

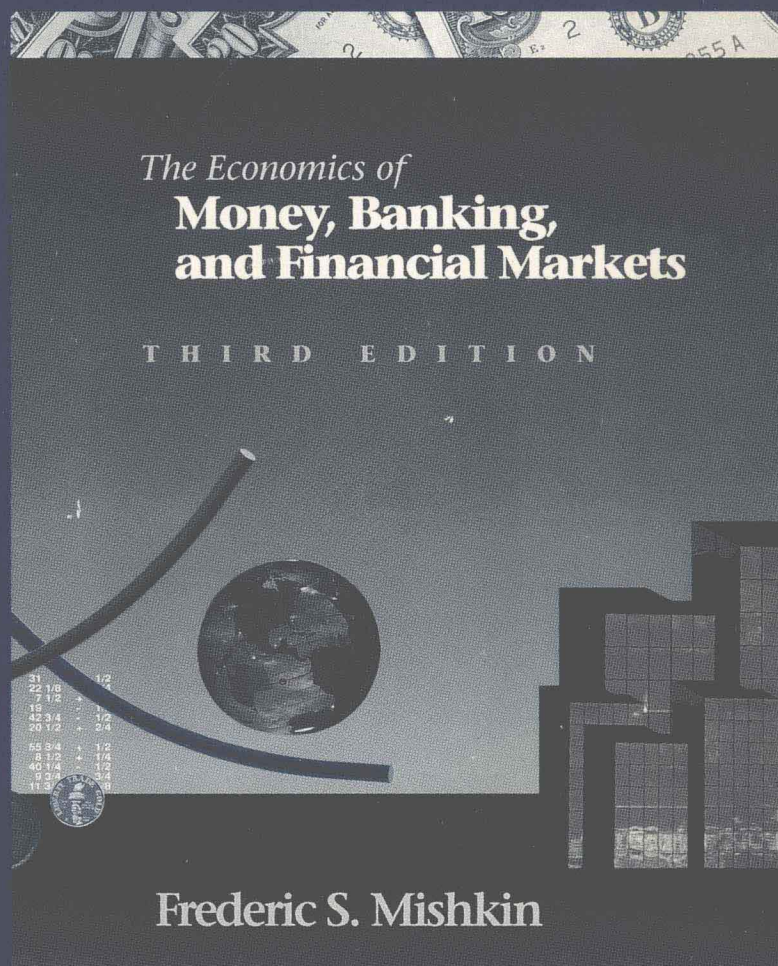
Readings to accompany

Frederic S. Mishkin

The Economics of
**Money, Banking,
and Financial Markets**

THIRD EDITION

James W. Eaton
Frederic S. Mishkin



Readings for the Economics of Money, Banking, and Financial Markets

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 **HarperCollins***Publishers*

Readings for *THE ECONOMICS OF MONEY, BANKING, AND FINANCIAL MARKETS* Edited by James W. Eaton and Frederic S. Mishkin

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ISBN: 0-0673-54022-7

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PREFACE

This *Reader* is designed to make *The Economics of Money, Banking, and Financial Markets* a unique teaching package that meets the current needs of both the professor and the students. A basic problem of textbooks in the Money and Banking or Financial Markets and Institutions field is that current events and financial innovation make many of the facts in the textbooks obsolete soon after they are published. To minimize this problem, *The Economics of Money, Banking, and Financial Markets* focuses less on a set of facts, but rather stresses a few basic economic principles that never go out of date to understand the role of money in the economy and the structure of financial markets and institutions. To make this economic approach to teaching Money and Banking or Financial Markets and Institutions even more effective, it is important to keep the textbook analysis up to date by supplementing it with current articles on money, financial markets and institutions. This is what this *Reader* does.

UNIQUE FEATURES OF THIS READER

This *Reader* is unique in the Money and Banking and Financial Markets and Institutions field because of features such as its being the most up-to-date, its use to provide a new way to teach financial markets and institutions, its pedagogical aids and its low price when purchased with the textbook.

Most Up-to-date

In contrast to other readers in the Money and Banking or Financial Markets and Institutions field, this *Reader* will be updated annually, with over half the articles new each year. For example, in this edition twenty-six of the forty articles — nearly two-thirds — have been published since July 1990. These include articles on the credit crunch, Japanese banking, reform

of the deposit insurance system, regulation of stock index futures, recent views of the real interest rate, interpreting recent money growth, the politics inside the Federal Reserve System, U.S. foreign exchange operations, and European financial integration. No other reader in the field is as current, and this will continue to be the case with the appearance of a new edition of the *Reader* every year.

A New Way to Teach Financial Markets and Institutions

The third edition of *The Economics of Money, Banking, and Financial Markets* develops a unifying economic framework to organize students' thinking about financial markets and institutions so that they can make sense of, rather than be confused by, all the facts about our financial system. The strength of this approach, in contrast to the approach used in other textbooks which focus on a set of facts about financial institutions, is that it will not go out of date. Because this approach stresses lasting economic concepts, it allows instructors to discuss the latest developments in financial markets and institutions. As part of this approach to teaching financial markets and institutions, instructors will want to use current articles in class to illustrate the economic forces that are driving changes in financial markets. This *Reader* has been designed to make it easier for instructors to do this and keep their teaching current. Over half of the readings are devoted to financial markets and institutions, and nearly three-quarters of these articles have been published since July 1990. Because the need for current discussion of financial markets and institutions is so important to teaching Money and Banking or Financial Markets and Institutions, future annual editions will make a special effort to have a similarly high percentage of current articles in the *Reader* focus on financial markets and institutions.

