

An Introduction to Monetary Theory and Policy

Third Edition

Dwayne Wrightsman

AN INTRODUCTION TO
**MONETARY THEORY
AND POLICY**

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Preface

This book has matured through successive editions by providing greater institutional and intellectual content to the coverage of monetary policy. Monetary policy is an exciting subject when studied in the context of current institutions and ideas; but institutions and ideas change, and, therefore, so must books about policy. This edition had to be written because the theory and practice of monetary policy have changed radically since the last edition.

New institutional developments have greatly changed the practice of monetary policy in the United States. In October 1979 the Federal Reserve changed its open market operating procedures from controlling the federal funds interest rate to controlling bank reserves, hoping to gain better indirect control over the growth of the money supply. In February 1980 the Fed expanded the definition of the M-1 money supply to include all spendable deposits at all depository institutions. Before this, M-1 excluded all deposits other than commercial bank demand deposits. In March 1980 the Monetary Control Act became law, enabling the Fed to impose reserve requirements on all spendable deposits at all depository institutions. Prior to the act, the

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Fed could require reserves only on member bank deposits. Thus, in the short space of 6 months, far-reaching changes were made in how the Fed defines and controls the money supply.

In addition to these institutional developments, there has been a major intellectual development in the theory of monetary policy. This development, known as the rational expectations hypothesis, challenges the conceptual basis that underlies conventional monetary policy. The rational expectations hypothesis contends that monetary policy has no significant effects on output and employment when changes in the money supply are expected. Only unexpected changes in money growth are thought to produce real effects in the economy. Discretionary monetary policy can result in unexpected money growth, but such policy surprises are thought to do more harm than good since they are deceptive and cause people to make poor economic decisions. Thus, according to the rational expectations hypothesis, there is no firm basis for discretionary, countercyclical monetary policy.

The present edition of this book has been revised and expanded to incorporate the new intellectual and institutional developments in the theory and practice of monetary policy. There are many changes between this edition and the last. One thing, however, that has not changed is the book's basic approach to the study of money. The book has always been written on the premise that the logical way for a business or economics student to study money is to study it as a market phenomenon. Supply, demand, and equilibrium analysis are used throughout this edition as they were in prior editions.

The first part of the book is an analysis of the supply of money. This part of the book has been thoroughly revised to incorporate the new institutional developments. References to the M-1 money supply are in terms of money defined to include all spendable deposits at all depository institutions. References to reserves are in terms of reserves of all depository institutions. The money multiplier is derived to link the new M-1 money supply to depository institution reserves. Moreover, the deriva-

tion is based on the new reserve requirements of the Monetary Control Act of 1980.

The second part of the book covers alternative theories of the demand for money and how changes in the money supply affect the economy. Here attention is given to the theories of Fisher, Pigou, Friedman, Keynes, Tobin, Brunner and Meltzer, and others. Their ideas are explained, evaluated, and compared on a conceptual level and in the light of empirical evidence. This part of the book pushes students further into monetary theory than does the traditional money and banking textbook. It starts with the old quantity theory of money and ends with modern monetarism and modern Keynesianism. The chronological presentation of monetary theory provides historical perspective, but, more important, it provides a way of building gradually from simple to more complex theoretical constructs.

The final part of the book focuses specifically on the theory and practice of monetary policy. This part has been reorganized to address three sets of questions. First, what can monetary policy achieve in terms of ultimate objectives? Should the monetary policy makers be concerned about unemployment or only about inflation? Second, what should the policy makers control in order to achieve their objectives? Should they control the money supply or interest rates? Does it make sense to follow a "balanced monetary policy" and set targets for both the money supply and interest rates? Third, how much discretion and fine tuning of monetary aggregates is desirable? Are the rational expectationists correct or not in arguing that discretionary, countercyclical monetary policy does more harm than good?

This book does not provide any final answers to these policy questions. Rather, it attempts to cover the issues on all sides so that readers can draw their own conclusions. Considerable attention is paid, however, to how the issues get resolved in actual practice. The Fed uses discretion in establishing objectives and setting targets in response to changing

economic conditions. A new chapter in this edition describes the formulation of policy by the Federal Open Market Committee and how the Committee's policy directives are implemented using the new monetary control procedures. In all the final chapters, the Fed's procedures, practices, and policies are integrated with theory and evidence so that policy can be rationalized, evidence made interesting, and theory appreciated.

The book is written concisely, with most chapters building on preceding chapters. The best way to read the book is to read it diligently in sequence. Also, study questions are presented at the end of each chapter. The questions are designed to stimulate thought and discussion about the material presented and to test readers' analytical skills. (Answers to the questions are available in the Instructor's Manual.)

