

Money and Banking

What is Money?

Money is any commodity or token that is generally acceptable as a means of payment. A **means of payment** is a method of settling a debt.

Money has three functions:

1. *Medium of exchange* : A **medium of exchange** is any object that is generally accepted in exchange for goods and services. Money acts as a medium of exchange. As a result, money eliminates the need for **barter** , which is the exchange of goods and services directly for other goods and services, which requires a **double coincidence of wants** (a situation in which two people each want some good or service that the other person can provide).
2. *Unit of account* : Money serves as a **unit of account** , which is an agreed-upon measure for stating the prices of goods and services
3. *Store of value* : Money serves as a **store of value** , which is any commodity or token that can be held and exchanged later for goods and services. ⁽¹⁸⁾

Money Today

Fiat money refers to objects that are money because the law decrees or orders them to be money. Today's fiat money consists of **currency** (the bills and coins that we use in the United States today) and **deposits** at banks and other depository institutions. Deposits are money because they can be converted into currency and because they are used to settle debts.

- Currency in a bank is *not* counted as money; only currency held by individuals and businesses in any form is counted money.
- Credit cards are not money — they are IDs that allow an instant loan.
- Checks, e-checks, and debit cards are not money — they are instructions to a bank to transfer money from one person to another.
- E-cash operates similarly to paper notes and coins, but doesn't yet meet the definition of money. However, as it becomes more widely accepted it will likely gradually replace physical forms of currency. ⁽¹⁸⁾

Read questions carefully and write down your answer.

Question 1: Cigarettes are used as money in prison. Are cigarettes in prison commodity money or fiat money?

Answer: _____

Question 2: What about the tickets won playing games at Chuck-E-Cheese? Inside Chuck-E-Cheese, are those tickets commodity money or fiat money? What about outside of Chuck-E-Cheese?

Answer: _____

Official Measures of Money: M1 and M2

M1 consists of **currency** held by individuals and businesses and **traveler's checks**, plus checkable deposits owned by individuals and businesses.

A broader definition of money, **M2** includes everything in **M1** but also adds other types of deposits. For example, M2 includes **savings deposits** in banks, which are bank accounts on which you cannot write a check directly, but from which you can easily withdraw the money at an automatic teller machine or bank. Many banks and other financial institutions also offer a chance to invest in **money market funds**, where the deposits of many individual investors are pooled together and invested in a safe way, such as short-term government bonds. Another ingredient of M2 are the relatively small (that is, less than about \$100,000) certificates of deposit (CDs) or **time deposits**, which are accounts that the depositor has committed to leaving in the bank for a certain period of time, ranging from a few months to a few years, in exchange for a higher interest rate.

In short, all these types of M2 are money that you can withdraw and spend, but which require a greater effort to do so than the items in M1. ⁽¹⁸⁾

The Banking System

The **banking system** consists of the **Federal Reserve (Fed)** and the banks and other institutions that accept deposits. There are three types of depository institutions whose deposits are money: commercial banks, thrift institutions, and money market mutual funds.

Commercial Banks

A **commercial bank** is a firm that is chartered by the Comptroller of the Currency or by a state agency to receive deposits and make loans. The number of commercial banks in the U.S. has shrunk dramatically in the past decade due to mergers and failures.

- A commercial bank accepts checkable deposits, savings deposits, and time deposits.
- A commercial bank tries to maximize their stockholders' wealth by lending for long terms at high interest rates and borrowing from depositors and others. Banks must be careful to balance security for depositors and stockholders against high but

risky returns from loans. To tradeoff between risk and profit, a bank divides its assets into:

- *Reserves* . A bank's **reserves** are its currency in its vault plus the balance on its reserve account at a Federal Reserve Bank. The **required reserve ratio** is the ratio of reserves to deposits that banks are required, by regulation, to hold.
- *Liquid Assets* . Liquid assets are short-term Treasury Bills and overnight loans to other banks — these assets have **low interest rates** and **low risk** .
- The **federal funds rate** is the interest rate on interbank loans and is the **central target for monetary policy** .
- *Securities and loans* . Banks buy securities issued by the U.S. government and large businesses. Some securities have low interest rates and low risk, while others have high interest rates and high risk. Banks also make loans to businesses and individuals. Loans tend to have higher interest rates and high risk and cannot be recalled until the agreed date. ⁽¹⁸⁾

Thrift Institutions

Thrift institutions are savings and loan associations, savings banks, and credit unions. A *saving and loan association* (S&L;) is a financial institution that receives checking deposits and savings deposits and that makes personal, commercial, and home-purchase loans. A *savings bank* is a financial institution that accepts saving deposits and makes mostly mortgage loans. A *credit union* is a financial institution owned by a social or economic group such as a firm's employees that accepts savings deposits and makes mostly consumer loans. ⁽¹⁸⁾

Money Market Funds

A money market fund is a fund operated by a financial institution that sells shares in the fund and holds liquid assets such as U.S. Treasury bills or short-term commercial debt. Shareholders can write checks of large amounts (for instance, a \$500 minimum) on a money market fund account. ⁽¹⁸⁾

The Federal Reserve System

The central bank of the United States is the **Federal Reserve System** . A **central bank** is a public authority that provides banking services to banks and regulates financial institutions and markets.

