



PEARSON NEW INTERNATIONAL EDITION

Money, Banking & Financial Markets
Principles of
Ritter Silber Udell
Twelfth Edition

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INTRODUCING MONEY, BANKING, AND FINANCIAL MARKETS



Oscar Wilde wrote that a cynic knows the price of everything and the value of nothing. Although that's certainly worthy of further reflection, for our purposes, price and value refer to the same thing: how much a security or financial asset is worth. **Financial markets** generate prices whenever securities are bought or sold. **Financial institutions** value financial assets whenever making loans to businesses or consumers. Thus pricing and valuation of financial assets are at the heart of the financial marketplace. One of our objectives is to link the behavior of securities prices, such as for stocks and bonds, to the performance of the economy as a whole, as well as with the behavior of financial institutions and markets.

But first things first. What exactly do we mean by money, banking, and financial markets? The **money** in *money, banking, and financial markets* refers not only to the greenbacks we spend, but more broadly to the monetary economy. Money plays a key role in the performance of the economy. It not only facilitates transactions among the millions of economic players in the economy, but it represents the principal mechanism through which central banks attempt to influence aggregate economic activity, including economic growth, employment, and inflation. The **banking** in *money, banking, and financial markets* refers to banks and other financial intermediaries. A financial intermediary is an institution that takes funds from one group of investors and redeploys those funds by investing in financial assets. Banks serve as the principal caretaker of the economy's money supply and, along with other financial intermediaries, provide an important source of funds for consumers and businesses. The financial markets in *money, banking, and financial markets* refer to the markets in which financial assets can be traded. Financial markets provide a mechanism for those with excess funds to purchase securities, such as stocks and bonds, issued by those who need funds. Moreover, financial markets provide prices for those stocks and bonds, so that we know whether to conceal or brag about our most recent purchases.

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LEARNING OBJECTIVES

In this chapter you will learn to

- see the importance of money, banking, and financial markets
- understand possible careers that use the skills and knowledge gained through studying this topic

An Overview

Money in the modern economy is sometimes viewed as a lubricant that greases the wheels of economic activity. Without money, the transactions that make up our daily economic routine would be unimaginably difficult, and saving and investing would be almost full-time jobs. Money, however, is more than just a lubricant that enables the economy to operate smoothly. Money also plays a key role in influencing the behavior of the economy as a whole and the performance of financial institutions and markets. More specifically, changes in the supply of money and credit can affect how rapidly the economy grows, the level of employment, and the rate of inflation—and these, in turn, can affect the value of financial assets held by individuals and institutions.

Banks play a particularly critical role in the economy. Banks provide a place where individuals and businesses can invest their funds to earn interest with a minimum of risk. Banks, in turn, redeploy these funds by making loans. In this regard, banks are remarkably similar to other financial intermediaries like finance companies and insurance companies, which also acquire funds from individuals and businesses and pass on these funds to other individuals and businesses. Like finance companies and life insurance companies, banks are well-equipped to invest in the most challenging types of financial investments—loans to individuals and small businesses.

Why are banks singled out for special treatment? As it turns out, most of what we call money in the United States is represented by the deposits issued by banks. Consequently, banks serve as the principal caretakers of the payments system because we write checks on our bank accounts to pay for things we buy. Moreover, because money has linkages to the overall performance of the economy, banks are intimately involved in how the central bank of the United States, called the **Federal Reserve (“the Fed”)**, influences overall economic activity. In particular, the Federal Reserve directly influences the lending and deposit creation activities of banks. This, in turn, helps determine how much people are willing to save and how much businesses are willing to invest and whether the prices of stocks and bonds go up, down, or sideways in the financial markets.

Why Study Money, Banking, and Financial Markets?

Why would you want to study *money*, *banking*, and *financial markets*? Will it make you a better person? The answer is: of course! For example, this book will help prepare you for that fateful moment when someone asks you whether interest rates will go up or down. Not impressed? You will be able to make sense out of the business section of your favorite newspaper. Still not impressed? Well, another reason for studying money and banking is that it will help you get a job after you graduate. And that should interest everyone! So, let's see what you can do—in money, banking, and financial markets.

Careers in Banking and Financial Markets

There are lots of jobs at banks having nothing at all to do with banking—like repairing computer terminals and running the executive dining room. Although these are important activities, they are not what we usually think of when banking is mentioned as a career. Our most visible contacts with banks—the teller who takes our money and the branch officer in charge of student loans—are somewhat closer to what banking is all about, but these are only two of the many specialized tasks that fall under banking and financial markets more generally.

We cannot offer a comprehensive review of all career opportunities in banking and financial markets. And even if we could, it would turn out to be more tedious than the upcoming discussion of the bank reserve equation (if that's possible). Instead we will provide a brief overview of the terrain and then offer some details on specific interesting opportunities. In particular, we will *not* describe what lawyers and accountants who work for banks or other financial institutions actually do; rather, we will focus on the derring-do of bond traders and Fed watchers—after all, that's where the money is (or was).

General Opportunities

The first thing to consider with a career in banking and financial markets is whose side you want to be on. Jobs in the private sector with a bank, mutual fund, or insurance company focus on profits; jobs in the public sector with the Federal Reserve system, **Federal Deposit Insurance Corporation (FDIC)**, or state insurance departments focus on safety. Although both public and private sector jobs deal with financial institutions and markets, with people on both sides of the fence often looking at similar things, their perspectives are quite different. A **bank examiner** with the FDIC or Federal Reserve will review a commercial bank's books to determine whether loans with delinquent payments impair the bank's capital; a commercial **loan officer** at a bank will examine a prospective borrower's books to determine whether timely repayments of interest and principal will add to the bank's profits.

Although both the bank examiner and the loan officer use corporate finance and accounting skills, their objectives and motivations are not the same.

Suppose pursuing the profit motive is your favorite pastime. You would then have an array of subindustries within financial markets to consider, including commercial banking, investment banking, insurance, and pension funds. Although each of these financial institutions has a different overall objective, there are particular skills that are easily transferable among them. For example, both a bank economist and an insurance company economist would forecast interest rates, talk with the institution's corporate customers about their particular industry's outlook, and evaluate the costs and benefits of some internal investment project. Economic and statistical analyses come into play in each and every case. Similarly, an investment officer or portfolio manager for an insurance company, bank, or pension fund will evaluate the merits of putting money into stocks or fixed income securities and, if the latter, whether the investments should be long term or short term.

Once you focus attention on a particular industry, an equally important decision centers on whether to concentrate on the retail or wholesale end of the business. Most financial institutions operate on both levels. A commercial bank has people dedicated to explaining the advantages of different types of **certificates of deposit (CDs)** to depositors with as little as \$1,000 to invest.

Banks also have CD traders and salespeople who specialize in placing large certificates of deposit (\$100,000 and up) with institutional investors, such as money market mutual funds and large corporations. Both activities raise funds for the banks, but they require very different skills. Retail CDs are marketed by people with strong interpersonal skills, while wholesale CDs are sold by people who are equally comfortable with interest rate calculations, movements in the term structure of interest rates, and whether the Federal Reserve's Open Market Committee is likely to vote yes or no to a tighter or easier monetary policy. The CD salespeople for commercial banks must be capable of discussing these factors in order to tailor the CDs to the needs of sophisticated corporate treasurers.

