

Money

# Continue...

## 4-1 What Is Money?

When we say that a person has a lot of money, we usually mean that he or she is wealthy. By contrast, economists use the term “money” in a more specialized way. To an economist, money does not refer to all wealth but only to one type of it: **money** is the stock of assets that can be readily used to make transactions. Roughly speaking, the dollars (or, in other countries, for example, pounds or yen) in the hands of the public make up the nation’s stock of money.

# The Functions of Money

As a **store of value**, money is a way to transfer purchasing power from the present to the future. If I work today and earn \$100, I can hold the money and spend it tomorrow, next week, or next month. Money is not a perfect store of value: if prices are rising, the amount you can buy with any given quantity of money is falling. Even so, people hold money because they can trade it for goods and services at some time in the future.

# Continue...

As a **unit of account**, money provides the terms in which prices are quoted and debts are recorded. Microeconomics teaches us that resources are allocated according to relative prices—the prices of goods relative to other goods—yet stores post their prices in dollars and cents. A car dealer tells you that a car costs \$20,000, not 400 shirts (even though it may amount to the same thing). Similarly, most debts require the debtor to deliver a specified number of dollars in the future, not a specified amount of some commodity. Money is the yardstick with which we measure economic transactions.

# Continue...

As a **medium of exchange**, money is what we use to buy goods and services. “This note is legal tender for all debts, public and private” is printed on the U.S. dollar. When we walk into stores, we are confident that the shopkeepers will accept our money in exchange for the items they are selling. The ease with which an asset can be converted into the medium of exchange and used to buy other things—goods and services—is sometimes called the asset’s *liquidity*. Because money is the medium of exchange, it is the economy’s most liquid asset.

# Continue...

- Standard of deferred payments
- Money is a matter of functions four: medium, measure, standard and store.

# Continue...

To better understand the functions of money, try to imagine an economy without it: a barter economy. In such a world, trade requires the *double coincidence of wants*—the unlikely happenstance of two people each having a good that the other wants at the right time and place to make an exchange. A barter economy permits only simple transactions.

# Continue...

Money makes more indirect transactions possible. A professor uses his salary to buy books; the book publisher uses its revenue from the sale of books to buy paper; the paper company uses its revenue from the sale of paper to buy wood that it grinds into paper pulp; the lumber company uses revenue from the sale of wood to pay the lumberjack; the lumberjack uses his income to send his child to college; and the college uses its tuition receipts to pay the salary of the professor. In a complex, modern economy, trade is usually indirect and requires the use of money.

# The Types of Money

- Fiat money
- Money that has no intrinsic value is called fiat money because it is established by government decree, fiat.

# Continue...

- Fiat money is the norm in most economies today, but most societies in the past have used a commodity with some intrinsic value for money. This type of money is called **commodity money**.
- The most widespread example is gold. When people use gold as money (or use paper money that is redeemable for gold), the economy is said to be on a **gold standard**.

# Continue...

- Gold is a form of commodity money because it can be used for various purposes—jewelry, dental filings, and so on—as well as for transactions.
- The gold standard was common throughout the world during the late nineteenth century.

# The Development of Fiat Money

- It is not surprising that in any society, no matter how primitive, some form of commodity money arises to facilitate exchange: people are willing to accept a commodity currency such as **GOLD** because it has intrinsic value.
- The development of fiat money, however, is more perplexing.
- What would make people begin to value something that is intrinsically useless?

# Continue...

- To understand how the evolution from commodity money to fiat money takes place,
- imagine an economy in which people carry around BAGS OF GOLD.
- When a purchase is made, the buyer measures out the **appropriate amount of gold**.
- If the seller is convinced that the weight and purity of the gold are right, the buyer and seller make the exchange.

# Continue...

- The government might first get involved in the monetary system to help people reduce transaction costs.
- **Using raw gold as money is costly** because it takes time to verify the purity of the gold and to measure the correct quantity.
- To reduce these costs, the **government can mint gold coins of known purity and weight.**
- The coins are easier to use than gold bullion because their values are widely recognized.