The numerous, current readings on financial markets and institutions that will appear annually

in this and future editions of the *Reader* and the stress on economic analysis in the textbook provide a whole new way of teaching financial markets and institutions. This new approach will make it less likely that students will memorize a mass of facts that will be forgotten after the final exam and that soon become obsolete because of the rapid pace of financial innovation. Instead, they will have an understanding of the dynamism of our financial markets and institutions and will see that what they have learned applies to current developments in financial markets, illustrating the relevance of their coursework.

Pedagogical Aids

Each of the *Reader's* seven parts begins with an introduction (written by James Eaton) which provides the student with a brief summary of each article. In addition, the introduction provides suggestions for which chapter(s) the reading might be assigned to, thus helping instructors decide how they might like to organize their course.

James Eaton has also written several discussion questions which follow each reading in order to encourage students to think about how the reading relates to material in the text. Instructors may find these questions useful for class discussions of the reading or as written assignments in problem sets.

Low Price

Because we believe that this *Reader* is such an important supplement to courses in Money and Banking or Financial Markets and Institutions, it will be sold with the text at a

particularly low price. This should give students the benefit of the *Reader* without making its cost prohibitive.

SUGGESTIONS AND ACKNOWLEDGMENTS

It is hoped that instructors and students who use this *Reader* will indeed find it an effective pedagogical tool. The editors look forward to receiving any comments or suggestions concerning the articles in this edition of the *Reader* or ones which would be appropriate for its next edition. Your comments and suggestions may be sent to:

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We owe sincere thanks to several people for their help in preparing this *Reader*. Our thanks go first to Tammy Hall, whose retyping of each article accounts for the *Reader's* uniform, polished appearance; and to Dan Spitzer, Jr., Ted Flory, and Scott Moomaw, who on many occasions shared helpful hints about word processing programs; and to Bruce Kaplan, economics editor at HarperCollins, for his advice and encouragement. Above all, we would like to thank our wives Mary and Sally, and our children, Amanda, Elizabeth and Matthew (for Eaton) and Matthew (for Mishkin), who have put up with us while this project claimed a large share of our time. We hope they know that they are infinitely more important to us than a book.

James W. Eaton
Frederic S. Mishkin

PART ONE

INTRODUCTION

The four readings for Part I introduce several basic issues related to money and the financial system: alternative means of making payments, the definition and measurement of the money supply, the internationalization of financial markets, and government regulation of the financial system.

Reading 1 is "A Cashless Society?" by Michael C. Keeley. Keeley examines trends in the use of cash, checks, and electronic payments and concludes that cash will not be replaced by electronic payments. This reading supplements the discussion in Chapter 2 of the evolution of the payments system and electronic funds transfer. (Instructors might wish to refer to this reading later in the course as well, when covering the theory of asset demand in Chapter 5 and the currency-checkable deposit ratio in Chapter 16.)

"The Monetary Aggregates" by John R. Walter is Reading 2. Walter reviews the origin and evolution of the monetary aggregates and describes how they are prepared and released and how the monetary data is used by economists. This reading provides an extended look at the monetary aggregates and the theoretical and empirical definitions of the money supply which are covered in Chapter 2. (Because this reading also discusses the money supply process, some instructors might wish to save it for discussion with Chapter 15.)

Japan has become the world's largest exporter of capital, most of which flows to the U.S. Reuven Glick, in Reading 3, "Japanese Capital Outflows," suggests several reasons for this and predicts a slower rate of growth for Japan's foreign investment in the future. This reading provides an opportunity to discuss the internationalization of financial markets discussed in Chapter 3; it could be used also with the balance of payments material in Chapter 22.

Reading 4 is "The Role of Government in Promoting Home Ownership: The U.S. Experience" by Gordon H. Sellon, Jr. As Chapter 3 in the text points out, government regulation of the financial system is prompted in part by the objective of encouraging home ownership. Sellon examines the rationale for government policies to promote home ownership and concludes that many of these policies were made necessary by an anti-housing bias in the U.S. financial regulatory structure which was established in the 1930's. In doing so he touches upon many of the topics discussed in Chapter 3. (This reading could also be used with Chapter 10, The Banking Industry; Chapter 11, Crisis in Banking Regulation; or Chapter 13, Financial Innovation, as it relates to material covered in these chapters as well.)

READING 1

A Cashless Society?

Michael C. Keeley

Editor's Note: This article is reprinted by permission from the Federal Reserve Bank of San Francisco *Weekly Letter*, April 15, 1988. Opinions expressed in this newsletter do not necessarily reflect the views of the management of the Federal Reserve Bank of San Francisco, or of the Board of Governors of the Federal Reserve System.

For years analysts have been predicting that the U.S. will become a cashless society in which most payments will be made electronically. Such predictions might seem reasonable in light of rapid advances in computer and telecommunications technology and the growth of electronic funds transfers.