A final distinguishing characteristic among institutions, as well as jobs within a particular firm, centers on domestic versus international business. Despite the growing interrelationship between foreign and domestic activities, there are different regulations that apply in each area, as well as foreign exchange rate movements that must be considered when you are dealing with foreign institutions. If you work for an international bank or if you are a foreign exchange trader, you must feel comfortable with the Japanese yen, British pound, Swiss franc, and whatever else comes along.

There are, no doubt, other ways to categorize the opportunities available within banking and financial markets. But once you've decided upon public versus private, banking versus insurance, wholesale versus retail, and domestic versus international, you've come far enough along to focus on exactly what you might want to do. In the next section we outline one or two glamorous opportunities (at least as far as financial markets are concerned).

Specific Opportunities

As financial markets have moved toward deregulation, business has become more transactions-oriented. The increased emphasis on transactions has generated a bonanza for people with skills in sales and trading, as well as for those with the analytical techniques to support these activities. **Sales** and **trading** jobs at the major investment banks and large commercial banks are exciting, well-paid opportunities; so are the jobs as **financial economists**, statisticians, and mathematicians that form the underlying brain trust. Let's take a somewhat closer look at what these people do and what it takes to get on the road to financial market stardom.

Trading We will encounter the role of a trader when we describe how a dealer makes a market by quoting a bid and offer for a particular security. Many of the large financial institutions are market makers in a wide variety of instruments. For example, commercial banks might be market makers in Treasury securities, mortgage-related instruments, and municipal bonds. Investment banks add corporate bonds to the list, while the major thrift institutions usually restrict their

attention to mortgage-backed securities. In addition to buying and selling these investment-type instruments, large banks also make markets in CDs and other short-term money market instruments.

The trader's job at these institutions is to quote bids and offers for securities on a continuous basis and to accommodate incoming purchase and sale orders from other banks, thrifts, pension funds, and insurance companies. You will see that the dealer earns a profit by buying securities at the bid price (\$97) and turning around and selling at the offer price (\$99) before the equilibrium price (\$98) has changed. A trader has to be extremely sensitive to shifting market conditions; otherwise a profit can quickly turn into a loss. For example, if a trader for the First National Profit Bank buys some government bonds at a price of \$97 from an insurance company, and before the trader has a chance to sell the bonds to an incoming purchase order from a pension fund, the government announces a rise in the consumer price index, the equilibrium price of the bonds may drop to \$95. With a bid and offer now at \$94 and \$96, respectively, the dealer winds up selling the securities that were bought at \$97 for \$96: a one dollar loss instead of a two dollar profit.

Traders must continuously monitor market conditions and alter their quotes so that they don't get stuck with unwanted inventory. In addition to concentrating on the market, traders must have the discipline to take profits when they are there and cut losses before they turn into disasters. It is sometimes said that the three most important characteristics of a successful trader are discipline, discipline, and discipline.

Traders are frequently viewed as interchangeable parts. A person with discipline, concentration, and sensitivity who can trade government bonds successfully can switch to trading municipals, corporates, or CDs. The details of each instrument can be quickly absorbed (see Chapter 8 first) as long as the trader's intuition is finely tuned.

Traders start their day early—7:30 A.M. on the East Coast, 4:30 A.M. on the West Coast. Much of their time is spent under intense pressure, trying to extract information about likely price movements of the securities they are responsible for from the price movements of related instruments. In trying to gauge market sentiment, they work closely with salespeople who deal with their institution's customers. Let's take a closer look at what these salespeople actually do.

Sales On the retail level, securities are sold to individuals by people whom we call *stockbrokers*. They are more formally called *account executives* by the securities firms that they work for. These investment banks also employ account executives to sell stocks and bonds to institutional investors such as pension funds and insurance companies. Commercial banks and large thrifts similarly employ salespeople to sell government bonds, municipals, and mortgages to institutional investors.

The salesperson's job is twofold: On the one hand, he or she tries to uncover information about the types of securities that institutional investors are most interested in buying and selling; and on the other hand, she or he tries to convince the bank's customers to buy the securities that the bank has already acquired through the activities of its traders. Thus salespeople provide information to traders about the sentiment within the investment community as well as creating an outlet for the securities that traders have acquired. Obviously, these two activities go together. If salespeople report little investor interest in long-term government bonds, the commercial bank's traders will be less aggressive buyers of such securities.

People employed in sales have to be gregarious and people-oriented. They spend considerable time talking on the phone to customers throughout the country and must feel comfortable with simple chitchat. In addition, however, salespeople must bring investment ideas to the party. In order to make a sale, the salesperson must convince the insurance company's portfolio manager, for example, that shifting out of a long-term government bond into a **GNMA pass-through security** will increase yields without unduly increasing risk exposure. To be effective, therefore, salespeople must have some perspective on the likely movements in interest rates over various investment horizons as well as a working knowledge of how specific bond characteristics, such as particular coupons, call provisions, and tax treatment will influence an investment's performance. (They also have to know that **GNMA** stands for **Government National Mortgage Association**.)

Salespeople obviously benefit considerably, therefore, from a solid course in money, banking, and financial markets. In addition, however, they pay close attention to what the bank's brain trust of professional economists, statisticians, and other **fixed-income researchers** have to say about markets in general and specific instruments in particular. Let's see what kind of information the research staff provides.

Financial Economist Most fixed-income divisions within large commercial and investment banks and thrift institutions employ an economist who is designated as a Fed watcher. The primary job of this money market specialist is to alert traders and salespeople to the expected activities of the Federal Reserve. Thus the Fed watcher pays close attention to the bank reserve equation as well as to the Federal Open Market Committee's most recent policy directive.

Much of the Fed watcher's analysis is communicated to traders and salespeople in brief memos. In addition, when an important news item comes across the news ticker, such as the release of the consumer price index or the employment report, the Fed watcher may use the firm's intercom to provide instant analysis to traders and salespeople. All these items provide salespeople with important discussion points for use with customers. However, salespeople have to translate the Fed watcher's general overview of interest rate movements and economic activity into concrete strategies for institutional investors.

For this perspective, the salesperson turns to the fixed-income group's rocket scientists.

Fixed-Income Research Swapping a government bond for a GNMA pass-through security has wide-ranging implications for the composition of a pension fund's portfolio, despite the fact that GNMA's and government bonds are both insured by the federal government. We will highlight the fact that the prepayment uncertainty associated with mortgage-related securities makes the maturity of these securities uncertain. The econometricians, statisticians, and mathematicians who work in the fixed-income research area provide, among other things, estimates of prepayments on GNMA pass-through securities so that salespeople can help explain the ramifications of GNMA purchases to their customers.

