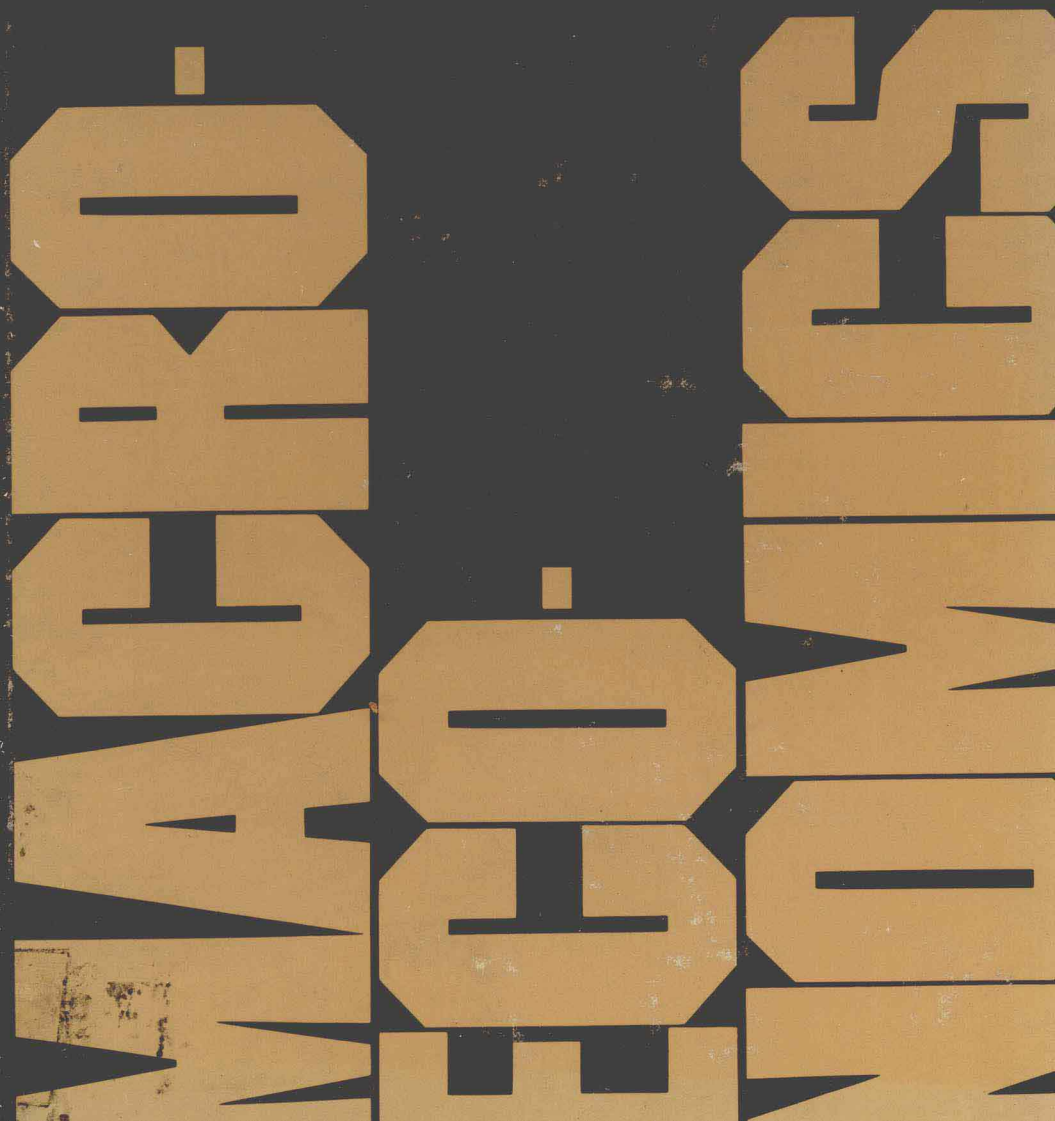
MACROECONOMICS: Theory and Policy

Michael R. Edgmand



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INTRODUCTION

During much of the 1970s, the economy experienced high rates of unemployment and inflation. These economic problems are not new. Our economy is periodically beset by unemployment, inflation, slow rates of economic growth, and balance of payments deficits. During the Great Depression of the 1930s, unemployment was widespread. In the 1940s, inflation replaced unemployment as the major economic problem. During the late 1950s and early 1960s, the economy experienced relatively high rates of unemployment, slow rates of economic growth, and balance of payments deficits. In the late 1960s, inflation again moved to the forefront.

