

Lesson 10 - Money

Acknowledgement: Ed Sexton and Kerry Webb were the primary authors of the material contained in this lesson.

Section 1: The Functions of Money

This lesson introduces us to the role of money in our economy, the **American Banking system** (including the Federal Reserve System of the United States), and the use of monetary policy to manipulate price levels and employment in the US economy. Money fulfills three primary functions in our economy: It is a medium of exchange, it is a measure of value, and it is a store of value. Let's consider each of these functions in turn.

Medium of Exchange

Money is the means by which we purchase goods and services. **Medium of exchange** is when money is used for transactional purposes to facilitate the exchange of goods and services. If there were no money, we might suppose that we would exchange goods and services directly for each other in **barter systems**.

Barter systems are very inefficient in that they require buyers and sellers to have a **double coincidence of wants**. This means that the two parties in the exchange both have to coincidentally want what the other has in order for the trade to take place. Suppose you have oranges and I have apples. If we coincidentally both want what the other has, a trade can occur. But if I want your oranges, when you don't want my apples, no trade will happen. In another situation, imagine taking a pig into a shoe store and trying to exchange it for a pair of tennis shoes. This situation is fraught with all sorts of difficulties. What if the owner of the tennis shoes does not happen to want a pig or any portion of a pig? What about the fact that the pig might be worth 5 pairs of tennis shoes and you only want one pair? Is it reasonable that the shoe store owner can accept only 1/5 of a pig for a pair of tennis shoes? How would he be able to do this?

Using money however, as a medium of common value eliminates the need for all of us to search out other people with "coincidental wants" because we can all substitute money as a "common want." Money facilitates the exchange, because everyone is willing to accept money as a medium of exchange for whatever it is that one might want to buy or sell. It is also very easily **divisible** to the scale of what is being exchanged.

Unit of Account (Measure of Value)

Money is also a **measure of value (unit of account or unit of value)** and acts as a yardstick for measuring the relative worth of heterogeneous goods. Unit of account means that we all have some notion of the relative worth of a unit of money. For example, we know the value of a \$1 bill because we understand what \$1 will buy from the dollar menu at a fast food restaurant.

We understand this function of money because of its relative value to other goods and services. It might be difficult to know off the top of your head that a pig is worth ten pairs of tennis shoes, but money makes this easy to measure. If a grown pig can be sold for \$300 and a pair of tennis shoes can be sold for \$60, then we can say that a pig is worth 5 pairs of tennis shoes. Money makes this calculation possible because it is a measure of value. How much regular gasoline could you trade for a pound of roast beef? The answer to that question might not be obvious to you at first blush. Let's say that you were told, however, that sliced roast beef at the Deli counter at Broulim's Grocery Store is \$7.00 a pound and that regular gasoline at the Maverick Gas Station in Rexburg, Idaho is \$3.50 a gallon. Now you would know that you could get two gallons of regular gasoline for one pound of roast beef, and money as a unit of account provides you with the answer.

Store of Value

Money is a **store of value** when money is used as the means to hold a person's wealth because it is a **liquid** (or spendable) source of wealth. Note that **wealth** is the sum of the value of a person's assets. Some people choose to hold on to money as an asset, just like they might have a home, a painting, or a diamond ring. Money has an advantage over other assets because it is very liquid. The **liquidity** of an asset refers to how quickly the asset can be turned into cash, and since money is already cash, it is the most liquid asset possible.

For example, you might have \$500 in cash, a car worth \$2,300, a computer worth \$600, 15 shares of Microsoft stock worth \$750, a Wii System you can sell on eBay for \$75, and various other odds and ends worth a total of \$500. Your total wealth is \$4,725. If you owe on a student loan \$2,100, your net worth is \$2,625 (i.e., **Total Assets - Total Liabilities = Net Worth**). If you were to sell all of your assets and convert them to cash, then money functions as a store of your wealth. The more assets you have in the form of money, the more liquid you are.

Section 2: The Money Supply

The **money supply** is the amount of money in the economy at any given point in time as measured by the **Federal Reserve System (Fed)** and is generally broken down into two classifications:

M1

The first definition of the money supply is called M1. **M1** consists of currency and coins in the hands of the non-bank public, traveler's checks, and checkable deposits. Currency and coins constitutes about 50% of M1 and checkable deposits make up the other 50%. Traveler's checks make up far less than 1% of M1. As of April, 2011, M1 was \$1,900,900,000,000, or nearly two trillion US dollars.

M2

The second definition of the money supply is called M2. **M2** is a broader and less liquid definition of the money supply. While M1 constitutes money that is either cash or readily changed to cash, M2 includes more types of money and specifically parts of the money supply that are harder to turn into cash. M2 consists of M1, Savings Deposits, Small Time Deposits (\$100,000 or less), and Money Market Mutual Funds. M1 makes up about 21% of M2, Savings Deposits account for 61% of M2, Small Time Deposits make up 10% of M2, and Money Market Mutual Funds constitute approximately 8% of M2. As of April 2011, M2 was 8,946,100,000,000 or nearly nine trillion US dollars.