The fixed-income research group also reports on such obscure items as the probability of a particular corporate bond being called by the issuer prior to maturity, the advantages of swapping low-coupon bonds for high-coupons or vice versa, and the price sensitivity of a bond portfolio to a one-percentage-point change in interest rates. Armed with such precision tools, a bond salesperson can back up simple chitchat with hard facts about how to improve portfolio yields without unduly increasing risk. Thus the rocket scientist econometricians, statisticians, and mathematicians earn their way into the hearts and minds of institutional investors even though their native language is one of differential equations, autocorrelated residuals, and lognormal distributions. Salespeople translate these obscure formulas into higher yields for their customers.

Cooperation between traders and salespeople, Fed watchers, and rocket scientists generates clever investment strategies for institutional investors, consistent profits for large banks and thrifts, and high bonuses for all of the fixed-income employees. It sounds as though life after *Money, Banking, and Financial Markets* can work out pretty well—as long as you know where to look.

Loan Officer Banks specialize in tailoring commercial loans to businesses. Unlike corporate bonds, commercial bank loans are chock-full of special features such as covenants, collateral requirements, and guarantees that enable banks to extend credit to companies that are too small, or whose credit characteristics are too challenging, to have access to the public debt markets. The commercial loan officer is responsible for making this happen by working closely with the borrowing company's management—and working within the lending policies of the bank. The loan officer must have a solid understanding of financial accounting, strong interpersonal skills, and a knack for negotiating.

At many banks, loan officers are also responsible for generating new business. Therefore, this job often has a big sales component. This requires that the loan officer cultivate strong ties with the local business community.

Bank Examiner Banks are audited about once per year by their regulators to determine whether the bank is solvent and whether its policies and procedures are prudent. These auditors, called **bank examiners**, work in teams. In the United States, there are about 9,000 banks and thrift institutions to examine. And, as you will discover, there is no shortage of bank regulators in the United States (nor elsewhere in the world). At the national level the Office of the **Comptroller of the Currency**, the Federal Deposit Insurance Corporation, and the Federal Reserve each have extensive bank examination staffs. At the state level, all 50 states have their own state banking authorities who also regulate and examine banks. Bank examiners rate banks on a number of different dimensions, including the adequacy of the bank's capital, its asset quality, its overall management skill, its risk management procedures, and its liquidity.

Now that you've reviewed the opportunities in banking and financial markets, it makes good sense to concentrate on what's coming up in this text. The lessons you learn will pay off sooner than you think.

KEY TERMS

bank examiner	Federal Reserve (the Fed)	GNMA pass-through security
banking	financial economist	loan officer
certificates of deposit (CDs)	financial institutions	money
Comptroller of the Currency	financial markets	sales
Federal Deposit Insurance Corporation (FDIC)	fixed-income research	trading
	Government National Mortgage Association (GNMA)	

THE ROLE OF MONEY IN THE MACROECONOMY



“The lack of money is the root of all evil,” said George Bernard Shaw. Although that may be something of an exaggeration, there have been numerous periods in history when it appeared to be more true than false. There have also been rather lengthy episodes when the opposite seemed true: when economic disruption apparently stemmed not from too little money, but from *too much* of it.

From this line of thought, the question naturally arises, what is the “right” amount of money? Not too little, not too much, but just right? And how can we go about getting it?

Actually those are fairly sophisticated questions requiring careful consideration to produce answers that stand the test of time. Although we will devote a fair amount of attention to the relationship between money and economic activity, a number of somewhat more fundamental issues spring to mind as well. For example, exactly what is this thing called money that has obsessed princes and paupers throughout the centuries? In the good old days money was gold, kept under lock and key until it was sent by ship or stagecoach to meet the payroll. Nowadays money is paper that we carry around until it is worn and frayed. Can these really be the same thing?

In truth, our discussion will have to extend far beyond the traditional confines of money if we want to understand the workings of our financial system. Financial institutions and markets have become so complex during the first decade of the twenty-first century that commercial banks are no longer the only financial institutions that matter, and stocks and bonds no longer tell the entire story of how financial markets operate.

LEARNING OBJECTIVES

In this chapter you will learn to

- understand the role of money in an economy
- comprehend the different measurements of money used in the United States
- see how the money supply drives inflation and economic expansion

Introducing Money

What *is* money, anyway? And how much of it do we actually have?

Money is just what you think it is—what you spend when you want to buy something. American Indians once used beads, Eskimos used fish-hooks, and we use **currency** (coins and bills) and **checking accounts**.

Money is used as (1) a means of payment, but it has other functions as well. It is also used as (2) a store of value, when people hold on to it, and (3) a standard of value (a unit of account), when people compare prices and thereby assess relative values. But most prominently, money is what you can spend, a generally acceptable means of payment or medium of exchange that you can use to buy things or settle debts.

How large a money supply do we have? It amounted to \$1,364 billion at the end of January 2008, roughly \$758 billion in the form of currency and about \$600 billion in checkable deposits at banks and other financial institutions. This definition of money—currency outside banks plus checking accounts—is frequently called M1 (to distinguish it from another definition of money, M2, which we will get to in a moment). If you want to know what the money supply is today, check the *New York Times* or the *Wall Street Journal*; both newspapers list it every Friday.

Since currency and checking accounts are spendable at face value virtually anywhere, at any time, they are the most **“liquid” assets** a person can have. A liquid asset is something you can turn into the generally acceptable medium of exchange quickly without taking a loss, as compared with illiquid assets, which usually can be sold or liquidated on short notice only at a substantially lower price. Currency and checking accounts are the most liquid assets you can have (because they *are* the medium of exchange), but they are not the only liquid assets around. Savings deposits and government bonds are rather liquid, although you can’t spend them directly. To spend them, you first have to exchange them for money. At the other extreme, real estate and vintage automobiles typically rank fairly low on the liquidity scale; if you have to sell quickly, you might suffer a loss.

Thus **liquidity** is a continuum, ranging from currency and checkable deposits at the top of the scale to a variety of frozen assets at the bottom. As a result, what we call **money** is not a fixed and immutable thing, like

The Role of Money in the Macroeconomy

TABLE 1 Two Definitions of the Money Supply (February 14, 2008)

M1	Currency outside banks (\$758 billion), plus demand deposits at banks (\$292 billion), plus other checkable deposits at banks and at all thrift institutions (\$308 billion), plus travelers' checks (\$6 billion)	\$1,364 billion
M2	Adds to M1 small-denomination time deposits (\$1,225 billion), plus money market deposit accounts and savings deposits at all depository institutions (\$3,903 billion), plus retail money market mutual funds shares (\$1,006 billion)	\$7,498 billion

Note: Money market mutual funds, money market deposit accounts, repurchase agreements, and Eurodollars are all explained and discussed in subsequent chapters.

Source: Federal Reserve Release H.6.

what we call water (H₂O), but to a great extent a matter of judgment; there are several different definitions of money, each of which drops one notch lower on the liquidity scale in drawing the line between “money” and “all other assets.” Table 1 summarizes two different definitions of the money supply.

