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货币理论与政策

MONETARY THEORY
AND POLICY

MILTON H. MARQUIS



世界财经与管理教材大系



东北财经大学出版社

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货币理论与政策

Monetary Theory and Policy

米尔顿·H. 马奎斯 著

Milton H. Marquis

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出版者的话

但凡成事，均缘于势。得势则事成，失势则事不顺。顺势而行，如顺水行舟；借势而动，如假梯登高；造势而为，如太空揽月。治学、从政、经商、置业，均不可一日失势。势者，长处、趋势也。

今日中国，是开放的中国；当今世界，是开放的世界。改革开放，大势所趋，势不可挡。经济开放、文化开放、政治开放，世界需要一个开放的中国，中国更要融入开放的世界。借鉴国际惯例，学习他人之长，已经到了不可不为之时。

借鉴国际惯例，学习他人之长，已属老生常谈，但学什么、如何学、以何为蓝本为众多志士仁人所关注。可喜的是，由赤诚图文信息有限公司精心策划，ITP、McGraw-Hill 及 Simon & Schuster 等国际出版公司特别授权，东北财经大学出版社荣誉出版的“世界财经与管理教材大系”现已隆重面世！她以“紧扣三个面向，精选五大系列，奉献百部名著，造就亿万英才”的博大胸襟和恢弘气势，囊括经济学、管理学、财务与会计学、市场营销学、商务与法律等财经、管理类主干学科，并根据大学教育、研究生教育、工商管理硕士（MBA）和经理人员培训项目（ETP）等不同层次的需要，相应遴选了具有针对性的教材，可谓体系完整，蔚为大观。所选图书多为哈佛、斯坦福、麻省理工、伦敦商学院、埃维商学院等世界一流名校的顶尖教授、权威学者的经典之作，在西方发达国家备受推崇，被广为采用，经久不衰，大有“洛阳纸贵”之势。

借鉴国际惯例，毕竟只是因势而动；推出国粹精品，才是造势而为。在借鉴与学习的同时，更重要的是弘扬民族精神，创建民族文化。“民族的，才是国际的”。我们提倡学他人之长，但更希望立自己之势。

势缘何物，势乃人为。识人、用人、育人、成人，乃人本之真谛。育人才、成能人，则可造大势。育人、成人之根本在教育，教育之要件在教材，教材之基础在出版。换言之，人本之基础在书本。

凡事均需讲效益，所谓成事，亦即有效。高效可造宏基，无效难以为继，此乃事物发展之规律。基于此，我们崇尚出好书、出人才、出效益！

东北财经大学出版社

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PREFACE

The material in this book was assembled in large measure from lecture notes for an upper division undergraduate course in monetary economics that I taught for eight of the past 10 years at Florida State University. During the remaining two of those 10 years, when much of the manuscript for the book was prepared, I worked as an economist in the Monetary Affairs Division of the Board of Governors of the Federal Reserve System. The latter experience illuminated for me the tension between the many practical problems involved in policy making and the fundamental issues that are the principal focus of contemporary research in monetary economics. That tension is reflected somewhat in this book, where an attempt has been made to remain true to the modern general equilibrium paradigm in which current research is conducted while recognizing, wherever possible, the important institutional factors and the inherent economic uncertainty that render monetary policy decision making something other than the practice of pure science.

I wanted the book to be generally “self-contained” in terms of coverage of the various topics in monetary economics. As a result, much of the material normally covered in a generic money and banking course (to the extent that one exists) is included in addition to more advanced topics, although the treatment is often at a slightly higher intermediate level. The book therefore may be suitable for a money and banking course if that course is sequenced after the intermediate macroeconomic theory course in the student’s curriculum.

Part I provides the basics for the subsequent development of issues in monetary theory and policy. Chapter 1 describes monetary versus barter economies within a strictly nonmathematical general equilibrium context to emphasize the role of money in solving the basic trading frictions that naturally arise in decentralized markets. It provides a background for many of the subsequent discussions ranging from optimal monetary policy to the endogenous development of financial institutions to monetary policy effectiveness. Chapter 2 shifts from an abstract economy to the Federal Reserve’s definitions of money. The primary focus is why certain aggregates were selected and how they have evolved over time. Chapter 3 then gives theoretical background on money demand and

velocity and portrays the historic behavior of velocity for the aggregates described in the preceding chapter. Chapter 4 introduces capital asset valuation formulas and the theory of the term structure of interest rates.