To see the most recent levels of M1 and M2 click go to the following Federal Reserve website: <http://www.federalreserve.gov/releases/h6/current/default.htm>, and note the official definitions for the various measures of money at the bottom of Table 1.

Section 3: The Money Demand

The **demand for money** represents the quantities of money that people are able and willing to hold at alternative interest rates. The **total demand for money** is often considered to be the sum of the two classifications of money demand. The first is called the transactions demand and the second is called the asset demand.

Transactions Demand

Transactions demand is money held for the purpose of making everyday market purchases. Since it doesn't vary with changes in the interest rate, this demand is vertical. The demand for money as a medium of exchange is independent of the interest rate, because when you are on your way home from work and need to pick up milk, the interest rate does not affect how much milk you buy. On a daily basis people need money on hand for the things that they

routinely buy. You have to get a haircut or stop by the store on the way home from work to pick up some milk. You have transactions that you need to conduct, and therefore you have a demand for money. The transactions demand for money is using money as a medium of exchange.

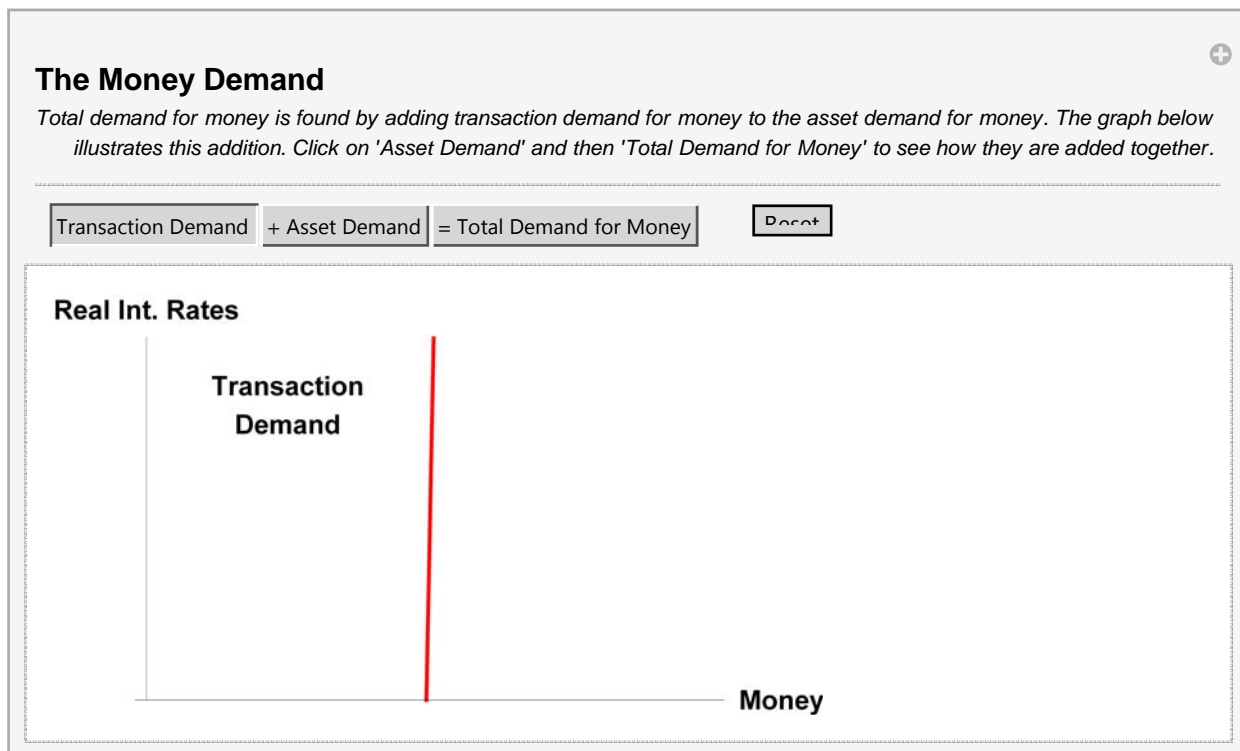
Asset Demand

Some people hold money as a financial asset just like stocks and bonds. Holding money as a liquid asset is using money as a store of value. Consider a person who has a portfolio of investments. Perhaps he owns some stocks, bonds, jewelry, artwork, a home, a savings account at his credit union, and has \$5,000 in a fireproof box hidden in his basement. In an emergency, the cash is the most liquid asset that the person has, and is far more spendable than a painting or a piece of jewelry that might take weeks to turn into cash. The liquidity of cash is the advantage of holding cash. The disadvantage of holding money as an asset is that there is very little or no return on this asset. Some call this curve **speculative demand for money**.

The **cost of holding money** as an asset is the **foregone interest rate** and there is an inverse relationship between the interest rate and the asset demand for money. If you hold money when interest rates are high, you lose out on the interest earnings you could have received from putting your money in a bank or lending it out. In other words, the opportunity cost of holding money increases as interest rates increase and vice versa.