M1 refers to the most liquid of all assets, currency plus all types of checking accounts at financial institutions. In addition to commercial banks, the so-called thrift institutions—savings banks, savings and loan associations, and credit unions—can also issue checking accounts. However, most **demand deposits** (noninterest-bearing checking accounts) are still in commercial banks. As indicated in Table 1, other checkable deposits, such as negotiable order of withdrawal (NOW) accounts, are also considered part of M1. These interest-bearing checking accounts were made available to individuals and households during the 1970s as banks and thrifts circumvented a prohibition which existed at the time against paying interest on demand deposits. Since M1 is confined to these highly liquid assets—ones that can be used in an unrestricted way as a means of payment—it is the narrowest definition of money (as well as the most traditional one, by the way).

M2 drops a shade lower on the liquidity scale by adding assets that are most easily and most frequently transferred into checking accounts when a payment is about to be made. This category includes household **savings accounts** and small-denomination (under \$100,000) **certificates of deposit (CDs)**. Unlike savings accounts, CDs have a scheduled maturity date. If you want to withdraw your funds earlier, you suffer a substantial penalty by having to forfeit part of your accrued interest.

M2 also includes **money market deposit accounts** at banks and thrift institutions as well as shares in consumer (retail) **money market mutual funds**. Actually, most money market deposit accounts and money market mutual fund shares carry limited check-writing privileges, so many people believe they should really be listed in M1. However, the data as presently compiled include them in M2.

The Role of Money in the Macroeconomy

So what is the money supply in the United States? Is it \$1,364 billion (M1), \$7,498 billion (M2), or something in between? Each definition of money has its adherents, but we use the narrow definition of the money supply—M1 because that and only that is generally acceptable as a means of payment. Once you go beyond currency and checking accounts, it is hard to find a logical place to stop. For the most part, we will stick to the narrow definition of money: currency plus checkable deposits.¹ However, the Federal Reserve has shown a preference for M2 in recent years.

Who Determines Our Money Supply?

Why do we have \$1,364 billion of M1 money in the United States? Who, or what, determines how much there will be?

Regardless of what you may have heard, gold does *not* determine the money supply. Indeed, it has very little influence on it. In 1968, the last remaining link between the money supply and gold was severed when a law requiring 25 percent gold backing behind most of our currency was repealed. If that is all news to you, it is a good indication of just how unimportant the connection between gold and money has been, at least in the past half century.

Both currency and checking accounts can be increased (or decreased) without any relation to gold. Does that disturb you? Does it lead you to distrust the value of your money? Then send it to us. We'll be delighted to pay you 90 cents on the dollar, which should be a bargain if you believe all you read in the papers or hear on television about a dollar being worth only 60 cents, or 50 cents, or whatever the latest figure may be.²

If gold is not the watchdog, then who (or what) *does* determine how much money we will have?

¹Which is not to say that M1 is a perfect measure of how much of the means of payment is in existence. As just one example of its shortcomings, notice that M1 does not include any estimate of existing bank "overdraft" facilities (which are arrangements that allow people to write checks—legally—even when they don't have enough in their checking accounts to cover them). These as well as other funds available for immediate payment are not included in M1 mainly because of the absence of reliable data on them.

²Actually, when you read that the dollar is worth only 50 cents you have a clue to why gold has little to do with the *value* of money, in addition to having little to do with determining the amount outstanding. Money is valuable only because you can buy things with it, like clothes and books and CD players. The value of a dollar is therefore determined by the prices of the things we buy. When people say a dollar is worth only 50 cents they mean that nowadays it takes a dollar to buy what 50 cents could have bought a few years ago (because prices have doubled).

The Role of Money in the Macroeconomy

The monetary authority in most countries is called the **central bank**. A central bank does not deal directly with the public; it is rather a bank for banks, and it is responsible for the execution of national monetary policy. In the United States, the central banking function is carried out by the Federal Reserve System, created by Congress in 1913. It consists of 12 district Federal Reserve banks, scattered throughout the country, and a **Board of Governors** in Washington, D.C. This hydra-headed monster, which some view as benign but others consider an ever-lurking peril, possesses significant control over the money supply.

As noted earlier, the money supply (M1) consists of currency and checking accounts. Currency is manufactured by money factories—the Bureau of Engraving and Printing and the U.S. Mint—and then shipped under heavy guard to the U.S. Treasury and the Federal Reserve for further distribution. For the most part, currency enters circulation when people and business firms cash checks at their local banks. Thus it is the public that ultimately decides what proportion of the money supply will be in the form of currency, with the Federal Reserve banks wholesaling the necessary coins and paper to local banks. The Federal Reserve is not particularly concerned with the fraction of the money supply that is in one form or another, but rather with *total* M1.³

As Table 1 shows, about 44 percent of the M1 money supply is in the form of checking accounts. These deposits come into being, as we will see later in the chapter, when banks extend credit; that is, when they make loans or buy securities. Checking deposits vanish, as silently as they came, when banks contract credit—when loans are repaid or banks sell securities. It is precisely here, through its ability to control bank behavior, that the Federal Reserve wields its primary authority over the money supply and thereby implements monetary policy.

This process of money creation by banks, and the execution of monetary policy by the Federal Reserve, will be introduced shortly. But before we get into the details, we should back off for a moment and ask, why all the fuss? Why is money so important to begin with?

³Just in case you're curious, here are some miscellaneous facts about coins and bills. Coins are manufactured by the U.S. Mint, which has production facilities in Philadelphia, Denver, and San Francisco. All bills are manufactured by the U.S. Bureau of Engraving and Printing, which has facilities in Fort Worth, Texas, and in Washington, D.C. The largest denomination of currency now issued is the \$100 bill; there used to be \$500, \$1,000, \$5,000, and \$10,000 bills in circulation, but their printing was discontinued in 1945. The average life of a \$1 bill is about a year and a half, before it is torn or worn out, which is why the government introduced the Sacagawea dollar coins in 2000. Coins last much longer than bills. Banks send worn-out bills back to the Federal Reserve, which destroys them and distributes newly printed bills in their place.



GOING OUT ON A LIMB

The Launch of the Euro

On January 1, 1999, eleven of the fifteen member countries of the European Union introduced a new common currency, the euro. This new currency reinforced the economic and political links among these countries and simplified trade and travel within the euro bloc. Giving up national currencies like francs (France) and marks (Germany) was a significant adjustment for Europeans, but the benefits were viewed as greater than the costs.

Interestingly, while the euro was introduced in 1999, euro notes and coins didn't actually begin to circulate until 2002. This raises an interesting question: how can a currency exist without the physical presence of circulating notes and coins? The answer to this question requires consideration of the three roles of money. The euro didn't exist as a medium of exchange until 2002 because national currencies

were still used in everyday transactions until 2002. The euro did play the role of a unit of account, because the euro-adopting countries began to publish their official financial statistics in euros. Likewise, newly issued securities were denominated in euros, which meant that the euro was able to play some role as a store of value, even if people couldn't stash euro notes under their mattresses.

During the 1999–2002 transition period, people from all sectors of the economy became familiar with the value of the euro. This familiarity meant that the euro was more readily accepted as a medium of exchange when notes and coins were introduced in 2002. The transition period reinforces the important point that people need to have faith in the unit of account before they'll accept money as a medium of exchange.