However, less technologically sophisticated means of payments stubbornly refuse to go away. Most individuals still rely primarily on checks, cash, and credit cards to make payments. A fully electronic payment system apparently remains a far distant development. In fact, trends in cash usage and holdings suggest that cold, hard cash is becoming an even *more* popular means of payment. This *Letter* examines trends in the use of cash, checks, and electronic payments to assess the likely evolution of the payment system over the next few years.

MEANS OF PAYMENT

In the U.S., households' primary means of payment (in dollar volume) are checks, followed by cash (currency and coin), and then credit cards. According to a 1984 Federal Reserve survey, 57 percent of a typical family's expenditures are made by check, a surprisingly large 36 percent are made by cash, and the remaining 7 percent are made by credit card. Very few households make payments via electronic wire transfers.

Detailed data on trends in the use of various means of payments are not readily available. However, trends in the Federal Reserve's

provision of various payments services may give a useful indication of underlying trends. The Federal Reserve is a major provider of check clearing services, electronic funds transfers, and cash services. Trends in both dollar volumes and numbers of items processed suggest that although electronic payments are growing, traditional means of making payments are well entrenched.

In terms of dollar volume, electronic wire transfers are by far the most important type of payments processed by the Fed. Over \$142 trillion dollars were transferred over the Federal Reserve's electronic transfer system in 1987, more than twelve times the dollar volume transferred by check. Most of these transactions occurred among large corporations, depositories, and financial companies. Moreover, electronic transfers mainly involved federal funds trades and securities purchases and sales, not purchases and sales of final goods and services. Individual electronic transfers tended to be large, averaging \$2.7 million each. Thus, the *number* of these "wholesale" electronic transfers was minuscule in relation to the total check volume processed by the Federal Reserve.

The growth in electronic transfers has been rapid, with a 62 percent increase in dollar value and a 39 percent increase in transfer volume between 1983 and 1987. In contrast, checks grew only 16 percent in dollar value and 16 percent in volume over the same period. Thus, electronic transfers apparently are gaining in popularity over checks. But checks still handle over 300 times the number of payments that electronic transfers do, so it is unlikely that

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electronic funds transfers will displace checks as the most popular mode of payment anytime soon.

CASH STILL IS KING

It is not surprising that electronic funds transfers are used for large-dollar transfers and that they have become increasingly popular, but it is surprising how popular currency still is. In fact, contrary to predictions of a cashless society, currency is becoming increasingly popular as a means of payment.

The dollar volume of currency outstanding in the hands of the public has been growing for a long time. In keeping with this trend, currency grew from \$148 billion in 1983 to \$200 billion in 1987, a 35 percent increase. Moreover, currency's share of the Fed's M1 monetary aggregate—a measure of transaction balances—declined only slightly from 27 percent in 1977 to 26.5 percent in 1987, even though interest-earning NOW and Super-NOW checking accounts for individuals were introduced during this period. In theory, the introduction of such accounts should have increased the popularity of checking accounts and reduced the attractiveness of cash balances. Interest-paying checking accounts, in fact, have been very popular (over 35 percent of households had them by 1985), but their popularity did not diminish that of currency. Rather, they attracted funds mainly from non-interest bearing checking accounts and other interest bearing accounts.

FEDERAL RESERVE CASH PROCESSING

Another sign of the growing popularity of cash as a means of payment is the rapid growth in the volume of currency and coin processed by the Federal Reserve. As part of their central bank services, the 12 regional Federal Reserve Banks and their branches count, sort, store, and ensure that the quality of currency in circulation is maintained. Banks can deposit excess or unfit currency at a Federal Reserve Bank or branch and can withdraw sorted, fit currency from their reserve accounts upon request. Typically, the

total volume of cash withdrawals from reserve accounts follows deposit volume fairly closely over time, but withdrawals run slightly higher than deposits as a result of the growing volume of cash held by the public. (New currency is printed by the Bureau of Engraving and Printing.)

The volume of currency received by all Federal Reserve Banks has been growing rapidly for some time. During the 1983-1987 period, unit volume increased 47 percent and dollar volume 52 percent—approximately triple the corresponding percentage increases for check volumes and in line with the percentage increases in electronic transfer volumes. Moreover, the 1986-87 growth rate in unit volume was about 9.5 percent, considerably greater than the 6.6 percent average annual growth rate since 1974.

In 1987, the Federal Reserve System processed about 17 billion notes of various denominations, representing a dollar value of more than \$216 billion. Thus, slightly more than the entire dollar volume of currency outstanding (\$200 billion) circulates through the Federal Reserve during a typical year.

These figures understate the extent to which cash is used as a means of payment, however. According to the 1984 Federal Reserve survey, only 15 percent of all currency (or about \$30 billion in 1987), is held for transaction purposes by domestic residents. (The rest is held outside the U.S., or possibly within the U.S. in hoards for illegal purposes.) Apparently, each dollar held by a U.S. resident for transaction purposes circulated through the Federal Reserve System several times, probably after being used in several transactions. Thus, the \$30 billion held domestically for transaction purposes probably supports transactions valued at several times the \$216 billion that the Fed receives annually in currency deposits. In view of these estimates, the cashless society is far from reality.

