

The Definition and Measurement of Money



What you will learn in this Module:

- The definition and functions of money
- The various roles money plays and the many forms it takes in the economy
- How the amount of money in the economy is measured

The Meaning of Money

In everyday conversation, people often use the word *money* to mean “wealth.” If you ask, “How much money does Bill Gates have?” the answer will be something like, “Oh, \$50 billion or so, but who’s counting?” That is, the number will include the value of the stocks, bonds, real estate, and other assets he owns.

But the economist’s definition of money doesn’t include all forms of wealth. The dollar bills in your wallet are money; other forms of wealth—such as cars, houses, and stock certificates—aren’t money. What, according to economists, distinguishes money from other forms of wealth?

◀ The Meaning of Money ▶

What Is Money?

Money is defined in terms of what it does: **money** is any asset that can easily be used to purchase goods and services. In **Module 22** we defined an asset as *liquid* if it can easily be converted into cash. Money consists of cash itself, which is liquid by definition, as well as other assets that are highly liquid.

You can see the distinction between money and other assets by asking yourself how you pay for groceries. The person at the cash register will accept dollar bills in return for milk and frozen pizza—but he or she won't accept stock certificates or a collection of vintage baseball cards. If you want to convert stock certificates or vintage baseball cards into groceries, you have to sell them—trade them for money—and then use the money to buy groceries.

Of course, many stores allow you to write a check on your bank account in payment for goods (or to pay with a debit card that is linked to your bank account). Does that make your bank account money, even if you haven't converted it into cash? Yes. **Currency in circulation**—actual cash in the hands of the public—is considered money. So are **checkable bank deposits**—bank accounts on which people can write checks.

Are currency and checkable bank deposits the only assets that are considered money? It depends. As we'll see later, there are two widely used definitions of the **money supply**, the total value of financial assets in the economy that are considered money. The narrower definition considers only the most liquid assets to be money: currency in circulation, traveler's checks, and checkable bank deposits. The broader definition includes these three categories plus other assets that are "almost" checkable, such as savings account deposits that can be transferred into a checking account online with a few mouse clicks. Both definitions of the money supply, however, make a distinction between those assets that can easily be used to purchase goods and services, and those that can't.

Money plays a crucial role in generating *gains from trade* because it makes indirect exchange possible. Think of what happens when a cardiac surgeon buys a new refrigerator. The surgeon has valuable services to offer—namely, performing heart operations. The owner of the store has valuable goods to offer: refrigerators and other appliances. It would be extremely difficult for both parties if, instead of using money, they had to directly barter the goods and services they sell. In a barter system, a cardiac surgeon and an appliance store owner could trade only if the store owner happened to want a heart operation *and* the surgeon happened to want a new refrigerator. This is known as the problem of finding a "double coincidence of wants": in a barter system, two parties can trade only when each wants what the other has to offer. Money solves this problem: individuals can trade what they have to offer for money and trade money for what they want.

Because the ability to make transactions with money rather than relying on bartering makes it easier to achieve gains from trade, the existence of money increases welfare, even though money does not directly produce anything. As Adam Smith put it, money "may very properly be compared to a highway, which, while it circulates and carries to market all the grass and corn of the country, produces itself not a single pile of either."

Let's take a closer look at the roles money plays in the economy.

Money is any asset that can easily be used to purchase goods and services.

Currency in circulation is cash held by the public.

Checkable bank deposits are bank accounts on which people can write checks.

The **money supply** is the total value of financial assets in the economy that are considered money.

Roles of Money

Money plays three main roles in any modern economy: it is a *medium of exchange*, a *store of value*, and a *unit of account*.

Medium of Exchange Our cardiac surgeon/appliance store owner example illustrates the role of money as a **medium of exchange**—an asset that individuals use to trade for goods and services rather than for consumption. People can't eat dollar bills; rather, they use dollar bills to trade for edible goods and their accompanying services.

In normal times, the official money of a given country—the dollar in the United States, the peso in Mexico, and so on—is also the medium of exchange in virtually all transactions in that country. During troubled economic times, however, other goods or assets often play that role instead. For example, during economic turmoil people often turn to other countries' moneys as the medium of exchange: U.S. dollars have played this role in troubled Latin American countries, as have euros in troubled Eastern European countries. In a famous example, cigarettes functioned as the medium of exchange in World War II prisoner-of-war camps. Even nonsmokers traded goods and services for cigarettes because the cigarettes could in turn be easily traded for other items. During the extreme German inflation of 1923, goods such as eggs and lumps of coal became, briefly, mediums of exchange.