The Importance of Money I: Money Versus Barter

What good is money in the first place? To appreciate the importance of money in an economic system, it is instructive to speculate on what the economy might be like without it. In other words, why was money invented (by Sir John Money in 3016 B.C.)?

For one thing, without money individuals in the economy would have to devote more time to buying what they want and selling what they don't. In other words, people would have less time to work and play. A barter economy is one without a medium of exchange or a unit of account (the measuring-rod function of money). Let's see what it might be like to live in a barter economy.

Say you are a carpenter and agree to build a bookcase for your neighbor. This neighbor happens to raise chickens and pays you with four dozen eggs. You decide to keep a dozen for yourself, so you now have three dozen to exchange for the rest of the week's groceries. All you must do is find a grocer who is short on eggs.

What's more, you have to remember that a loaf of bread exchanges for six eggs (it also exchanges for 11 books of matches or three boxes of crayons or one Yankee Yearbook, but never mind because you don't have any of these things to spare). And of course all the other items on the grocer's shelf have similar price tags, listing the various possible exchanges. The tags are bigger than the items.

The Role of Money in the Macroeconomy

Along comes something called money and simplifies matters. Workers are paid in money, which they can then use to pay their bills and make their purchases. Money becomes the medium of exchange. We no longer need price tags giving rates of exchange between an item and everything else that might conceivably be exchanged for it. Instead, prices of goods and services are expressed in terms of money, a common denominator.

The most important thing about the medium of exchange is that everyone must be confident that it can be passed on, that it is generally acceptable in trade. Paradoxically, people will accept the medium of exchange only when they are certain that it can be passed on to someone else. One key characteristic is that the *uncertainty* over its value in trade must be very *low*. People will be more willing to accept the medium of exchange if they are certain of what it is worth in terms of things they really want. The uncertainty of barter transactions makes people wary of exchange. If I want to sell my house and buy a car and you want to do just the reverse, we might be able to strike a deal, except for the fact that I'm afraid you might sell me a lemon. Hence I don't make a deal; I'm uncertain about the value of the thing I'm being asked to accept in exchange. A medium of exchange, which is handled often in many transactions, becomes familiar to us all and can be checked carefully for fraud. Uncertainty in trading is thereby reduced to a minimum.

Closely related to the low-uncertainty-high-exchangeability requirement is the likelihood that the medium of exchange will not deteriorate in value. It must be a good store of value; otherwise as soon as I accept the medium of exchange I'll try to get rid of it. It thereby might be worth fewer and fewer goods and services tomorrow or the day after. Thus if price inflation gets out of hand and I have little confidence that the medium of exchange will hold its value, I'll be reluctant to accept it in exchange; in other words, it won't be the medium of exchange for very long. If that happens, we'll begin to slip back into a barter economy.

The medium of exchange also usually serves as a unit of account. In other words, the prices of all other goods are expressed in terms of, say, dollars. Without such a unit of account, you'd have to remember the exchange ratios of soap for bread, knives for shirts, and bookcases for haircuts (and haircuts for soap). The unit of account reduces the information you have to carry around in your brain, freeing that limited space for creative speculation.

So money is a good thing. It frees people from spending too much time running around bartering goods and services and allows them to undertake other endeavors—production, relaxation, contemplation, and temptation.

It is important to emphasize, once again, that people use the medium of exchange—money—not because it has any intrinsic value but because it can be exchanged for things to eat, drink, wear, and play with. The *value* of a unit of money is determined, therefore, by the prices of each and every thing—more accurately, the average level of all prices. If prices go up, a unit of money—a dollar—is worth less because it will buy less; if prices go down (use your imagination) a dollar is worth more because it will buy more. Thus the value of money varies inversely with the price level.

The Importance of Money II: Financial Institutions and Markets

Money also contributes to economic development and growth. It does this by stimulating both saving and investment and facilitating transfers of funds out of the hoards of savers and into the hands of borrowers, who want to undertake investment projects but do not have enough of their own money to do so. Financial markets give savers a variety of ways to lend to borrowers, thereby increasing the volume of both saving and investment and encouraging economic growth.

People who save are often not the same people who can see and exploit profitable investment opportunities. In an economy without money, the only way people can invest (for example, to buy productive equipment) is by consuming less than their income (saving). Similarly, in an economy without money the only way people can save—that is, consume less than their income—is by acquiring real goods directly.

The introduction of money, however, permits the separation of the act of investment from the act of saving: Money makes it possible for a person to invest without first refraining from consumption (saving) and likewise makes it possible for a person to save without also investing. People can now invest who are not fortunate enough to have their own savings.

In a monetary economy, a person simply accumulates savings in cash because money is a store of value. Through financial markets, this surplus cash can be lent to a business firm borrowing the funds to invest in new equipment, equipment it might not have been able to buy if it did not have access to borrowed funds. Both the saver and the business firm are better off: The saver receives interest payments, and the business firm expects to earn a return over and above the interest cost. And the economy is also better off: The only way an economy can grow is by allocating part of its resources to the creation of new and more productive facilities.

In an advanced economy such as ours, this channeling of funds from savers to borrowers through financial markets reaches highly complex dimensions. A wide variety of financial instruments, such as stocks, bonds, and mortgages, are utilized as devices through which borrowers can gain access to the surplus funds of savers. Various markets specialize in trading one or another of these financial instruments.

And financial institutions have sprung up—such as commercial banks, savings banks, savings and loan associations, credit unions, insurance companies, mutual funds, and pension funds—that act as intermediaries in transferring funds from ultimate lenders to ultimate borrowers. Such financial intermediaries themselves borrow from saver-lenders and then turn around and lend the funds to borrower-spenders. They mobilize the savings of many small savers and package them for sale to the highest bidders. In the process, again both saver-lenders and borrower-spenders gain: Savers have the added option of acquiring savings deposits or pension rights, which are less risky than individual stocks or bonds, and business-firm borrowers can tap large sums of money from a single source. None of this would be possible were it

not for the existence of money, the one financial asset that lies at the foundation of the whole superstructure.⁴

Uncontrolled, money may cause hyperinflation or disastrous depression and thereby cancel its blessings. If price inflation gets out of hand, for example, money ceases to be a reliable store of value and therefore becomes a less efficient medium of exchange. People become reluctant to accept cash in payment for goods and services, and when they do accept it, they try to get rid of it as soon as possible. As we noted above, the value of money is determined by the price level of the goods money is used to purchase. The higher the prices, the more dollars one has to give up to get real goods or buy services. **Inflation** (rising prices) reduces the value of money. **Hyperinflation** (prices rising at a fast and furious pace) reduces the value of money by a lot within a short time span. Hence people don't want to hold very much cash; they want to exchange it for goods or services as quickly as possible. Thus if money breaks down as a store of value, it starts to deteriorate as a medium of exchange as well, and we start to slip back into barter. People spend more time exchanging goods and less time producing, consuming, and enjoying them. **Deflation**, falling prices often associated with severe recessions or even depressions, causes different but no less severe consequences.

So once we have money, the question constantly challenges us: How much of it should there be?