Part II pertains to institutions. Chapter 5 examines the various market frictions associated with intertemporal trading, that is, those involving credit, with reference to the general equilibrium environment of Chapter 1. Chapter 6 then describes how an array of financial institutions has emerged to fill the market niches created by the basic trading frictions. Chapter 7 is a relatively standard discussion of the money multiplier process associated with an open market operation, although it includes some additional institutional information beyond what is normally found in standard money and banking texts. Chapter 8 briefly describes the evolution of the Federal Reserve as the nation's monetary authority with a policy-making mandate.

Parts III and IV of the text give an intermediate-level treatment of many of the important topics in monetary theory and policy. The "core" theory chapters are in Part III. The basic theoretical model is a graphic depiction of a representative agent economy. The model is assembled in Chapter 9 and the "classical" result of "policy neutrality" is established. The model is used as a frame of reference for much of the subsequent discussion of macroeconomic fluctuations and the consequences of monetary policy actions. In Chapter 10, the responses of the economy to permanent productivity shocks and to transitory preference shocks are described and a policy of monetary accommodation is discussed in the context of stabilization objectives. Chapter 11 reexamines the model when prices are set in advance, which raises the possibility of a constructive "stabilization policy" role for the central bank with respect to the real economy. Examples are given of policy mistakes caused by a "signal extraction problem," which is created by transitory preference shocks and which the monetary authority must confront. Chapter 12 introduces Keynesian-like rigidities in the labor market, as well as long-lived preference shocks that eventually die out. The consequences for monetary policy are then examined.

Part IV addresses major issues that have been perennial sources of debate over the proper conduct of monetary policy. In Chapter 13, the monetarist criticism of stabilization policy is described with a focus on the very practical problems facing a monetary authority that attempts it. Chapter 14 examines monetary rules versus discretion. In Chapter 15, many views on what the "optimal" inflation rate ought to be are offered, including a description of seigniorage as a source of government revenue.

Part V addresses additional aspects of policy making. Chapter 16 begins the discussion of the mechanics of monetary policy with an analysis of optimal targeting and the historical targeting regimes selected by the Federal Reserve in recent years. Targeting is described within the context of choices of policy instruments (etc.), and subsequent discussion examines how efficient financial markets respond to policy announcements and/or policy actions and to other policy-related "news." Added to this discussion is an overview of the recent literature on "base drift." Chapter 17 explores open market operations in more detail. It includes descriptions of the RP market for government securities, its relation to the federal funds market, and the (implementation) decisions made

by the Desk about the optimal mix and timing of RPs, MSPs, and outright purchases. Chapter 18 explains the time inconsistency problem of optimal monetary policy, which is then related to the issues of credibility and the inflation bias in monetary policy. The chapter closes with a discussion of the provisions in the optimal contract that would induce a monetary authority to eliminate its inflation bias while continuing to operate within a discretionary policy regime.

The book has benefited greatly from the suggestions of individuals who reviewed all or selected chapters or commented on the overall project. I particularly thank Randall Holcombe, Barry Hirsch, George Macesich, Kislaya Prasad, and Allen Lynch (Florida State University), Kevin Reffett (Arizona State University), David VanHoose (University of Alabama), Fred Thum (University of Texas), Benjamin Kim (University of Nebraska), Charles Hultman (University of Kentucky), Jose C. Blanco (Utah State University), Ronnie J. Phillips (Colorado State University), Clinton Greene (University of Missouri–St. Louis), Michael E. DePrano (University of Southern California), Radha S. Bhattacharya (California State University, Fullerton), Joseph M. Phillips, Jr. (Creighton University), Frank G. Steindl (Oklahoma State University), George A. Selgin (University of Georgia), William R. Dougan (Clemson University), and Sherry Edwards and Jim Clouse (Board of Governors of the Federal Reserve System). I express a special thanks to Joe Coyne (Board of Governors of the Federal Reserve System), who shared with me his wealth of knowledge on the Federal Reserve System as an institution. Nothing in this book should be construed as reflecting opinions of any of the persons mentioned, as I am sure that not all would endorse the methods employed and/or the emphasis given to many of the theoretical issues. The views in this book do not necessarily reflect those of the Board of Governors of the Federal Reserve System or its staff.