Store of Value In order to act as a medium of exchange, money must also be a **store of value**—a means of holding purchasing power over time. To see why this is necessary, imagine trying to operate an economy in which ice-cream cones were the medium of exchange. Such an economy would quickly suffer from, well, monetary meltdown: your medium of exchange would often turn into a sticky puddle before you could use it to buy something else. Of course, money is by no means the only store of value. Any asset that holds its purchasing power over time is a store of value. So the store-of-value role is a necessary but not distinctive feature of money.

Unit of Account Finally, money normally serves as the **unit of account**—the commonly accepted measure individuals use to set prices and make economic calculations. To understand the importance of this role, consider a historical fact: during the Middle Ages, peasants typically were required to provide landowners with goods and labor rather than money. A peasant might, for example, be required to work on the landowner's land one day a week and also hand over one-fifth of his harvest. Today, rents, like other prices, are almost always specified in money terms. That makes things much clearer: imagine how hard it would be to decide which apartment to rent if modern landowners followed medieval practice. Suppose, for example, that Mr. Smith says he'll let you have a place if you clean his house twice a week and bring him a pound of steak every day, whereas Ms. Jones wants you to clean her house just once a week but wants four pounds of chicken every day. Who's offering the better deal? It's hard to say. If, on the other hand, Smith wants \$600 a month and Jones wants \$700, the comparison is easy. In other words, without a commonly accepted measure, the terms of a transaction are harder to determine, making it more difficult to make transactions and achieve gains from trade.



Gambling at the Stalag 383 prisoner of war camp during World War II was carried out using cigarettes as currency. With permission of the New Zealand Ministry for Culture and Heritage

A **medium of exchange** is an asset that individuals acquire for the purpose of trading goods and services rather than for their own consumption.

A **store of value** is a means of holding purchasing power over time.

A **unit of account** is a measure used to set prices and make economic calculations.

Types of Money

In some form or another, money has been in use for thousands of years. For most of that period, people used **commodity money**: the medium of exchange was a good, normally gold or silver, that had intrinsic value in other uses. These alternative uses gave commodity money value independent of its role as a medium of exchange. For example, the cigarettes that served as money in World War II POW camps were valuable because many prisoners smoked. Gold was valuable because it was used for jewelry and ornamentation, aside from the fact that it was minted into coins.

By 1776, the year in which the United States declared its independence and Adam Smith published *The Wealth of Nations*, there was widespread use of paper money in addition to gold or silver coins. Unlike modern dollar bills, however, this paper money consisted of notes issued by private banks, which promised to exchange their notes for gold or silver coins on demand. So the paper currency that initially replaced commodity money was **commodity-backed money**, a medium of exchange with no intrinsic value whose ultimate value was guaranteed by a promise that it could always be converted into valuable goods on demand.

The big advantage of commodity-backed money over simple commodity money, like gold and silver coins, was that it tied up fewer valuable resources. Although a note-issuing bank still had to keep some gold and silver on hand, it had to keep only enough to satisfy demands for redemption of its notes. And it could rely on the fact that on a normal day only a fraction of its paper notes would be redeemed. So the bank needed to keep only a portion of the total value of its notes in circulation in the form of gold and silver in its vaults. It could lend out the remaining gold and silver to those who wished to use it. This allowed society to use the remaining gold and silver for other purposes, all with no loss in the ability to achieve gains from trade.

In a famous passage in *The Wealth of Nations*, Adam Smith described paper money as a “waggon-way through the air.” Smith was making an analogy between money and an imaginary highway that did not absorb valuable land beneath it. An actual highway provides a useful service but at a cost: land that could be used to grow crops is instead paved over. If the highway could be built through the air, it wouldn’t destroy useful land. As Smith understood, when banks replaced gold and silver money with paper notes, they accomplished a similar feat: they reduced the amount of real resources used by society to provide the functions of money.

At this point you may ask, why make any use at all of gold and silver in the monetary system, even to back paper money? In fact, today’s monetary system goes even further than the system Smith admired, having eliminated any role for gold and silver. A U.S. dollar bill isn’t commodity money, and it isn’t even commodity-backed. Rather, its value arises entirely from the fact that it is generally accepted as a means of payment, a role that is ultimately decreed by the U.S. government. Money whose value derives entirely from its official status as a means of exchange is known as **fiat money** because it exists by government *fiat*, a historical term for a policy declared by a ruler.

Commodity money is a good used as a medium of exchange that has intrinsic value in other uses.

Commodity-backed money is a medium of exchange with no intrinsic value whose ultimate value is guaranteed by a promise that it can be converted into valuable goods.

Fiat money is a medium of exchange whose value derives entirely from its official status as a means of payment.