The Structure of the Federal Reserve

- The Board of Governors has seven members who are appointed by the President and confirmed by the Senate to 14-year nonrenewable terms. One of the

members is appointed by the President to act as the Chairman (a 4-year renewable position).

- There are 12 regional Federal Reserve banks.
- **The Federal Open Market Committee** (FOMC) is the Fed's main policy-making committee that meets approximately every 6 weeks. It is comprised of the members of the Board of Governors and the Presidents of the regional Federal Reserve Banks. The Board of Governors, the President of the Federal Reserve Bank of New York, and, on a rotating basis, the presidents of four other regional Federal Reserve Banks, vote on monetary policy. In practice, the chairman has the largest influence on policy. The chairman is the Fed's chief executive, public face, and center of power and responsibility. ⁽¹⁹⁾

The Fed's Policy Tools

- **Required reserve ratios** : The minimum percentage of deposits that depository institutions must hold as reserves are the required reserve ratios. The Fed sets the required reserve ratios.
- **Discount rate** : The discount rate is the interest rate at which the Fed stands ready to lend reserves to depository institutions.
- **Open market operation** : An open market operation is the purchase or sale of government securities by the Federal Reserve System in the open market. The Fed does not directly purchase bonds from the federal government because it would appear that the government was printing money to finance its expenditures.
- **Extraordinary crisis measures** : In response to the 2008 financial crisis, the Fed created new policy tools that can be grouped into three broad categories:
 - **Quantitative easing** : when the Fed creates bank reserves by a large scale open market operation at a **low or possibly zero interest rate** in the federal funds market.
 - **Credit easing** : when the Fed buys private securities or makes loans to financial institutions to stimulate their lending.
 - **Operation Twist** : when the Fed sells short-term securities and buys long-term securities in an attempt to lower long-term interest rates and stimulate long-term borrowing and investment. ⁽¹⁹⁾

How the Fed's Policy Tools Work

- The **monetary base** is the sum of coins, Federal Reserve notes, and banks' reserves at the Fed. It is by changing the monetary base that the Fed can change the quantity of money in the economy.
- By increasing the required reserve ratio, the Fed forces banks to hold more reserves, which are part of the monetary base. This action decreases the quantity of money.
- By raising the discount rate, the Fed discourages banks from borrowing reserves, which decreases the quantity of money.

- By selling securities in the open market, the Fed decreases the monetary base, which decreases the quantity of money. ⁽¹⁹⁾

Quantity Theory of Money

The **quantity theory of money** is the proposition that when real GDP equals potential GDP, an increase in the quantity of money brings an equal percentage increase in the price level.

The **velocity of circulation** is the number of times in a year that the average dollar of money gets used to buy final goods and services. Nominal GDP equals real GDP(Y), multiplied by the price level (P), or $GDP = P \cdot Y$. So, the velocity of circulation (V) is given by ⁽¹⁹⁾:

$$V = (P \times Y) \div M$$

The **equation of exchange** states that the quantity of money (M), multiplied by the velocity of circulation (V), equals the price level multiplied by real GDP:

$$M \times V = P \times Y$$

The equation of exchange is a definition and so is always true. It becomes the quantity theory of money by adding two facts:

- Real GDP equals potential GDP at full employment, and potential GDP is determined by only real factors and not the quantity of money.
- The velocity of circulation does not change when the quantity of money changes.

Rearrange the equation of exchange as:

$$P = (M \times V) \div Y = M \times (V \div Y)$$

According to the quantity theory, velocity and potential GDP are not influenced by the quantity of money. So, an x percent change in M results in the same x percent change in P ⁽¹⁹⁾.

Inflation and the Quantity Theory of Money

In rates of growth, the equilibrium of exchange is:

$$(\text{Money growth}) + (\text{Velocity growth}) = (\text{Inflation rate}) + (\text{Real GDP growth})$$

The previous equation can be rearranged as:

$$\text{Inflation rate} = \text{Money growth} + \text{Velocity growth} - \text{Real GDP growth}$$

This formula concludes that, in the long run, the percentage increase in the price level, which is the inflation rate, equals the percentage increase in the quantity of money, plus the percentage increase in velocity, minus the percentage increase in real GDP. If the growth rates of velocity and real GDP do not change when the money growth rate changes, then changes in the money growth rate lead to equal changes in the inflation rate. ⁽¹⁹⁾

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