# Continue...

- The next step is for the government to accept gold from the public in exchange for **gold certificates**—pieces of paper that can be redeemed for a certain quantity of gold.
- If people believe the government's promise to redeem **the paper bills** for gold, the bills are just as valuable as the gold itself.

# Continue...

- In addition, because the bills are lighter than gold (and gold coins), they are easier to use in transactions.
- Eventually, no one carries gold around at all, and these gold-backed government bills become the monetary standard.

# Continue...

- Finally, the gold backing becomes irrelevant.
- If no one ever bothers to redeem the bills for gold, no one cares if the option is abandoned.
- As long as everyone continues to accept the paper bills in exchange, they will have value and serve as money.

# Continue...

- Thus, the system of commodity money evolves into a system of fiat money.
- Notice that in the end the use of money in exchange is a social convention: everyone values fiat money because they expect everyone else to value it.

# How the Quantity of Money Is Controlled

- The quantity of money available in an economy is called the **money supply**.
- In a system of commodity money, the money supply is simply the quantity of that commodity.
- In an economy that uses fiat money, such as most economies today, the government controls the supply of money: legal restrictions give the government a monopoly on the printing of money.

# Continue...

- Just as the level of taxation and the level of government purchases are policy instruments of the government, so is the quantity of money.
- The government's control over the money supply is called **monetary policy**.

# Continue...

- The primary way in which the SBP controls the supply of money is through **open-market operations**—the purchase and sale of government bonds.
- When the SBP wants to increase the money supply, it uses some of the dollars it has to buy government bonds from the public.
- Because these dollars leave the SBP and enter into the hands of the public, the purchase increases the quantity of money in circulation.

# Continue...

- Conversely, when the SBP wants to decrease the money supply, it sells some government bonds from its own portfolio.
- This open-market sale of bonds takes some dollars out of the hands of the public and, thus, decreases the quantity of money in circulation.

# How the Quantity of Money Is Measured

Because money is the stock of assets used for transactions, the quantity of money is the quantity of those assets.

$M1 = CC + DD$  where

CC CURRENCY IN CIRCULATION DD=DEMAND DEPOSITS

$M2 = M1 + TD + RFCD$  where

TD =TIME DEPOSITS

RFCD=RESIDENTS

FOREIGN

CURRENCY

DEPOSITS

# The Role of Banks in the Monetary System

- $M = \text{CURRENCY} + \text{DEMAND DEPOSITS}$
- To understand the money supply, we must understand the interaction between currency and demand deposits and how the banking system, together with SBP policy, influences these two components of the money supply.

# Continue...

- 100–Percent–ReserveBanking

We begin by imagining a world **without banks**.

- In such a world, all money takes the form of currency, and the quantity of money is simply the amount of currency that the public holds.
- For this discussion, suppose that there is \$1,000 of currency in the economy.

# Continue...

- Now introduce banks.
- At first, suppose that banks accept deposits but do not make loans.
- The only purpose of the banks is to provide a safe place for depositors to keep their money.

# Continue...

- The deposits that banks have received but have not lent out are called **reserves**.
- Some reserves are held in the vaults of local banks throughout the country, but most are held at a central bank, such as the SBP.
- In our hypothetical economy, all deposits are held as reserves: banks simply accept deposits,
- place the money in reserve, and leave the money there until the depositor makes a withdrawal or writes a check against the balance.
- This system is called **100-percent-reserve banking**.

# Continue...

Suppose that households deposit the economy's entire \$1,000 in Firstbank. Firstbank's **balance sheet**—its accounting statement of assets and liabilities—looks like this:

**Firstbank's Balance Sheet**

Assets		Liabilities	
Reserves	\$1,000	Deposits	\$1,000

The bank's assets are the \$1,000 it holds as reserves; the bank's liabilities are the \$1,000 it owes to depositors. Unlike banks in our economy, this bank is not making loans, so it will not earn profit from its assets. The bank presumably charges depositors a small fee to cover its costs.