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1

Approach

This is a book about money. It deals with such questions as: What is money? Where does money come from? Why is the quantity of money in circulation what it is? What are commercial banks, mutual savings banks, savings and loan associations, and credit unions, and what role do they play in the determination of the stock of money? Why do people hold money? What effect does money have on the price level? On production? Employment? What is the process or transmission mechanism by which a change in the stock of money affects these variables? Does the government or the central bank have ways of controlling the supply of money? If so, can the government or the central bank indirectly influence prices, income, and employment? Is inflation caused by bad monetary policy? Is good monetary policy the cure for inflation? Is discretionary monetary policy a cure or a cause of economic instability? How are interest rates and money related?

These questions are more difficult to answer than one might think. People have lots of ideas about money, but without some exposure to rigorous economic analysis of the money market and its relation to other markets, these ideas are, more

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often than not, erroneous. The purpose of this book is to provide rigorous monetary analysis and thereby help the reader to reason soundly about money and its effects.

The logical way for an economics student to study money is to study it as a market phenomenon. A market exists whenever suppliers and demanders get together for the purpose of exchanging something. In the market for money, the something exchanged is money; the suppliers of money are banks; and the demanders of money are just about everybody.

Analysis of the money market begins (in chapter 2) with a specification of what money is. Money must be a definable quantity in order to form hypotheses about its supply and demand, and it must be a measurable quantity if such hypotheses are to be subject to empirical verification.

Unlike such quantities as the Gross National Product (GNP) and the balance of payments, the quantity of money is a "stock" variable; its existence does not require the passage of time. If time were to stop, money would still exist. The same is true for holdings of securities, inventories, houses, factory buildings, machines, and other assets. Thus at any point in time there is a stock of money which is actually in existence. There is also a stock of money which people desire to hold. When the actual money stock equals the desired money stock, the money market is in equilibrium.

Quantities which exist only over time, on the other hand, are called "flow" variables. Production, sales, income, expenditures, consumption, investment, and so on are all flows because it takes time to produce and sell goods and to earn and spend income. If time were to stop, these variables would cease to exist.

Besides stock and flow variables there are variables that take the form of "ratios." For example, an interest rate is neither a stock nor a flow but is a ratio of a flow (interest) to a stock (principal). To illustrate, interest of \$10 per annum on \$100 of invested funds results in an interest rate of 10 percent per annum. Another example is prices, which are ratios of one

stock to another: a ten-cent price for a pencil is the ratio of a stock of ten pennies to a stock of one pencil. Prices can also be taken as ratios of one flow to another: a ten-cent price for a pencil can also be measured as the ratio of an expenditure-flow of, say, one dollar per year to a receipt-flow of ten pencils per year.

Once the stock or quantity of money is defined, monetary analysis concentrates on how the suppliers and demanders of money behave. The banking system is examined (in chapters 3–5) to gain an understanding of why the supply of money is what it is. The public is studied (in chapters 6–9) to the extent that its behavior determines the demand for holding money. However, the essence of monetary analysis is to consider supply behavior and demand behavior together. If the amount of money people want to hold differs from the amount of money the banking system wants to supply, we must know what the public and the banking system will do to reconcile this difference, and how this reconciliation will affect the overall economy.

Supply and demand behavior in the money market is specified by money supply and money demand functions. A money supply function is an expression of the relation between the quantity of money supplied and one or more of the variables upon which the supply depends. Similarly, a money demand function relates the quantity of money demanded to one or more of its determining variables.

An example of a money supply function is the hypothesis that the money supply depends on the interest rate on business loans, meaning that a change in the interest rate can be expected to change the quantity of money that the banking system wants to supply. Obviously, this is not a very informative statement of the function because it tells us only that the interest rate influences the money supply. It does not specify the direction nor the magnitude of the influence. A more informative statement of the hypothetical function is that the quantity of money supplied varies directly with the interest rate on business loans, meaning that an increase (decrease) in the interest rate can be

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expected to increase (decrease) the money supply, other things being the same. This tells us not only that the interest rate affects the supply of money but that the effect is in a particular direction.

Supply and demand functions are frequently stated in symbolized terms. If we let M_s be the quantity of money the banking system wants to supply, and i be the interest rate on business loans, the statement that "the money supply is a function of (or dependent on) the interest rate" can be rewritten: $M_s = f(i)$. Both statements say the same thing, but the symbolized version takes up less space and is easier to write.

However, $M_s = f(i)$ does not say whether the money supply is a direct or inverse function of the interest rate; it does not say whether M_s will go up or down given an increase in i . To symbolize that M_s is an increasing function of i , we write:

$$\frac{\Delta M_s}{\Delta i} > 0,$$

where " Δ " stands for "a small change in," where " >0 " means "is positive," and where the denominator is the implied cause and the numerator the implied effect. The common sense explanation of this expression is that, since both M_s and i move in the same direction, ΔM_s is positive as Δi is positive, and ΔM_s is negative as Δi is negative. Consequently, the ratio between ΔM_s and Δi must always be positive. (The ratio will be negative only when the numerator and denominator are of opposite sign, and this will occur only when there is an inverse relation between the variables.)