The following chapters deal with the causes of these economic problems and means for coping with them. This chapter begins with a discussion of microeconomics and macroeconomics and their relationship to the Keynesian revolution. Next, the role of economic theory is considered with the aid of a simple price determination model. The goals of macroeconomic policy are then discussed; a preview of the book follows.

Microeconomics and Macroeconomics

There are two main branches of economic theory, microeconomics and macroeconomics. *Microeconomics* deals with individual units in the economy, usually households or firms. Microeconomics is con-

cerned, for example, with how a household allocates its income among expenditures for various goods and services. Similarly, microeconomics is concerned with the determination of a firm's profit-maximizing level of production.

In some instances, microeconomics deals with units as large as an industry. For example, if the demand for a particular industry's product increases, microeconomics attempts to trace the impact of the increase upon the price of the product and the industry's level of production.

In contrast, *macroeconomics* deals with the economy as a whole. It ignores individual units and many of the problems which they face. By concentrating on the economy in the aggregate, macroeconomics is concerned with the total output of the economy and the general price level, not the output and price levels of a single firm or industry.

Methodologically, there is also a distinction between microeconomics and macroeconomics. In microeconomics, it is generally assumed that the total output and the general price level of the economy are given; microeconomics then tries to explain how the outputs and prices of individual products are determined. Macroeconomics assumes the constancy of the distribution of output and relative prices. It treats total output and the general price level as variables and attempts to explain how they are determined.

In practice, this sharp distinction between microeconomics and macroeconomics is difficult to maintain. Changes in the microeconomic variables may well affect the macroeconomic variables and vice versa. For example, during the 1973 oil embargo, the oil shortage—a microeconomic problem—helped depress the activity of the economy. Nevertheless, the distinction between microeconomics and macroeconomics is meaningful.

Economic Theory and the Keynesian Revolution

Before the 1930s, microeconomics rather than macroeconomics absorbed the attention of economists.[1] The primary reason was the assumption that full employment prevailed except for temporary disruptions. If full employment prevails, the nation's output is constant in the short run. With aggregate output assumed constant, economists devoted their time to microeconomics with its emphasis on the determination of the prices and output levels of individual products. In the 1930s, however, two events stimulated the development of macroeconomics. First, the Great Depression demonstrated that the assumptions of full employment and constant aggregate

output were untenable. In 1929, the unemployment rate was 3.2 percent. By 1933 it had reached 24.9 percent. Real gross national product, a measure of the nation's output of goods and services, fell from $314.7 billion in 1929 to $222.1 billion in 1933, a decline of approximately 30 percent. When economists recognized that the unemployment rate and aggregate output were variables, they saw the obvious desirability of studying the forces which determine them.

Second, in 1936, John Maynard Keynes published *The General Theory of Employment, Interest, and Money.*[2] In this book, Keynes presented a theory which showed that unemployment could exist for long periods of time or even indefinitely. Many economists received Keynes's theory, or *Keynesian economics* as it was later called, enthusiastically. In fact, the publication of his book and subsequent adoption of his views are often referred to as the *Keynesian revolution*. Although Keynes's theory may not have been truly revolutionary, his book did have a profound effect upon economists and economic theory.

Economic Models

Most of this text is devoted to the development of a theoretical model of the economy. A *model* is a set of relationships representing the economy or one or more of its parts. It may be expressed in words, tables, graphs, and/or mathematical equations.[3] By abstracting from detail and focusing attention on the essential relationships, a model simplifies reality so that we can understand it.

Although economic models or theories are often criticized as unrealistic, they should be judged in terms of their explanatory power rather than their realism. For one thing, models cannot be fully realistic. The world is too complex to be described in complete detail. For another, one of the main purposes of economic theory is explanation. Therefore, the adequacy of the model or theory should be judged in these terms. If a model helps us to understand reality, it is a "good" model. If a model leads to misunderstanding, it is inadequate and we seek alternative models. For example, before Keynes, full employment was considered to be the normal state of affairs on the basis of the prevalent macroeconomic model, the classical model. Unemployment, if it existed, was considered to be only temporary. But substantial unemployment existed during the 1930s and showed few signs of disappearing; consequently, economists were ready to drop or to revise the classical model. According to Keynes's theory, unemployment could exist for prolonged periods.