Money, the Economy, and Inflation

Many people persist in thinking that money must somehow be based on gold, or maybe silver, or at least on *something* that has tangible physical substance. As we saw above, however, money has value because people believe it will be accepted as a means of payment, as a store of value, and as a standard of value. There simply isn't any backing behind our currency, and checking accounts, which constitute most of our money, are nothing more than liabilities on the books of financial institutions.

How do such checking accounts come into existence? How does the central bank—the Fed—regulate their amount? How does the Federal Reserve know how large the money supply should be in the first place? Finally, just what is the relationship between the money supply, economic activity, and inflation?

The remainder of this chapter is devoted to a preliminary exploration of such questions. Later we will dig deeper into many of these same matters; meanwhile, we will provide some background information intended to make the material in the intervening chapters more meaningful.

⁴Strictly speaking, it is theoretically possible for transfers between savers and borrowers to occur within a barter framework. Thus credit arrangements could exist without money. But only the existence of money permits the complex and efficient channeling of funds between savers and borrowers.

Bank Reserves and the Money Supply

Checking accounts come into being when banks extend credit; that is, when they make loans or buy securities. Checking accounts disappear when banks contract credit, when bank loans are repaid or banks sell securities. Here is how it works.

When a bank makes a loan to a consumer or business firm, it typically creates a checking account for the borrower's use. For example, when you borrow \$1,000 from your friendly neighborhood bank, the bank will take your promissory note and give you a checking account in return. From the bank's point of view, it has an additional \$1,000 of assets (namely, your promissory note); this is matched by an additional \$1,000 of liabilities (namely, your checking account). The creation of this \$1,000 in checking deposits means the money supply, M1, has increased by \$1,000.

Similarly, when a bank buys a corporate or government bond, it pays for it by opening a checking account for the seller. Assume you are holding a \$1,000 corporate or government bond in your investment portfolio, and you need cash. You might sell the bond to your local bank, which would then add \$1,000 to your checking account. Once again, from the point of view of the bank, its assets (bonds) and liabilities (checking accounts) have gone up by \$1,000. Again, money has been created; the supply of money in the economy has increased by \$1,000.

Conversely, when you repay a bank loan by giving the bank a check, the bank gives you back your promissory note and at the same time lowers your deposit balance. If a bank sells a bond to an individual, the same reduction in deposits occurs. The supply of money declines. Conclusion: Banks create money (checking accounts) when they lend or buy securities and destroy money when their loans are repaid or they sell securities.

A bank cannot always expand its checking account liabilities by making loans or buying securities. Banks are required by the Federal Reserve to hold reserves against their checking account liabilities—the current reserve requirement is about 10 percent reserves against checking deposits. These reserves must be held in the form of vault cash or a deposit in their regional Federal Reserve bank. Therefore, only if a bank has “excess” reserves—reserves over and above its requirements—can it create new checking deposits by making loans and buying securities.

Once a bank is “loaned up,” with no more excess reserves, its ability to create money ceases. And if it has deficient reserves, not enough to support its existing deposits, the bank must somehow get additional reserves. To obtain reserves, the bank could call in loans or sell securities in order to bring its deposits back in line with its reserves.

Banks can also borrow reserves from the Fed or through the **federal funds market**, the market for very short-term (usually overnight) loans between banks. Changes in the level of available reserves will affect supply in the “fed funds” market and thereby affect the federal funds rate, the interest rate charged on inter-bank loans of reserves. For reasons discussed later in this book, the Fed emphasizes targets for this federal funds rate in carrying out monetary policy.

It is through the fulcrum of these reserves that the Federal Reserve influences the federal funds rate and the money supply. How the Federal Reserve

manipulates the reserves of the banking system will be explored in detail later. For now, let's just take it for granted that the Federal Reserve controls bank reserves, hence the money supply, and move on to the next question.

How Large Should the Money Supply Be?

In theory, the answer is simple enough. Presumably the supply of money affects the rate of spending, and therefore we should have enough money so that we buy, at current prices, all the goods and services the economy is able to produce. If we spend less, we will have idle capacity and that can lead to deflation and unemployment; if we spend more, we will wind up with higher prices but no more real output. In other words, we need a money supply large enough to generate a level of spending on new domestically produced goods and services—the economy's **gross domestic product (GDP)**—that produces high employment at stable prices. More money than that would mean too much spending and inflation, and less money would mean too little spending and recession or depression.

In practice, unfortunately, the answer is not nearly that simple. In the first place, decisions about the appropriate amount of money are often linked with the notion of countercyclical monetary policy, that is, a monetary policy that deliberately varies the amount of money in the economy—increasing it (or, more realistically, increasing the rate at which it is growing) during a recession, to stimulate spending, and decreasing it (or increasing it at a less than normal rate) during a boom, to inhibit spending. As we will see in later chapters, such attempts at economic stabilization are quite controversial.

The more fundamental issue for us is to understand how changes in the money supply can influence people's *spending* in a consistent way. What a change in the money supply can do is to alter the liquidity of people's assets. Money, after all, is the most liquid of all assets. A liquid asset, as mentioned previously, is something that can be turned into cash; that is, sold or liquidated, quickly, with no loss in dollar value. Money already *is* cash. You can't get more liquid than that!

Since monetary policy alters the liquidity of the public's portfolio of total assets—including, in that balance sheet, holdings of real as well as financial assets—it should thereby lead to portfolio readjustments that involve spending decisions. An increase in the money supply implies that the public is more liquid than before; a decrease in the money supply implies that the public is less liquid than before. If the public had formerly been satisfied with its holdings of money relative to the rest of its assets, a change in that money supply will presumably lead to readjustments throughout the rest of its portfolio.⁵

In other words, these changes in liquidity should lead to more (or less) spending on either real assets (cars and television sets) or financial assets

⁵Of course, if monetary policy could increase the money supply while all other assets of the public remained unchanged, people would not only have more liquid assets but also be wealthier. However, monetary policy can alter only the composition of the public's assets; it cannot change total wealth *directly*.

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(stocks and bonds). If spending on real assets expands, demand for goods and services increases, production goes up, and GDP is directly affected. If spending on financial assets goes up, the increased demand for stocks and bonds drives up securities prices. Higher securities prices mean lower interest rates. The fall in interest rates may induce more spending on housing and plant and equipment, thereby influencing GDP through that route.⁶

Underlying the effectiveness of monetary policy, therefore, is its impact on the liquidity of the public. But whether a change in the supply of liquidity actually does influence spending depends on what is happening to the demand for liquidity. If the supply of money is increased but demand expands even more, the additional money will be held and not spent. “Easy” or “tight” money is not really a matter of increases or decreases in the money supply in an absolute sense, but rather increases or decreases relative to the demand for money. In the past half century we have had hardly any periods in which the money supply actually decreased for any sustained length of time, yet we have had many episodes of tight money because the *rate* of growth was so small that the demand for money rose faster than the supply.

If people always respond in a consistent manner to an increase in their liquidity (the proportion of money in their portfolio), the Federal Reserve will be able to gauge the impact on GDP of a change in the money supply. But if people’s spending reactions vary unpredictably when there is a change in the money supply, the central bank will never know whether it should alter the money supply a little or a lot (or even at all!) to bring about a specified change in spending.

