Money is a tremendously important invention for the operation of a modern, complicated economy. Without money, we would be reduced to barter, which would greatly reduce the diversity of goods and services provided in the economy.

Money is anything that is generally accepted as a means of payment.

Money eliminates the need for a double coincidence of wants.

5 Desirable characteristics of money
- Scarce
- Easily recognizable
- Portable
- Divisible
- Durable

4 Functions of money
- Medium of exchange
- Unit of account
- Store of value (inflation hinders this)
- Standard of deferred payment (unanticipated inflation hinders this)

5 Types of money
- Commodity money – valuable stuff that is also used as money
- Convertible paper money – paper money that can be turned in for stuff
- Legal tender – money that must, by law, be accepted
- Fiat money/Token money – money that has value only because it is legal tender
- Private debt money – money that is created by banks, which we’ll talk about

Measuring the Money Supply

The degree to which something is money depends on liquidity, or the ease with which it can be converted to other stuff.
Coins and paper money and deposits in checking accounts are very liquid. Money in savings accounts and certificates of deposit at banks are somewhat less liquid. The old baseball cards you have up in your closet are even less liquid.

Measuring the quantity of money in an economy, the money supply, requires a definition of money.

The most liquid money in an economy constitutes M1. M1 contains:
- coins
- cash
- deposits in checking accounts

According to the textbook, in 2004 M1 totalled $1287B for the U.S. economy

A second measure of the money supply is M2. M2 contains:
- M1
- deposits in savings accounts

According to the textbook, in 2004 M2 totalled $6076B for the U.S. economy

Financial Intermediaries
Institutions that handle your money for you are called financial intermediaries. They are critically important to an economy.

The history of financial intermediaries probably started with people depositing gold at a goldsmith and being given a receipt for that gold. They could potentially trade that receipt for goods and services, essentially making the receipt money.

Types of Financial intermediaries
- Banks and bank like institutions
- Mutual funds
- Insurance companies
- Pension funds

Functions of financial intermediaries
- Minimize borrowers’ costs of obtaining funds
- Minimize lenders’ costs of screening/monitoring borrowers
- Pooling risk for lenders
- Minimize lenders’ cost of diversifying assets
- Create liquidity by creating money
**Fractional Reserve Banking**

At some point, goldsmiths probably recognized that no one was going to show up demanding their gold at the same time, so they could lend out some of the gold that was deposited and make more of a profit from the operation.

A system in which the cash that a bank has on hand is less than the amount people have deposited at it is called a *fractional reserve system* and it is one of the cornerstones of our economy. The effects of a fractional reserve system include:

1. increased profitability of banks
2. bank control of the money supply
3. banks’ exposure to runs if people lose faith in a bank

Reserve banking concept
- Banks hold only a small amount of total deposits in reserve, the rest of the money is loaned out
- Fractional reserve banking creates money through the multiplier process
- The whole concept rests on the idea that not everyone will want their money at once

If people lose faith in a bank, they are likely to rush to the bank and demand their money back immediately. This behavior will destroy the fractional reserve banking system, so there are measures in place to try and maintain faith in banks.

1. Deposit insurance – pays off depositors if the bank fails
2. Bank supervision
3. Reserve requirements – requirements that banks maintain some percentage of total deposits in reserve. This is costly, but makes banks more secure.

**Actual and Excess Reserves**

Banks are generally required to keep some percentage of deposits in reserve and will usually keep some additional amount in reserve.

The *required reserve ratio* (RRR) is the percentage of deposits that banks are required to keep in reserve.

The *excess reserve ratio* (ERR) is the percentage of deposits that banks hold beyond this percentage.

The *actual reserve ratio* (ARR) is the sum of the required and excess reserve ratios.

So,

\[
ARR = RRR + ERR
\]
The story of the money multiplier process
For reasons too complicated to explain here, a new $100 bill is printed and given to you. Being prudent, you go to your bank and deposit the money in hopes of using it for a birthday present for that special someone in your life. You have an extra $100.

The bank holds onto some fraction of your $100, perhaps 10% of it, and, being interested in making a profit, lends out the remaining $90 to Joe, who is going to use the money to buy some new knives for his home sushi business. Joe spends the money, and the knife seller then deposits it in her bank. The knife seller has an extra $90.

The knife seller’s bank holds onto 10% of this deposit and lends out the remaining $81, and so on and so on….

So, the initial release of a new $100 bill actually has a much larger impact on the money supply due to fractional reserve banking and the money multiplier.

The money multiplier
There are two ways to think about the money multiplier.

The first way is to think of it as a relationship between the monetary base, or the amount of cash in the economy, and the total money supply. In this case the money multiplier is:

\[ MM = \frac{\text{MoneySupply}}{\text{MonetaryBase}} \]

The second way is to think about changes in the amount of cash in the economy and the resulting change in the money supply. In this case, the money multiplier is:

\[ MM = \frac{\Delta M_S}{\Delta \text{Deposits}} \]

The size of the money multiplier depends on how much of a deposit banks lend back out. The more they lend back out, the bigger the multiplier is.

In the above story about the multiplier process, banks were holding 10% of a deposit in reserve and lending out 90% of the deposit.

Over numerous cycles of lending and depositing, the total impact looks like this:

<table>
<thead>
<tr>
<th>Round</th>
<th>Deposited</th>
<th>Reserved</th>
<th>Lent</th>
</tr>
</thead>
</table>
In terms of the reserve ratio that banks hold, or the actual reserve ration (ARR), the money multiplier is

\[ MM = \frac{1}{ARR} \]

For example, if the ARR is 10%, the money multiplier is

\[ MM = \frac{1}{ARR} = \frac{1}{0.10} = 10 \]

This means that printing an extra dollar will have the impact of increasing the money supply by ten dollars.

For example, if the ARR is 20%, the money multiplier is

\[ MM = \frac{1}{ARR} = \frac{1}{0.20} = 5 \]