Since actual experience seemed to be more in line with predictions based on Keynes's theory, the classical model was abandoned in favor of Keynes's theory.

Comparative Statics and Dynamics

Economic theory is used to predict the results of certain actions. For example, economic theory can predict or explain the consequences of an increase in the supply of money. Similarly, it can predict the impact of a reduction in federal tax rates. In making these predictions, we use the comparative statics method almost exclusively.[4] That is, we compare equilibrium positions corresponding to two or more sets of external circumstances. To illustrate the method and its shortcomings, we develop the following example from microeconomics. At the same time, some of the concepts and terms used later in the text are introduced.

Suppose we are concerned with the market for meat. First, assume that the quantity of meat that consumers wish to buy per period depends upon, or is a function of, the price of meat and the per capita income of consumers. In equation form, the demand for meat is

$$D = f(p, y) \tag{1.1}$$

where D is the quantity of meat demanded, p is the price of meat, and y is per capita income. Suppose also that the amount demanded varies inversely with price and directly with per capita income. Thus, the lower the price, the greater the amount demanded; the higher the level of per capita income, the greater the amount demanded.

Second, assume that the quantity of meat that producers or suppliers will make available per period varies directly with the price of meat. Thus, as the price of meat increases, the amount of meat supplied increases. In equation form, the supply of meat is

$$S = g(p) \tag{1.2}$$

where S is the quantity of meat supplied and p is the price of meat.

Equations (1.1) and (1.2) are *behavioral equations* because they describe the "behavior" of demanders and suppliers. Prospective purchasers buy more meat at lower prices, whereas suppliers offer more meat for sale at higher prices.

Third, the market for meat is in equilibrium when the amount

of meat demanded per period equals the amount of meat supplied per period:

$$D = S. \tag{1.3}$$

Equation (1.3) is the *equilibrium condition* because it specifies the condition necessary for the market for meat to be in equilibrium.

Equilibrium exists when there is no net tendency for the variables in question to change. In this case, it occurs at the price at which the quantity of meat demanded equals the quantity of meat supplied. At any other price, the quantity demanded will either be greater or less than the quantity supplied. In either instance, the price of meat will tend to change; it will tend to rise if the quantity demanded exceeds the quantity supplied and tend to fall if the opposite occurs.

Suppose per capita income, y, is constant so that

$$y = y_0.$$

Given y and the three equations, the equilibrium values of the three variables, p, D, and S, can be determined either algebraically or geometrically. Algebraically, the equilibrium price is determined by substituting the behavioral equations into the equilibrium condition.

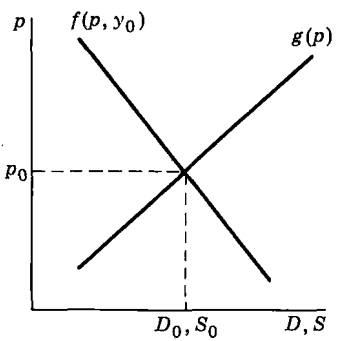

Figure 1.1 The Demand for and the Supply of Meat

The equilibrium quantity is then found by substituting the equilibrium price in either the demand or supply equation since the quantity demanded is equal to the quantity supplied when the market is in equilibrium.

Geometrically, the equilibrium combination of price and

quantity may be determined by plotting the demand and supply curves and locating their intersection. Since the quantity demanded is inversely related to price, the demand curve, drawn for a given level of per capita income y_0 in Figure 1.1, is negatively sloped. The supply curve is positively sloped as the quantity supplied is directly related to price.

According to Figure 1.1, the equilibrium price is p_0 and the equilibrium quantity is D_0 (both demanded and supplied). So long as the underlying conditions remain unchanged, the equilibrium price and quantity will remain p_0 and D_0 respectively.

Before continuing, we note that the three variables, p, D, and S, are called the *endogenous* variables of the model, meaning that they are variables whose values are determined within the model. In this case, they are determined by the interaction of the demand for, and supply of, meat. The variable y is an *exogenous* variable: its value is determined outside the model (by external forces).