The relationship between changes in the money supply and induced changes in spending brings us to the speed with which money is spent, its *velocity* or rate of turnover. When the Federal Reserve increases the money supply by \$1 billion, how much of an effect will this have on people’s spending, and thereby on GDP? Say we are in a recession, with GDP \$100 billion below prosperity levels. Can the Fed induce a \$100-billion expansion in spending by increasing the money supply by \$10 billion? Or will it take a \$20-billion—or a \$50-billion—increase in the money supply to do the job?

Velocity: The Missing Link

Clearly, this is the key puzzle that monetary policymakers must solve if the policy is to operate effectively. Money is only a means to an end, and the end is

⁶Since this point will come up again and again, it is worth devoting a moment to the *inverse* relationship between the *price* of an income-earning asset and its effective *rate of interest* (or yield). For example, a long-term bond that carries a fixed interest payment of \$10 a year and costs \$100 yields an annual interest rate of 10 percent. However, if the price of the bond were to rise to \$200, the current yield would drop to 10/200, or 5 percent. And if the price of the security were to fall to \$50, the current yield would rise to 10/50, or 20 percent. Conclusion: A rise (or fall) in the price of a bond is reflected, in terms of sheer arithmetic, in an automatic change in the opposite direction in the effective rate of interest. To say that the price of bonds rose or the rate of interest fell is saying the same thing in two different ways.

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the total volume of spending, which should be sufficient to give us high employment but not so great as to produce excessively rising prices.

When the Federal Reserve increases the money supply, the recipients of this additional liquidity *probably* spend some of it on domestically produced goods and services, increasing GDP. The funds thereby move from the original recipients to the sellers of the goods and services. Now the sellers have more money than before, and if they behave the same way as the others, they, too, are *likely* to spend some of it. GDP thus rises further, and the money moves on to yet another set of owners, who, in turn, *may* also spend part of it, thereby increasing GDP again. Over a period of time, say a year, a multiple increase in spending and GDP could thus flow from an initial increase in the stock of money.

This relationship between the increase in GDP over a period of time and the initial change in the money supply is important enough to have a name: the **velocity** of money. Technically speaking, velocity is found after the process has ended, by dividing the cumulative increase in GDP by the initial increase in the money supply.

Velocity is most easily understood by considering the equation $MV = GDP$ where M represents the money supply and V stands for velocity. In order to buy goods and services, money changes hands and velocity increases. During economic slowdowns, velocity decreases and, for a given amount of money, GDP falls.

We can compute the velocity of the *total* amount of money in the country by dividing *total* GDP (not just the increase in it) by the *total* money supply. This gives us the average number of times each dollar is used to buy goods and services during the year. In 2007, for example, with a GDP of \$13,843 billion and an average M1 of \$1,369 billion during the year, the velocity of money was \$13,843 divided by \$1,369 or 10.1 per annum. Each dollar of M1, on average, was spent 10.1 times purchasing goods and services during 2007.

With this missing link—velocity—now in place, we can reformulate the problem of monetary policy more succinctly. The Federal Reserve influences the supply of money. Its main job is to regulate the flow of spending. The flow of spending, however, depends not only on the supply of money but also on the velocity of money, and the Federal Reserve does not have control of this under its thumb.

A central problem of monetary theory is the exploration of exactly what determines the velocity of money—or, looked at another way, what determines the volume of spending that flows from a change in the supply of money. As we shall see, disagreements over the determinants and behavior of velocity underlie part of the debate over economic stabilization policy.

But there's more. The Federal Reserve has to worry not only about the relationship between money and spending but also about whether prices or production respond to increased spending. More GDP is good if it corresponds to more production but not so good if it means higher prices. Either outcome is possible. And that brings us to the subject of inflation.

Money and Inflation

Consumer prices are now over ten times higher than in 1945 and more than quadruple what they were in 1975. Since 1975 prices have risen at an average annual rate of 4.3 percent a year; at that rate, prices double roughly every 17 years.⁷

Who is responsible for inflation? Is money the culprit? Can we bring an inflationary spiral to a halt if we clamp down on the money supply? The classic explanation of inflation is that “too much money is chasing too few goods.” The diagnosis implies the remedy: Stop creating so much money and inflation will disappear.

Such a diagnosis has been painfully accurate during those hard-to-believe episodes in history when runaway hyperinflation skyrocketed prices out of sight and plunged the value of money to practically zero. Example: Prices quadrupled in Revolutionary America between 1775 and 1780, when the Continental Congress opened the printing presses and flooded the country with currency. The phrase “not worth a continental” remains to this day. The situation in Germany after World War I was even more extreme; prices in 1923 were 34 billion times what they had been in 1921. In Hungary after World War II, it took 1.4 nonillion pengo in 1946 to buy what one pengo could purchase a few years earlier (one nonillion is 1,000,000,000,000,000,000,000,000,000).

Severe breakdowns of this sort are impossible unless they are fueled by continuous injections of new money in ever-increasing volume. In such cases, money is undoubtedly the inflation culprit, and the only way to stop inflation from running away is to slam a quick brake on the money creation machine.

However, hyperinflation is not what we have experienced in this country in recent years. From 1950 through 2007, the cost of living increased in every year but one (1955). The annual rate of inflation over the entire period averages out at more than 4 percent per year. Moreover, even during periods of recession, such as 1974, 1981, 1991, and 2001, inflation was still with us, with prices rising 12, 9, 4, and 2 percent respectively in those years. Only during the Great Depression has the United States experienced persistent deflation. On the other hand, Japan has had deflation during the chronic recessions that took hold after the mid-1990s.

Unlike its role in hyperinflation, money is not so obviously the only culprit when it comes to this everyday variety of creeping inflation we have experienced in recent years. Let’s take a look at some evidence before jumping to conclusions. The following list shows annual money supply growth and the inflation rate from 1930 to 2007, using M1 as the definition of money. It shows that the two tend to move together. If we use M2 as our definition of

⁷As a special bonus, we give you “the rule of 72” for growth rates. If something (anything) is growing at a compound annual rate of x percent, to find out how many years it will take to *double*, divide 72 (the magic number) by x . For example, if prices are rising at 5 percent a year, they will double in $72 \div 5 \approx 14$ years. It isn’t precise to the dot, but it’s a useful rule of thumb.

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money, the relationship is also close.⁸ Using the 1930–2007 period and M1 as our definition of money:

1. During the 1930s, the money supply (M1) increased by 35 percent, but consumer prices *fell* 20 percent.
2. In the 1940s the money supply increased by 200 percent, but prices rose by “only” 70 percent.
3. The 1950s provide the best fit: The money supply and prices both rose by about 25 percent.
4. In the 1960s, the relationship deteriorated slightly: The money supply increased by 45 percent, and consumer prices rose by slightly less than 30 percent.
5. During the 1970s, the money supply rose by 90 percent, and prices rose by 105 percent.
6. In the 1980s, the money supply doubled, and prices rose by 60 percent.
7. In the last decade of the 20th century, the money supply rose by 40 percent, and prices rose by about 30 percent.
8. From the beginning of 2000 to the end of 2007, M1 grew 22 percent and prices rose 24 percent, nearly a one-to-one ratio.