REASONS FOR CASH'S POPULARITY

There are several reasons why cash as a means of payment is likely to remain popular. There are even some reasons why it is likely to

become *more* popular. For one thing, cash is a convenient means of payment, especially for small purchases. It takes much less time to make a cash payment than it does to make a check or credit card payment, and cash is more widely acceptable. The time involved in making a transaction is a very real cost, which increases with the value of alternative uses of an individual's time. These values have increased along with real wages and the proportion of the population employed. As a result, convenience has become a more important determinant of the choice of method of payment.

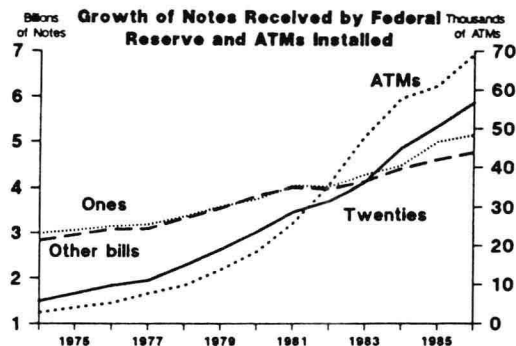
Another reason for using currency is that cash transactions are anonymous, making them widely used in illegal transactions or for tax evasion. In fact, several economists have relied on patterns of cash usage to try to estimate the size of the "underground" economy. However, the recent reductions in federal marginal tax rates, in theory, should have reduced the incentives for tax evasion and therefore, reduced the popularity of cash transactions.

GROWTH IN ATMs

Perhaps a more important reason for the growing popularity of cash is the introduction and rapid growth of automatic teller machines (ATMs), a trend that is also related to the convenience demand for cash. The number of these machines has grown from 10,000 nationwide in 1977 to over 80,000 today.

By offering virtual around-the-clock availability from many locations, ATMs make it possible for individuals to obtain cash frequently and at their convenience, thereby reducing the time costs involved in obtaining cash. Moreover, individuals do not have to risk possible loss, theft, or loss of interest on large cash balances. Instead, they can obtain cash frequently and in amounts more closely related to the size and timing of planned expenditures. In fact, the 1984 Federal Reserve survey confirms that ATM users hold smaller average cash balances and obtain cash more frequently than do non-ATM users. Also, ATMs are used more frequently by high-income persons with high time costs and thus larger incentives to

economize on the time involved in making payments.



The chart shows a correlation between the growth of ATMs and the demand for cash. Since most ATMs use \$20 bills, it is interesting to note that the growth in the volume of \$20 bills has been greater than that of other denominations since 1977—about the same time that the number of ATMs installed started to grow rapidly nationwide. Moreover, the volume of \$20 bills processed by the Federal Reserve has exceeded that of other denominations since 1983. Surveys by the Bank Administration Institute in 1979 and 1986 also show that the fraction of the number of all debits from checking accounts arising from ATM cash withdrawals increased 336 percent while the number of debits associated with checks actually declined about 4 percent.

One final reason that cash has been and likely will continue to be so popular is that the Federal Reserve's cash services are not priced. (However, institutions pay the full costs of transporting cash to and from the Federal Reserve.) Check services and wire transfers, in contrast, are both priced at levels intended to recover processing costs. Because Federal Reserve cash services are underpriced compared to checks and electronic transfers, cash payments are more economical than if users had to pay the full costs of the Federal Reserve's services. This, in turn, may help to explain the rapid growth of ATMs, since ATMs require sorted and fit currency—two services banks can obtain without cost from the Federal Reserve.

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CASH IS HERE TO STAY

Far from becoming a cashless society, the U.S. appears to be relying *more* on currency as a means of payment. The reasons for this trend include increased time costs, the innovation of ATMs and the underpricing of Federal Reserve cash services. Thus, it seems unlikely that electronic payments will replace cash anytime in the near future.

QUESTIONS

1. What alternative means of payment does Keeley identify? What is the relative importance and the growth trend of each?
2. Why is cash's popularity growing rather than diminishing as many observers had predicted it would?

READING 2

Monetary Aggregates

John R. Walter

Editor's Note: This article is reprinted by permission from the Federal Reserve Bank of Richmond *Macroeconomic Data: A User's Guide* (1990), 36-44. The views and opinions are solely those of the author and should not be attributed to any other person, to any agency that prepares macroeconomic statistics, or to the Federal Reserve Bank of Richmond.

The monetary aggregates are measures of the nation's money stock. The most narrowly defined monetary aggregate, M1, is the sum of the dollar amounts of currency and nonbank travelers checks in circulation, plus checkable deposits. M2 includes M1 plus overnight repurchase agreements, overnight Eurodollar deposits, general purpose and broker/dealer money market fund balances, money market deposit accounts, and savings and small time deposits. M3 is the sum of M2 and large time deposits, term repurchase agreements, term Eurodollar deposits, and balances in money market funds employed solely by institutional investors. Analysts study the relationships among these monetary measures and other macroeconomic variables, such as national income, employment, interest rates, and the price level. These relationships are then used to forecast changes in economic activity, interest rates, and inflation. The Board of Governors of the Federal Reserve System defines the aggregates and calculates and reports their values.