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FUNDAMENTALS OF MONETARY THEORY

- 1 CURRENCY IN AN ISLAND ECONOMY
- 2 THE MONIES OF A MODERN ECONOMY
- 3 THE DEMAND FOR MONEY
- 4 STOCK AND BOND VALUATION AND THE TERM
STRUCTURE OF INTEREST RATES

CHAPTER

CURRENCY IN AN ISLAND ECONOMY

Why do rational people willingly give up tangible real assets in exchange for the intrinsically worthless pieces of paper known as currency? They do so with the understanding that other people, whom they may never have met and perhaps may see only once in their lives, will also accept currency without question in exchange for goods and services that they in turn possess. But where is the assurance that other people will value currency when there is no real asset for which it ultimately can be redeemed?

Currency-for-goods transactions appear to be a confidence game. They provide opportunities for fraud and the participants may incur large risks. Yet virtually all economies around the world engage in such currency transactions, which dwarf pure barter exchanges (goods-for-goods transactions) in volume. Clearly, currency-for-goods transactions must afford substantial benefits to an economy. We can examine these benefits systematically by constructing an artificial economy that is initially producing at a point of autarky—that is, everyone is producing only for their own consumption—and examining how it passes by stages through a bilateral exchange economy to a monetary economy. First, however, some preliminary discussion of the nature of exchange is necessary.

1.1 MONEY AND BARTER

Monetary theory can be defined as the study of monetary economies, in which goods are reallocated via monetary transactions rather than by barter as in pure exchange economies. However, for this definition to be useful, we must differentiate monetary transactions from barter. We begin by generalizing the notion of a currency-for-goods transaction. A monetary transaction is an exchange of money for goods and goods for money, whereas barter is an exchange of goods

for goods. Our task is to determine exactly what it is in the economy that distinguishes “money” from “goods.” A useful approach is to identify items in the economy that satisfy the following condition: *Money can be exchanged for any good, and any good can be exchanged for money, but a good cannot be exchanged for all other goods.*¹

As an example, consider a small island economy having three types of individuals, differentiated by preferences as A, B, and C, and four types of commodities: pineapples, papayas, fish, and corn. Type A individuals detest fish but like each of the other commodities, Type B individuals like all four commodities, and Type C individuals loathe papayas but like pineapples, fish, and corn. The problem is that these preferences are not matched by endowments. Type A individuals possess all of the island’s pineapples, Type B individuals own the economy’s papayas, Type C individuals have all of the economy’s fish, and all individuals possess some corn. Initially, assume that all individuals are averse to acquiring any additional amounts of corn. What exchanges are possible? That is, what is the feasible set of trades?

The smallest feasible set of trades would result if the trades were restricted to be bilateral exchanges in which *both* participating individuals acquire commodities they desire. In this case, Type A individuals can trade their pineapples for Type B individuals’ papayas; however, Type C individuals can trade with neither Type A nor Type B. Of course, each individual can also trade with others of the same type. Feasible trades are shown in Figure 1.1a. The reason for this pattern is that Cs possess nothing desired by As, who despise fish, and Bs possess nothing desired by Cs, who hate papayas. This basic “trading friction” in economies is known as the “lack of double coincidence of wants.” It plays a fundamental role in creating a demand by individuals in an economy for “money” to serve as a common medium of exchange.

To continue the example, suppose all individuals are now willing to acquire additional quantities of corn in trade. In this case, in addition to the trade between the As and Bs already described, the As can trade pineapples with the Cs for corn and the Bs can trade corn with the Cs for fish. Note also that the trade between the As and the Bs can consist of a Type A individual trading corn with a Type B for papayas and a Type B individual trading corn with a Type A for pineapples. Thus, the feasible set of trades is expanded to that shown in Figure 1.1b. According to the preceding definition of money and goods, corn is money and pineapples, papayas, and fish are goods.

1.2 METHOD OF ANALYSIS

To examine how and why benefits are derived from the introduction of fiat money into an economy as a common medium of exchange, a measure of those

¹This distinction was first made by Clower (1967). He illustrated it with the example that follows in the text, which implies that the medium-of-exchange property is what makes money unique. In actual economies, clearly identifying the objects that serve as money is difficult. This issue is discussed at length in Chapter 2.