You can be your own judge, but the data seem to imply that money has a lot to do with all types of inflation. People will not continue buying the same amount of goods and services at higher and higher prices unless they have more money to spend. If the money supply today were no larger than it was in 1950 (\$115 billion), prices would have stopped rising long ago.

A qualification is in order: While most inflations are tied to increases in the money supply, more money does not guarantee prices will rise. Increases in the money supply will not raise prices if velocity falls (as in the 1930s). Even if velocity remains constant, an increase in the money supply will not raise prices if production expands faster than the increase in money supply. When we are in a depression, for example, the spending stimulated by an increase in the money supply is likely to raise output and employment rather than prices. Furthermore, in the short run at least—and sometimes the short run is a matter of several years—increased spending and inflation can be brought about by increases in velocity without any increase in the money supply.

⁸There is a reason why in recent years inflation has tracked M2 more closely than M1. M2 includes money market deposit accounts and money market mutual funds, both of which pay short-term market rates of interest. When interest rates go up lots of “money” flows from noninterest-paying demand deposit and low-interest-paying NOW accounts into the more profitable money market accounts. This dramatically decreases M1 but has no effect on M2. Why? Because M2 includes both money market accounts and demand deposits. When rates go down, the opposite happens. The net effect: M1 bounces all over the place with interest rates while M2 does not. Hence, most economists now place more weight on M2 than M1 because it isn’t so unstable.



GOING OUT ON A LIMB

Will Paper Money Ever Disappear?

For many years, “money” meant coins, paper currency, and perhaps checking accounts. Recently, technology has opened up new ways of paying for goods and services. Debit cards, automated bill payments, and Internet “cyber-money” or “e-money” are all examples of electronic media of exchange that can replace traditional means of payment. Some people have predicted that traditional payment methods will decline in importance and could one day become obsolete. This possibility has led to speculation that central banks like the Fed might lose control of their national money supplies if the Internet puts a significant amount of cyber-money beyond government regulation.

Recent experience has shown that it is unlikely that people will ever completely give

up the use of coins, paper currency, or checks. The convenience and anonymity of these forms of payment are appealing. Growth of electronic currency has not been as rapid as initially predicted, in part due to concerns about security or the trustworthiness of some providers of electronic payment services.

The possibility that central banks could lose control of the money supply is exaggerated. As we’ll see later in the book, the Fed does not currently attempt to target the size of the money supply but instead chooses to influence interest rates. Research suggests that the Fed’s ability will remain a potent tool of policy-makers for the future.

Let us end this section with a summary statement of the role of money in the inflation process. Does more money *always* lead to inflation? No, but it can under certain circumstances, and if the increase is large enough it probably will. Case 1: If the central bank expands the money supply while we are in a recession, the increased spending it induces is likely to lead to more employment and a larger output of goods and services rather than to higher prices. Case 2: As we approach full employment and capacity output, increases in the money supply become more and more likely to generate rising prices. However, if this increase is only large enough to provide funds for the enlarged volume of transactions accompanying real economic growth, inflation still need not result. Case 3: Only when the money supply increases under conditions of high employment *and* exceeds the requirements of economic growth can it be held primarily responsible for kindling an inflationary spiral.

The time factor and the extent of inflation are also relevant. In the short run, an increase in monetary velocity alone (generated by increasing government or private spending), with a constant or even declining money supply, can finance a modest rate of inflation. The longer the time span, however, and the higher the rise in prices, the less likely that velocity can do the job by itself. Over the longer run, the money supply must expand for inflation to persist.

SUMMARY

1. Money serves a number of functions in the economy. Perhaps the most important is its use as a medium of exchange. It also serves as a store of value and as a unit of account. In general, money is considered the most liquid asset, because it can be spent at face value virtually anywhere at any time.
2. The precise definition of the asset called money varies with the economic system. In the United States, we have two definitions: M1 and M2. Each represents a slightly different definition of liquidity and spendability. M1 is the narrowest and most traditional definition: the sum of currency and all checkable deposits at banks and thrift institutions. This is the definition we use throughout the book unless we say otherwise.
3. Without money, the economy would have to rely on the more cumbersome barter system to exchange goods and services. Only a primitive mechanism would exist for channeling savings into productive investments. The level of economic welfare would be lower on both counts.
4. Control over the money supply rests with the central bank. In the United States, the central banking function is carried out by the Federal Reserve, which tries to regulate the supply of money so that we have enough spending to generate high employment without inflation. The Federal Reserve regulates bank lending and the money supply through its control over bank reserves. By changing bank reserves and thereby the money supply, the Fed alters people's liquidity and, it is hoped, their spending on goods and services, which in turn helps determine GDP, the level of unemployment, and the rate of inflation.
5. The relationship between money and spending depends on how rapidly people turn over their cash balances. This rate of turnover of money is called the velocity of money. Since any given supply of money might be spent faster or more slowly—that is, velocity might rise or fall—a rather wide range of potential spending could conceivably flow from any given stock of money.
6. Inflation has historically been one of our most troublesome economic problems. Increases in the money supply are a necessary but not a sufficient condition for the creeping type of inflation we have been experiencing. In cases of hyperinflation, the money supply is clearly the main culprit. More money does not always lead to inflation, because velocity can fall and output can expand. In the long run, however, inflation cannot continue unless it is fueled by an expanding money supply.

KEY TERMS

Board of Governors	federal funds market	money
central bank	gross domestic product (GDP)	money market deposit account
certificate of deposit (CD)	hyperinflation	money market mutual fund
checking account	inflation	savings account
currency	liquid asset	velocity
deflation	liquidity	
demand deposit		

QUESTIONS

Questions with a red oval are in  at www.myeconlab.com.

- 2.1** Which definition of money supply, M1 or M2, is most appropriate if the most important function of money is its role as medium of exchange? Why?
- 2.2** What are the most important characteristics of a good medium of exchange?
- 2.3** Explain why the value of money is inversely related to the price level.
- 2.4** Assuming the Federal Reserve can successfully control the money supply, does this mean that the Fed can also control aggregate spending and GDP?
- 2.5** Is inflation clearly due to “too much money”?
- 2.6** Prices have roughly quadrupled in the last 30 years. If they do the same over the next 30, how much will it cost annually to go to your college 30 years from now?
- 2.7** When interest rates rise there is a tendency for people to switch their money out of demand deposits and other checkable deposits into money market deposit accounts and money market mutual funds. How does this affect the money supply as defined by M1? As defined by M2?
- 2.8** If a country were to adopt U.S. dollars as its own currency, how would the U.S. money supply be affected?
- 2.9** *Discussion question:* Communist leader Vladimir Lenin is supposed to have said that inflation will undermine a country’s financial system and eventually ruin the nation. But we have had inflation for many years, and the country is still standing. Does this mean that the statement is wrong?