This article explains the origin and evolution of the monetary aggregates and discusses how they are prepared and released, how they are used, and when and why they are revised. Information on the monetary base is also included.

HOW THE MONETARY AGGREGATES EVOLVED

Over the years economists have proposed many different groupings of financial assets into something called "money." No single definition of money has been universally acceptable. Two approaches have been used to define money. The first is to identify what financial assets are commonly used for certain purposes. Analysts using this approach generally include as money financial assets serving (1) as a medium of exchange, i.e., assets widely acceptable in payment for goods, services, and debts, and (2) as a store of value. A second approach to defining money is to find the groupings of financial assets the movements of which are most closely correlated with the movements of certain macroeconomic variables such as national income, employment, and prices. Both approaches have contributed to the development of the monetary aggregates constructed by the Federal Reserve. A brief chronology of the evolution of these measures is given below.

In 1944 the Board of Governors of the Federal Reserve System began reporting monthly data on two types of exchange media, (1) currency outside of banks, and (2) demand deposits at banks, i.e., non-interest-bearing deposits transferable by check or convertible into cash "on demand." It also reported the sum of these two. The Board's expressed intent in reporting the data was "to increase the information available to the public on current changes ... in the nation's money supply." In time the sum of currency outside banks and

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demand deposits came to be called M1, the narrowest of the Fed's monetary aggregates.

Until 1971 M1 was the only monetary aggregate for which estimates were published by the Board of Governors. In that year, however, the Board began reporting data for two additional aggregates, M2 and M3. Interest in these latter variables reflected the growing importance of the monetary aggregates in formulating monetary policy. It also reflected the view among some economists that the appropriate definition of money should include assets capable of providing a temporary store of value. Accordingly, M2 was defined to include M1 plus savings deposits at commercial banks and time deposits at commercial banks except large negotiable certificates of deposit. Similarly M3 was defined as the sum of M2 and deposits at mutual savings banks and savings and loan associations.

In 1975, the Board began publishing data for even broader collections of financial assets, namely M4 and M5. M4 included M2 plus large negotiable certificates of deposit. M5 was the sum of M3 and large negotiable certificates of deposit.

The decade of the 1970s witnessed the development of many financial instruments. Some of the new assets were close substitutes for demand deposits, namely negotiable order of withdrawal (NOW) accounts which are interest-bearing checkable accounts, savings accounts featuring automatic transfer to checking accounts (ATS accounts), credit union share draft accounts, and money market mutual funds with checking privileges. These new accounts began to be used as exchange media but were not counted in M1 until 1980.

The introduction of these new assets also coincided with what some economists interpreted as changes in the relationships between the monetary aggregates and economic variables such as income, employment, and prices. These apparent changes provided some of the Fed's motivation for modifying its definitions of the aggregates in 1980.¹ At that time the Fed replaced its M1 definition of money with M1A and M1B. M1A was equivalent to the old M1, including only currency and demand deposits; M1B included all of M1A plus NOW and ATS balances at banks and thrifts, credit union share draft balances, and demand deposits at mutual

savings banks.² At the same time old M2 through M5 were replaced with new measures of M2 and M3. New M2 included all of M1B and a number of other assets that are easily convertible to transaction account deposits or that can be used in transactions to a limited degree. These were overnight repurchase agreements (RPs) issued by commercial banks and certain overnight Eurodollars held by nonbank U.S. residents, money market mutual fund shares, and savings and small-denomination time deposits at all depository institutions.³ New M3 added to M2 large-denomination time deposits at all depository institutions and term RPs at commercial banks and savings and loan associations.

In January 1982 the Board of Governors stopped reporting M1A and redesignated M1B as M1. Since then the definitions have been modified only slightly. Table I shows the current magnitudes of M1, M2 and M3.

MONETARY BASE

The monetary base is composed of currency held by the public and in vaults of depository institutions, plus reserves of depository institutions. In 1968 the Federal Reserve Bank of St. Louis began publishing figures on the monetary base. In 1979 the Board of Governors of the Federal Reserve System also began publishing data on a somewhat different version of the monetary base.

The base can be viewed as the foundation upon which the superstructure of deposits is erected. An increase in the reserves component of the base allows the system of depository institutions to expand deposits. Initially, an increase in reserves—resulting from open market operations or loans by the Fed—leads to an increase in "excess" reserves, that is, reserves beyond the amount needed to meet reserve requirements at depository institutions. These institutions use the excess reserves to make loans and investments which soon become deposits. When these deposits are spent and redeposited, they create additional excess reserves and lead to the extension of more loans. Through a multiplicative process the money supply is

Table I
**COMPONENTS OF THE MONETARY AGGREGATES
 AND MONETARY BASE AND THEIR LEVELS**
 August 1988
 Billions of dollars

| | |
|-----------------------------------------------------|---------------|
| M1 | 782.5 |
| Currency | 207.2 |
| Travelers checks | 7.2 |
| Demand deposits | 290.0 |
| Other checkable deposits | 278.1 |
| M2 | 3032.0 |
| M1 | 782.5 |
| Overnight RPs | 64.9 |
| Overnight Eurodollars | 15.8 |
| MMF balances (general purpose and broker/dealer) | 231.2 |
| MMDAs | 517.1 |
| Savings deposits | 433.8 |
| Small time deposits | 985.2 |
| M3 | 3847.3 |
| M2 | 3032.0 |
| Large time deposits | 514.7 |
| Term RPs | 121.0 |
| Term Eurodollars | 102.4 |
| MMF balances (institution only) | 84.0 |
| Monetary Base | 271.2 |
| Currency | 207.2 |
| Reserves | 61.1 |