# Continue...

- What is the money supply in this economy?  
Before the creation of First bank, the money supply was the \$1,000 of currency.
- After the creation of Firstbank, the money supply is the \$1,000 of demand deposits.

# Continue...

- A dollar deposited in a bank reduces currency by one dollar and raises deposits by one dollar,
- so the money supply remains the same.
- *If banks hold 100 percent of deposits in reserve, the banking system does not affect the supply of money.*

# Fractional–Reserve Banking

- Now imagine that banks start to use some of their deposits to make loans—for example, to families who are buying houses or to firms that are investing in new plants and equipment.
- The advantage to banks is that they can charge interest on the loans.

# Continue...

- The banks must keep some reserves on hand so that reserves are available whenever depositors want to make withdrawals.
- But as long as the amount of new deposits approximately equals the amount of withdrawals, a bank need not keep all its deposits in reserve.

# Continue...

- Thus, bankers have an incentive to make loans.
- When they do so, we have **fractional–reserve banking**, a system under which banks keep only a fraction of their deposits in reserve.

# Continue...

Here is Firstbank's balance sheet after it makes a loan:

## Firstbank's Balance Sheet

Assets		Liabilities	
Reserves	\$200	Deposits	\$1,000
Loans	\$800		

This balance sheet assumes that the *reserve–deposit ratio*—the fraction of deposits kept in reserve—is 20 percent. Firstbank keeps \$200 of the \$1,000 in deposits in reserve and lends out the remaining \$800.

# Continue...

- Notice that Firstbank increases the supply of money by \$800 when it makes this loan.
- Before the loan is made, the money supply is \$1,000, equaling the deposits in Firstbank.

# Continue...

- After the loan is made, the money supply is \$1,800: the depositor still has a demand deposit of \$1,000,
- but now the borrower holds \$800 in currency.
- *Thus, in a system of fractional-reserve banking, banks create money.*

# Continue...

- The creation of money does not stop with First bank.
- If the borrower deposits the \$800 in another bank (or if the borrower uses the \$800 to pay someone who then deposits it), the process of money creation continues.
- Here is the balance sheet of Second bank:

# Continue...

## Secondbank's Balance Sheet

Assets		Liabilities	
Reserves	\$160	Deposits	\$800
Loans	\$640		

Secondbank receives the \$800 in deposits, keeps 20 percent, or \$160, in reserve, and then loans out \$640. Thus, Secondbank creates \$640 of money. If this \$640 is eventually deposited in Thirdbank, this bank keeps 20 percent, or \$128, in reserve and loans out \$512, resulting in this balance sheet:

# Continue...

## Thirdbank's Balance Sheet

Assets		Liabilities	
Reserves	\$128	Deposits	\$640
Loans	\$512		

The process goes on and on. With each deposit and subsequent loan, more money is created.

# Continue...

This process of money creation can continue forever, but it does not create an infinite amount of money. Letting  $rr$  denote the reserve–deposit ratio, the amount of money that the original \$1,000 creates is

$$\begin{aligned} \text{Original Deposit} &= \$1,000 \\ \text{Firstbank Lending} &= (1 - rr) \times \$1,000 \\ \text{Secondbank Lending} &= (1 - rr)^2 \times \$1,000 \\ \text{Thirdbank Lending} &= (1 - rr)^3 \times \$1,000 \\ \hline \text{Total Money Supply} &= [1 + (1 - rr) + (1 - rr)^2 \\ &\quad + (1 - rr)^3 + \dots] \times \$1,000 \\ &= (1/rr) \times \$1,000. \end{aligned}$$

Each \$1 of reserves generates  $\$(1/rr)$  of money. In our example,  $rr = 0.2$ , so the original \$1,000 generates \$5,000 of money.<sup>4</sup>