It is usually understood that in a statement of functional relationship such as $M_s = f(i)$, specification of only a single determinant, in this case i , does not mean that there is only one determinant, but that unspecified determinants are, for analytical purposes, being held constant. However, these determinants need not be suppressed. If M_s not only depends on i , but on j , k , l , m , and n as well, the money supply function can be written:

$M_s = f(i, j, k, l, m, n)$.¹ Again, this does not mean that all explaining variables have been identified, but it does indicate an attempt to specify those determinants which explain most of the variation in the dependent variable.

Simple functional relations are commonly graphed to give a pictorial impression of behavior. Economics students are familiar with graphs as they are used extensively in textbooks and by professors on the blackboard. Because these graphs are drawn on two-dimensional surfaces, they are limited to showing relations between two variables only. For example, the relation between M_s and i appears graphically in figure 1.1.

The graph line is a money supply curve. Its upward slope (moving to the right) indicates that the amount of money that the banking system wants to supply is an increasing function of the interest rate. The higher the rate, the greater the amount supplied. Underlying the curve, of course, is the assumption that other factors related to supply are being held constant.

Sometimes we do not wish to hold these other factors constant; we want them to be free to vary. When this is the case, the supply curve will shift to the left or to the right. Suppose M_s is an inverse function of some factor j . An increase in j will cause M_s to decrease, i and other factors held constant. Since M_s has decreased, but i has not changed, the original supply curve relating M_s to i no longer holds. Instead, there will be a new supply curve lying above and to the left of the original supply curve, the new supply curve showing the relation between M_s and i at the new j level.

Figure 1.2 shows that M_s falls to M'_s when j is increased to j' . The supply of money still varies directly with the interest rate, but with the increased value of j , the variation takes place along the supply curve on the left. Should j return to its original

¹The determinants j , k , l , m , and n are not given any economic meaning in this chapter; they are expositional only. In chapter 3, the actual economic determinants of money supply are identified and analyzed.

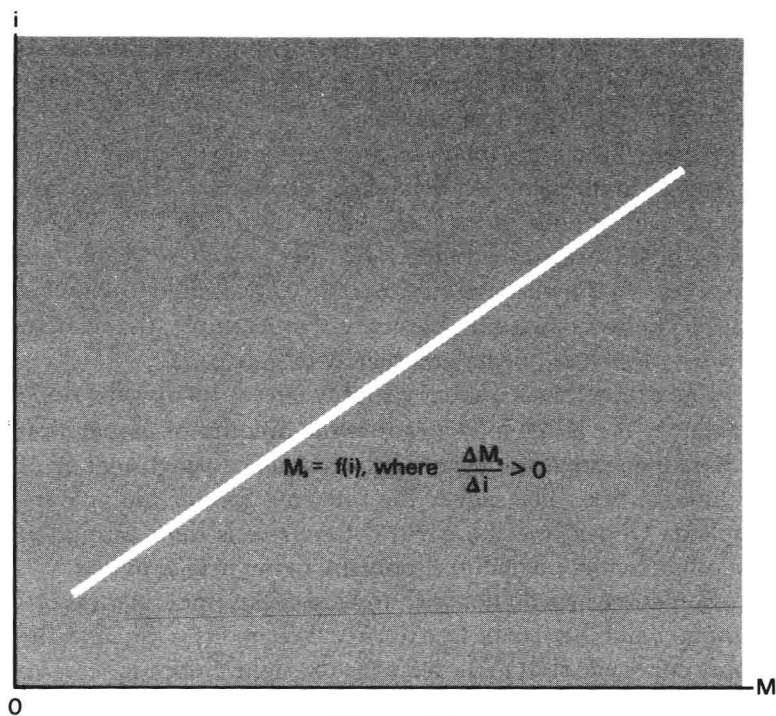


Figure 1.1

level, the supply curve would shift back to its original position on the right.

(It should be recalled from basic economic principles that a change in the independent variable which is graphed causes a *movement along* the supply or demand curve on the graph, while a change in any determinant which is not graphed causes a *shift* in the supply or demand curve. In figure 1.2, the determinant j does not appear on either axis of the graph; thus when it changes, the money supply curve must shift.)

All of what has been said about supply functions and supply curves applies to demand functions and demand curves, except that variables which are positively related to supply are frequently inversely related to demand, and variables which cause supply to move in the opposite direction typically cause