Sources: Data for M1, M2, M3 and their components are from Board of Governors of the Federal Reserve System H.6 release, "Money Stock, Liquid Assets, and Debt Measures," dated October 6, 1988. Data for Monetary Base are from Board of Governors of the Federal Reserve System H.3 release, "Aggregate Reserves of Depository Institutions and the Monetary Base," dated October 6, 1988. The Currency figure shown below Monetary Base is from H.6 while the Reserves figure is from H.3.

Explanation: M2 and M3 both differ from the sums of their components because these aggregates are seasonally adjusted by adjusting the non-M1 components of M2 and the non-M2 components of M3 as blocks. Several of these components are not reported in seasonally adjusted form while those that are have been adjusted individually. Monetary Base differs from its components because the currency component the Board uses in its Monetary Base computation includes some adjustments excluded from the H.6 currency figure. The Board does not publish the currency portion of Monetary Base separately.

Other checkable deposits are negotiable order of withdrawal (NOW) accounts, automatic transfer service (ATS) accounts, credit union share draft accounts, and demand deposits at thrift institutions.

RPs, repurchase agreements, are loan arrangements in which the borrower sells the lender securities with an agreement to repurchase them at a future date.

Eurodollars are dollar-denominated deposits issued to U.S. residents by foreign branches of U.S. banks worldwide.

MMF, money market mutual funds, are funds investing in money market instruments, offered by investment companies.

MMDAs, money market deposit accounts, are savings deposits on which only a limited number of checks can be drawn each month.

Savings deposits are liabilities of depository institutions that do not specify a date of withdrawal or a time period after which deposited funds may be withdrawn, although depository institutions must reserve the right to require at least seven days written notice before withdrawal of savings deposits.

Time deposits are liabilities of depository institutions payable on a specified date, or after a specified period of time or notice period, which in all cases may not be less than seven days following the date of deposit.

Term, as in Term RPs and Term Eurodollars, means maturities of greater than one day.

The *Reserves* component of Monetary Base is total reserves of depository institutions with Federal Reserve Banks plus vault cash used to satisfy reserve requirements and is adjusted for reserve requirement changes.

For a detailed description of each of the components of M1, M2, and M3 see any recent H.6 release or footnotes to the table entitled "Money Stock, Liquid Assets, and Debt Measures," in the statistical section of a recent *Federal Reserve Bulletin*. For a detailed description of the Reserves component of Monetary Base see the footnotes to the H.3 release, or footnotes to the table entitled "Reserves and Borrowings, Depository Institutions" in the statistical section of a recent *Federal Reserve Bulletin*. The Federal Reserve Bank of Richmond's *Instruments of the Money Market* includes a chapter for each of the major money market instruments, including Eurodollars, RPs, and MMF, listed above.

The Federal Reserve, in its H.6 release and in the tables of its *Federal Reserve Bulletin*, publishes estimates of liquid assets and total debt of non-financial sectors with the monetary aggregates even though these are not considered monetary aggregates. The liquid assets measure is called L and is made up of M3 plus U.S. savings bonds, short-term Treasury securities, commercial paper, and bankers acceptances. The aggregate labeled "Debt" includes the debt of the U.S. government, state and local governments, and private nonfinancial sectors. L first appeared in the *Federal Reserve Bulletin* in 1980, with Debt following in 1984. Items in L and Debt fall outside of the category of assets that most economists would call money.

increased by a multiple of the Fed's original addition to the monetary base. The extent to which the money stock increases upon an increase in the monetary base depends on the percentages of required and excess reserves held by depository institutions and on the public's holdings of cash relative to deposits.⁴

As noted above, the Board of Governors' and the St. Louis Federal Reserve Bank's estimates of the monetary base differ, and do so in three respects. First, the Board and St. Louis adjust the base differently to cleanse it of changes that are simply the result of changes in reserve requirements.⁵ Second, the Board and St. Louis account for vault cash differently.

Third, they seasonally adjust their estimates differently.⁶

PREPARATION AND RELEASE OF MONETARY DATA

The Board of Governors constructs its estimates of the monetary aggregates from information supplied by depository institutions, the U.S. Treasury, money market mutual funds, New York State investment companies, nonbank issuers of travelers checks, and foreign central banks. Some of these institutions report every