Figure 1.1
Feasible Trades in a
Four-Commodity,
Three-Person
Economy

Figure 1.1a				
The feasible trades when there are no trades involving corn are marked by an "x" in the table. Note that this is not a monetary economy.				
	PINEAPPLES	PAPAYAS	FISH	CORN
Pineapples	x	x		
Papayas	x	x		
Fish			x	
Corn				x
Figure 1.1b				
The feasible trades when trading in corn does occur are marked by an "x" in the table. Note that only corn can be traded for any of the other goods, because fish cannot be traded for either pineapples or papayas. Therefore, corn is "money" and pineapples, papayas, and fish are "goods."				
	PINEAPPLES	PAPAYAS	FISH	CORN
Pineapples	x	x		x
Papayas	x	x		x
Fish			x	x
Corn	x	x	x	x

benefits and a systematic method of analysis are necessary. Economists rely on the fundamental microeconomic notion that the individual household (1) maximizes utility, given (2) the technology available to it, (3) the resources it possesses, and (4) the trading environment it faces.²

As a basis for analysis, (1) household preferences, in the form of a utility function, (2) technology, in the form a production function, and (3) resources, in the form of factors of production, must be fully specified. The analysis then consists of altering (4) the trading environment as the economy evolves from autarky to barter to systems of monetary exchange, and examining how the household, by employing its available technology, will reallocate its given resources to maximize utility, which is based on a given set of preferences. "Benefits" (or losses) to the economy can then be measured as the utility gains (or losses) that result from the more (or less) efficient allocations of the economy's resources.

²The term "trading environment" is intended to include not only the set of rules that govern the nature of exchange in the economy, which is the focus of this chapter, but also any set of government regulations and policies and any naturally occurring phenomena, such as the "frictions" that lead to adjustment costs, etc., or random elements in the economy such as productivity shocks, that affect optimal resource allocations. Many of these factors are studied in subsequent chapters.

1.3 AN ISLAND ECONOMY

Again consider an isolated island economy, but one that consists of a large number of households (imagine 1000 or 10,000) and produces a wide variety of goods (numbering in the thousands). Now define a period to be a standard interval of time, which could be thought of as a week or a month. In each period, every household engages in the home production of a subset of the economy's K goods, and each household owns the means, or factors, of production for its home goods. Those factors include both physical capital, denoted k , and human capital, denoted h , here the latter is a measure of the household's skill level in production. The household also has a limited amount of time available each period, denoted T . Time is a real economic resource that the household must allocate among competing uses. Some of the time is devoted to production and is denoted n . Some households on the island produce flour, some catch fish, others grow crops, and so on. However, because their production decisions all pertain to resource allocations, an individual "representative household" can be used to examine those decisions. Refer to this household as household i and designate quantities associated with it by the subscript i .

The production technology of household i has two factor inputs. One is the stock of physical capital, k_i , which is assumed to be task specific in that it can be used only in the production of designated goods. The other is the stock of human capital, h_i , that is combined with hours of labor, n_i , to yield skill-weighted or effective hours of labor, $(h_i n_i)$. The technology for transforming factor inputs into output goods can be represented by the household's production function as $f_i[k_i, (h_i n_i)]$. For simplicity, assume the stocks of physical and human capital are held constant over time.³ This limits the production decision to a determination of the amount of time devoted to production, n_i , which is the sole remaining variable in the production function. Therefore, the production function can be rewritten as $f_i(n_i)$. This function has the property of diminishing marginal returns to labor, implying that a small increase in labor yields a lesser increase in output at high levels of production than at low levels of production. (See Mathematical Appendix 1.1 for the mathematical representation of the household's technology and resource constraints.)

The wide variety of goods produced in the economy is represented pictorially in Figure 1.2 by the set K . This set can be partitioned into a set of perishable goods, G , and a set of durable investment goods, X . The distinction is that perishable goods cannot be stored and therefore must be consumed within the period, whereas durable investment goods add to the household's stock of physical capital and are storable, but depreciate over time.⁴ Now further imagine

³These stocks will be allowed to vary when investment decisions are examined in subsequent chapters.

⁴Investment goods include both intermediate and capital goods. No distinction is made between them because it is their similarities that are important here. That is, both are durable goods and both are used up in production.