The use of the model may be extended by considering what happens if the exogenous variable, y, changes or if a shift occurs in either the demand curve or the supply curve. For example, suppose that the level of per capita income increases from y_0 to y_1. The amount of meat demanded at each price increases so that the demand curve in Figure 1.2 shifts to the right. As a consequence, the new equilibrium price is p_1 and the new equilibrium quantity is D_1. Hence, an increase in per capita income is predicted to increase both the price of meat and the amount sold.[5]

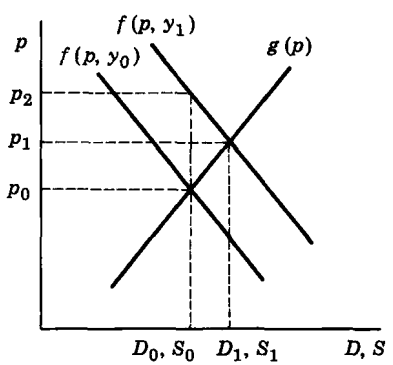

Figure 1.2 An Increase in the Demand for Meat

The sizes of the increases depend on various factors. The greater the increase in per capita income or the greater the responsiveness

of consumers to increases in per capita income, the greater the increase in demand and, hence, the greater the increase in the price of meat. Similarly, the more responsive suppliers are to an increase in the price of meat, the smaller will be the increase in the price of meat.

This analysis is an example of *comparative statics*. It involves the comparison of equilibrium positions corresponding to two sets of circumstances. Specifically, it indicates the changes in the equilibrium values of the endogenous variables when there is a change in an exogenous variable or in a functional relationship.

Despite the widespread usage of comparative statics, the approach has limitations. First, it does not describe the process or path by which the variables move from one equilibrium position to another. In the context of the example, does the price of meat rise from the original equilibrium price, p_0, to p_2 and then fall to p_1, or does it increase steadily to p_1? Since comparative statics involves only a comparison of initial and final equilibrium positions, we do not know. Second, the approach does not indicate how long it takes for the variables to move from one equilibrium position to another. How long does it take for the price of meat to adjust to an increase in demand? A week? A month? A year or more? The answer is not revealed by the comparative statics approach.

Third, the comparative statics method does not even provide assurance that the new equilibrium position will be reached. It may be that the variables move away (diverge) from the new equilibrium position; in this case, an *unstable* equilibrium exists. If the equilibrium is unstable, the comparative statics method produces erroneous results since the new equilibrium position is not attained. On the other hand, if the variables move toward the new equilibrium position, a *stable* equilibrium exists.

If the system is stable, the comparative statics method yields valid predictions; however, it still does not indicate the time path of the variables nor does it indicate how long the variables will take to reach their new equilibrium values. In order to avoid the shortcomings of comparative statics, dynamic analysis may be used. Dynamic analysis or *dynamics*, in cases where it can be applied, permits the study of the time path of the variables regardless of whether the equilibrium is stable or not.

Despite the advantages of dynamic analysis, it is rarely used in basic macroeconomic texts for at least two reasons. First, all but the very simplest dynamic models involve the use of differential or difference equations. Second, a generally accepted theory of income

determination based on dynamic analysis does not exist. Hence, the comparative statics method is used almost exclusively in this text despite its limitations.

The Goals of Macroeconomic Policy

Economic theory attempts to explain why problems arise in the economy and how these problems can be dealt with. It is, therefore, indispensable in formulating and conducting economic policy. But before studying macroeconomic theory and policy, one must state the macroeconomic goals of the economy. After all, without definite goals there is little point in formulating policy.

Full Employment

Economists often cite four macroeconomic goals: full employment, price stability, economic growth, and external balance. Although disagreement about these goals exists, all, or almost all, economists agree on the desirability of full employment. Indeed, such a goal has legislative mandate. In the Employment Act of 1946, Congress declared "that it is the continuing policy and responsibility of the Federal Government to use all practicable means. . .to promote maximum employment. . . ."

Full employment is favored because the greater the level of employment, the greater the amount of goods and services available to society. As noted earlier, the unemployment rate rose from 3.2 percent in 1929 to 24.9 percent in 1933. At the same time, real gross national product declined by approximately 30 percent. With the dramatic increase in unemployment and corresponding reduction in real gross national product, society lost goods and services it would have had if full employment had prevailed.

Full employment is also desired because the burden of unemployment and loss of goods and services falls disproportionately on people without jobs. This burden is eased somewhat by unemployment insurance benefits, food stamps, and various other transfer payments programs.

Edward M. Gramlich has produced evidence which suggests that the poor are more adversely affected by an increase in the unemployment rate than those with higher incomes.[6] According to his statistics, a family head is more likely to become unemployed if the head's family income is at the poverty line (roughly $5,000 for a family of four in 1974) than if the head's family income is three or five times the poverty level. Moreover, families headed by males with poverty-