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Table II
**SOURCES OF DATA USED BY THE BOARD OF GOVERNORS IN THE
 ESTIMATION OF THE MONETARY AGGREGATES AND THE MONETARY BASE**

| Component | Description of Component | Source of Data on Component and Frequency |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| M1 | | |
| Currency | Currency and coin in the hands of the nonbank public. | Consolidated Statement of Condition of All Federal Reserve Banks (H.4.1)—weekly; vault cash data from Report of Transaction Accounts, Other Deposits and Vault Cash (FR 2900)—weekly, and Quarterly Report of Selected Deposits, Vault Cash, and Reservable Liabilities (FR 2910Q). |
| Nonbank travelers checks | Travelers checks issued by institutions other than banks. Included in M1 because they can be used directly for purchases. | Report of Travelers Checks Outstanding (FR 2054)—monthly. |
| Demand deposits and Other checkable deposits | Checkable deposits including regular non-interest-bearing checking accounts, NOW balances, ATS balances, and credit union share draft balances. | FR 2900; FR 2910Q; Reports of Condition and Income (Call Reports)—quarterly; internal Federal Reserve float data; Weekly Report of Assets and Liabilities for Large Banks (FR 2416). |
| M2 | | |
| M1 | | |
| Overnight repurchase agreements | Overnight and continuing contract repurchase agreements (RPs) issued by commercial banks. Included in M2 because they are generally considered short-term investments used in managing demand deposit balances. | Report of Selected Borrowings (FR 2415)—weekly; Annual Report of Repurchase Agreements (FR 2090A); Weekly Report of Assets of Money Market Mutual Funds (FR 2051A); Weekly Report of Assets for Selected Money Market Mutual Funds (FR 2051C). |
| Overnight Eurodollars | Overnight Eurodollars issued to U.S. residents by foreign branches of U.S. banks worldwide. Short-term investments like RPs. | Report of Selected Deposits in Foreign Branches Held by U.S. Residents (FR 2050)—weekly; FR 2051A; FR2051C. |
| Money market mutual fund (MMF) balances (general purpose and broker/dealer) | Often checkable, but included in M2 rather than M1 because turnover rates are more like savings instruments than transactions instruments. | Investment Company Institute (ICI) gathers FR 2051A and FR 2051C for Fed covering all MMFs. |
| Money market deposit accounts (MMDAs) | Limited check writing features and turnover rates like savings rather than transactions accounts cause Fed to include this asset in M2 rather than M1. | FR 2900; FR 2910Q; Call Reports. |
| Savings deposits | Passbook and telephone transfer accounts. | FR 2900; FR 2910Q; Call Reports; FR 2416. |
| Small time deposits | Time deposits at depository institutions with denominations less than \$100,000. Includes RPs with denominations less than \$100,000. | FR 2900; FR 2910Q; Call Reports; Monthly Survey of Selected Deposits and Other Accounts (FR 2042); Report of Repurchase Agreements on U.S. Government and Federal Agency Securities (FR 2090Q)—quarterly; FR 2090A. |
| M3 | | |
| M2 | | |
| Large time deposits | Time deposits at depository institutions with denominations of \$100,000 or more. Held largely by institutions. | FR 2900; FR 2910Q; Call Reports; FR 2416; FR 2051A; FR 2051C. |
| Term RPs | Denominations \$100,000 or greater with more than one day maturity. Held largely by institutions rather than individuals. | FR 2415; FR 2090A; Call Reports; FR 2051A; FR 2051C. |
| Term Eurodollars | More than one day maturity, held largely by institutions rather than individuals. | Weekly Report of Foreign Branch Liabilities to, and Custody Holdings for, U.S. Residents (FR 2077); information from Bank of Canada and Bank of England; FR 2051A; FR 2051C. |
| MMF balances (institution only) | Balances held by institutions rather than individuals. | FR 2051A; FR 2051C. |
| Monetary Base | | |
| Currency | Currency and coin in the hands of the nonbank public plus currency and coin in bank vaults not used to satisfy reserve requirements. | H.4.1; FR 2900; FR 2910Q; Call Reports. |
| Reserves | Reserves of depository institutions held with Federal Reserve Banks plus vault cash used to satisfy reserve requirements. | FR 2900; H.4.1. |

Table III

**AVAILABILITY OF TIME SERIES ON
MONETARY AGGREGATES AND COMPONENTS
MAKING UP MONETARY AGGREGATES**

| Series | Weekly Averages Available Beginning: | | Monthly Averages Available Beginning: | |
|---------------------------------------------|--------------------------------------------|--------|---------------------------------------------|-------|
| | sa | nsa | sa | nsa |
| Aggregates | | | | |
| M1 | 1/75 | 1/75 | 1/59 | 1/47* |
| M2 | 1/81 | 1/81 | 1/59 | 1/59 |
| M3 | 1/81 | 1/81 | 1/59 | 1/59 |
| Monetary Base—Board | | | | |
| Adjusted | 1/59** | 1/59** | 1/59 | 1/59 |
| Unadjusted | | 1/59** | | 1/59 |
| Monetary Base—St. Louis | | | | |
| Adjusted | 1/72** | 1/72** | 1/50 | 1/29 |
| Unadjusted | | 1/72** | | 1/19 |
| Components of Ms | | | | |
| Currency | 1/75 | 1/75 | 1/59 | 1/47* |
| Demand deposits | 1/75 | 1/75 | 1/59 | 1/47* |
| Other checkable deposits | 1/75 | 1/75 | 1/63 | 1/63 |
| Overnight RPs | | 1/75 | | 11/69 |
| Overnight Eurodollars | | 12/79 | | 2/77 |
| MMMF (general purpose and broker/dealer) | | 2/80 | | 11/73 |
| MMMF (institution only) | | 2/80 | | 4/74 |
| Nonbank travelers checks | 1/75 | 1/75 | 1/59 | 1/59 |
| Savings deposits | 1/81 | 1/81 | 1/59 | 1/59 |
| Small time deposits | 1/81 | 1/81 | 1/59 | 1/59 |
| Large time deposits | 1/81 | 1/81 | 1/59 | 1/59 |
| MMDA | | 12/82 | | 12/82 |
| Term RPs | | 1/75 | | 10/69 |
| Term Eurodollars | | 12/79 | | 1/59 |
| Components of Base | | | | |
| Reserves—Board | | | | |
| Adjusted | 1/59** | 1/59** | 1/59 | 1/59 |
| Unadjusted | | 1/59** | | 1/59 |
| Reserves—St. Louis | | | | |
| Adjusted | | | 1/50 | 1/47 |
| Currency—St. Louis | | 1/72** | | 1/50 |