The History of the Dollar

U.S. dollar bills are pure fiat money: they have no intrinsic value, and they are not backed by anything

that does. But American money wasn't always like that. In the early days of European settlement, the colonies that would become the United States used commodity money, partly consisting of gold and silver coins minted in Europe. But such coins were scarce on this side of the Atlantic, so the colonists relied on a variety of other forms of commodity money. For example, settlers in Virginia used tobacco as money and settlers in the Northeast used "wampum," a type of clamshell.

Later in American history, commodity-backed paper money came into widespread use. But this wasn't paper money as we now know it, issued by the U.S. government and bearing the signature of the Secretary of the Treasury. Before the Civil War, the U.S. government didn't issue any paper money. Instead, dollar bills were issued by private banks, which promised that their bills could be redeemed for silver coins on demand. These promises weren't always credible because banks sometimes failed, leaving holders of their bills with worthless pieces of paper. Understandably, people were reluctant to accept currency from any bank rumored to be in financial trouble. In other words, in this private money system, some dollars were less valuable than others.

A curious legacy of that time was notes issued by the Citizens' Bank of Louisiana, based in New Orleans. They became among the most widely used bank notes in the southern states. These notes were printed in English on one side and French on the other. (At the time, many people in New Orleans, originally a colony of France, spoke French.) Thus, the \$10 bill read Ten on one side and Dix, the French word for "ten," on the other. These \$10 bills became known as "dixies," probably the source of the nickname of the U.S. South.

The U.S. government began issuing official paper money, called "greenbacks," during the Civil War, as a way to help pay for the war. At first greenbacks had no fixed value in terms of commodities. After 1873, the U.S. government guaranteed the value of a dollar in terms of gold, effectively turning dollars into commodity-backed money.

In 1933, when President Franklin D. Roosevelt broke the link between dollars and gold, his own federal budget director—who feared that the public would lose confidence in the dollar if it wasn't ultimately backed by gold—declared ominously, "This will be the end of Western civilization." It wasn't. The link between the dollar and gold was restored a few years later, and then dropped again—seemingly for good—in August 1971. Despite the warnings of doom, the U.S. dollar is still the world's most widely used currency.

Fiat money has two major advantages over commodity-backed money. First, it is even more of a "waggon-way through the air"—it doesn't tie up any real resources, except for the paper it's printed on. Second, the money supply can be managed based on the needs of the economy, instead of being determined by the amount of gold and silver prospectors happen to discover.

On the other hand, fiat money poses some risks. One such risk is counterfeiting. Counterfeiters usurp a privilege of the U.S. government, which has the sole legal right to print dollar bills. And the benefit that counterfeiters get by exchanging fake bills for real goods and services comes at the expense of the U.S. federal government, which covers a small but nontrivial part of its own expenses by issuing new currency to meet growing demand for money.

The larger risk is that government officials who have the authority to print money will be tempted to abuse the privilege by printing so much money that they create inflation.



The image of a valid U.S. five-dollar bill shows a pattern in the background of the Lincoln Memorial image as seen through a Document Security Systems, Inc. document verifier. AP Photo/Don Heupel

Measuring the Money Supply

The Federal Reserve (an institution we'll talk about shortly) calculates the size of two **monetary aggregates**, overall measures of the money supply, which differ in how strictly money is defined. The two aggregates are known, rather cryptically, as M1 and M2. (There used to be a third aggregate named—you guessed it—M3, but in 2006 the Federal Reserve concluded that measuring it was no longer useful.) M1, the narrowest definition, contains only currency in circulation (also known as cash), traveler's checks, and checkable bank deposits. M2 starts with M1 and adds several other kinds of assets, often referred to as **near-moneys**—financial assets that aren't directly usable as a medium of exchange but can be readily converted into cash or checkable bank deposits, such as savings accounts. Examples are time deposits such as small denomination CDs, which aren't checkable but can be withdrawn at any time before their maturity date by paying a penalty. Because currency and checkable deposits are directly usable as a medium of exchange, M1 is the most liquid measure of money.

The logo consists of the lowercase letters 'fyi' in a white, sans-serif font, positioned on a dark orange background. To the right of the text are several overlapping, light-colored circles of varying sizes, creating a decorative graphic element.

What's with All the Currency?

Alert readers may be a bit startled at one of the numbers in the money supply: \$861.1 billion of currency in circulation in January 2010. That's \$2,789 in cash for every man, woman, and child in the United States. How many people do you know who carry \$2,789 in their wallets? Not many. So where is all that cash?

Part of the answer is that it isn't in individuals' wallets: it's in cash registers. Businesses as well as individuals need to hold cash.

