.1
1973	1,265.4	1,228.2	1,233.4
1974	1,315.9	1,271.7	1,210.7
1975	1,368.6	1,316.9	1,191.7
1976	1,419.9	1,363.6	1,265.0

Source: Economic Report of the President, 1977.

creases and growth of the labor force, potential GNP is assumed to grow at a rate of about 4 percent per year.

The official estimate shows potential output in Chart 1-1 growing in almost a straight-line fashion, while actual GNP fluctuates around the level of potential output.² Actual real GNP fell short of potential GNP in the fifties and remained below potential output all the way through 1965. From about 1961, though, actual GNP began to grow more rapidly than potential output. Actual GNP stayed above potential output from 1965 until 1969, remaining below it since then. The depth of the 1973-1975 recession is shown by the gap of nearly 12 percent between actual and potential output that existed in 1975.

How is it possible for actual GNP to exceed potential GNP, as it did from 1965 to 1969? Remember that potential output is defined as the level of output that can be achieved if the unemployment rate is as low as 4 percent. In 1965-1969, the unemployment rate was even lower than 4 percent. The economy was operating at "high pressure" and produced in excess of the estimate of potential output. This suggests once more that potential output is only a bench mark for the economy's capacity. It is certainly neither a very accurate estimate nor a very rigid constraint.

Much of the recent history of the economy can be read from Chart 1-1. The economic performance of the Eisenhower years increased the GNP gap, as that administration concentrated its attention on fighting inflation.

²Notice 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.