Sources: Board of Governors of the Federal Reserve System, H.6, "Historical Money Stock Data," March 1988; Board of Governors of the Federal Reserve System, H.3, "Reserves of Depository Institutions, Historical Data," June 1988, *Banking and Monetary Statistics, 1941-1970*, Board of Governors of the Federal Reserve System, 1976; The Federal Reserve Bank of St. Louis.

* Data from 1/47 until 12/70 can be found in *Banking and Monetary Statistics, 1941-1970*, Board of Governors of the Federal Reserve System, 1976, while data for 1/59 to current are available from Board of Governors of the Federal Reserve System, H.6, "Historical Money Stock Data," March 1988. Definitions used in these two sources differ.

** Weekly data are available until 2/84, after which only biweekly data are available.

sa = Seasonally adjusted

nsa = Not seasonally adjusted

PART I Introduction

week, others report less frequently. Some report in an abbreviated form not available to larger institutions. To produce weekly and monthly estimates of the aggregates, the Board estimates missing data where detail or frequency of reporting are lacking. Table II lists, by component, sources of data used by the Board to calculate the monetary aggregates.

The Board of Governors reports figures for M1, M2, and M3 each week (usually on Thursday afternoon at 4:30 eastern time). Reported values are weekly averages of daily figures for the week ending ten days earlier. The Board publishes both seasonally adjusted and not seasonally adjusted data. Revisions of the seasonally adjusted aggregates can be large due to changing seasonal patterns over time.⁷

The Board of Governors releases its most recent estimates of the monetary base every two weeks. These figures are two-week averages of daily figures for the two weeks ending eight days earlier. The Board publishes a seasonally adjusted monetary base figure adjusted for changes in reserve requirements, a not seasonally adjusted base figure adjusted for changes in reserve requirements, and a not seasonally adjusted figure not adjusted for reserve requirement changes. The St. Louis Federal Reserve Bank also releases a new estimate of the average monetary base every two weeks. It provides only a base figure adjusted for reserve requirement changes and for seasonal change.

The Board of Governors publishes historical series of the monetary aggregates and many of the components making up the aggregates. These series are periodically updated to reflect revisions or redefinitions of the aggregates. Both the Board and the St. Louis Fed produce historical series for the base. Table III lists the monetary aggregates and their component series as well as the monetary base and its component series available from the Board and St. Louis.

HOW DATA ON MONETARY AGGREGATES ARE USED

The Fed's legislative mandate is to set a monetary policy consistent with high employment, stable prices, and moderate long-

term interest rates. In semiannual testimony to Congress, the Chairman of the Board of Governors of the Federal Reserve System reports the targets set by the Federal Open Market Committee (the Fed's monetary policy making body)⁸ for growth of the monetary aggregates. The Chairman also relates these targeted growth rates to forecasted rates of unemployment, output growth, and inflation. Because of concern with the instability of the behavior of M1, the Federal Open Market Committee has not specified an M1 target range since 1986, although it has continued to set target ranges for M2 and M3.

The Federal Reserve cannot directly control the quantity of money. It can, however, control variables that influence short-term interest rates, namely the quantity of reserves held by depository institutions and the monetary base, and thereby influence the growth rate of the aggregates. Greater provision of reserves through Federal Reserve open market purchases of securities tends to push down the federal funds rate and other short-term interest rates. Lower interest rates, in turn, help determine the quantities of the monetary aggregates demanded by the private sector. Downward pressure on federal funds and other rates makes holding money balances, which pay no or low rates of interest, less costly. The lower cost of holding money increases the quantity of money demanded. Assuming money supply equals money demand, the result is an increase in the level of monetary aggregates. Changes in the aggregates normally are followed by temporary changes in aggregate output and employment and by permanent changes in prices.⁹ Chart 1 illustrates the relationship between M2 and the price level. As is conventional in such comparisons, M2 is shown per unit of real output, i.e., is divided by real GNP, to adjust for growth in the economy.¹⁰

The monetary aggregates have been watched closely by those attempting to predict Fed policy moves.¹¹ In periods when the Fed sought tight control of the growth rate of the aggregates, unusually fast or slow money growth has generated expectations of subsequent policy actions by the Fed to arrest or reverse these movements. In such periods, the financial markets react to the announcement of the weekly M1 figure. The announcement of a higher than