Economists also believe that cash plays an important role in transactions that people want to keep hidden. Small businesses and the self-employed sometimes prefer to be paid in cash so they can avoid paying taxes by hiding income from the Internal Revenue Service. Also, drug dealers and other criminals obviously don't want bank records of their dealings. In fact, some analysts have tried to infer the amount of illegal activity in the economy from the total amount of cash holdings held by the public. The most important reason for those huge currency holdings, however, is foreign use of dollars. The Federal Reserve estimates that 60% of U.S. currency is actually held outside the United States—largely in countries in which residents are so distrustful of their national currencies that the U.S. dollar has become a widely accepted medium of exchange.

A **monetary aggregate** is an overall measure of the money supply.

Near-moneys are financial assets that can't be directly used as a medium of exchange but can be readily converted into cash or checkable bank deposits.



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In January 2010, M1 was valued at \$1,676.4 billion, with approximately 51% accounted for by currency in circulation, approximately 48% accounted for by checkable bank deposits, and a tiny slice accounted for by traveler's checks. In turn, M1 made up 20% of M2, valued at \$8,462.9 billion. M2 consists of M1 plus other types of assets: two types of bank deposits, known as savings deposits and time deposits, both of which are considered non checkable, plus money market funds, which are mutual funds that invest only in liquid assets and bear a close resemblance to bank deposits. These near-moneys pay interest while cash (currency in circulation) does not, and they typically pay higher interest rates than any offered on checkable bank deposits.

◀ Measuring the Money Supply ▶

Check Your Understanding

1. Suppose you hold a gift certificate, good for certain products at participating stores. Is this gift certificate money? Why or why not?

[Answer Field]

Show Answer

2. Although most bank accounts pay some interest, depositors can get a higher interest rate by buying a certificate of deposit, or CD. The difference between a CD and a checking account is that the depositor pays a penalty for withdrawing the money before the CD comes due—a period of months or even years. Small CDs are counted in M2, but not in M1. Explain why they are not part of M1.

[Answer Field]

Show Answer

3. Explain why a system of commodity-backed money uses resources more efficiently than a system of commodity money.

[Answer Field]

Show Answer

Tackle the Test: Multiple-Choice Questions

1. When you use money to purchase your lunch, money is serving which role(s)?
- I. medium of exchange
 - II. store of value
 - III. unit of account
- a. I only
 - b. II only
 - c. III only
 - d. I and III only
 - e. I, II, and III

[Answer Field]

Show Answer

2. When you decide you want "\$10 worth" of a product, money is serving which role(s)?
- I. medium of exchange
 - II. store of value
 - III. unit of account
- a. I only
 - b. II only
 - c. III only
 - d. I and II only
 - e. I, II, and III

[Answer Field]

Show Answer

3. In the United States, the dollar is
- a. backed by silver.
 - b. backed by gold and silver.
 - c. commodity-backed money.
 - d. commodity money.
 - e. fiat money.

[Answer Field]

Show Answer

4. Which of the following is the most liquid monetary aggregate?
- a. M1
 - b. M2
 - c. M3
 - d. near-moneys
 - e. dollar bills

[Answer Field]

Show Answer

5. Which of the following is the best example of using money as a store of value?
- a. A customer pays in advance for \$10 worth of gasoline at a gas station.
 - b. A babysitter puts her earnings in a dresser drawer while she saves to buy a bicycle.
 - c. Travelers buy meals on board an airline flight.

d. Foreign visitors to the United States convert their currency to dollars at the airport.

e. You use \$1 bills to purchase soda from a vending machine.

[Answer Field]

Show Answer

Tackle the Test: Free-Response Questions

1.

- a. What does it mean for an asset to be “liquid”?

[Answer Field]

- b. Which of the assets listed below is the most liquid? Explain.

A Federal Reserve note (dollar bill)

A savings account deposit

A house

[Answer Field]

- c. Which of the assets listed above is the least liquid? Explain.

[Answer Field]

- d. In which monetary aggregate(s) calculated by the Federal Reserve are checkable deposits included?

[Answer Field]

Answer (6 points)

1 point: It can be easily converted into cash.

1 point: A Federal Reserve note

1 point: It is already cash.

1 point: A house

1 point: It takes time and resources to sell a house.

1 point: M1 and M2

2.

- a. The U.S. dollar derives its value from what? That is, what “backs” U.S. currency?

[Answer Field]

Show Answer

- b. What is the term used to describe the type of money used in the United States today?

[Answer Field]

Show Answer

- c. What other two types of money have been used throughout history? Define each.

[Answer Field]

Show Answer