The Money Demand Graph

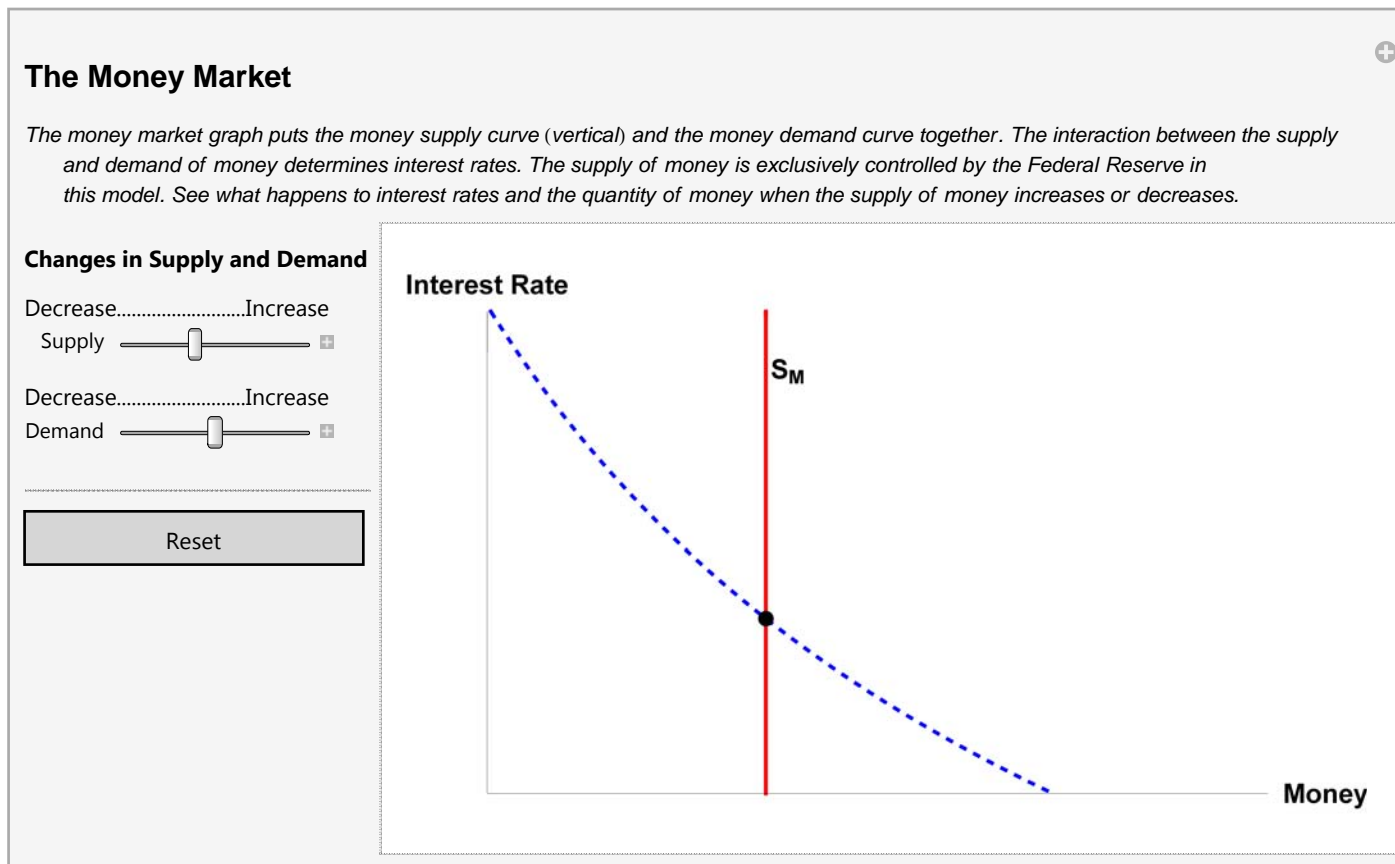
The graph below illustrates the three curves: transactions demand, asset demand, and total demand for money. The total demand of money is the horizontal sum of the transactions demand (vertical line) and the asset demand (downward sloping), and has the same downward slope as the asset demand.



Section 4: The Money Market Equilibrium

Interest rates act as the price of money, and equilibrate the supply of money from savers with the demand for money by borrowers. As shown in the figure below, the **money supply curve** is typically drawn as a vertical line because the amount of money in the economy (say, M2) will be set by Federal Reserve System at some given level. At the

same time, the **total money demand curve** (total demand for money curve) is downward sloping because of the asset demand. Equilibrium in the money market occurs when the interest rate adjusts so that the quantity of money demanded equals the quantity of money supplied. In the graph below it is where the black dot is located.



Adjustments can be made to shift the supply and demand curve. Some of the adjustments are outlined below.

Adjustments to a Decrease in the Supply of Money — When the supply of money decreases (shifts to the left) the interest rate goes up.

Adjustments to an Increase in the Supply of Money — When the supply of money increases (shifts to the right) the interest rate goes down.

Adjustments to a Decrease in the Demand for Money — When the demand for money decreases (shifts to the left) the interest rate falls.

Adjustments to an Increase in the Demand for Money — When the demand for money increases (shifts to the right) the interest rate goes up.

The above four statements can be easily illustrated by shifts in the graph above, but can you see the logical economic argument behind each? Let's illustrate with the first statement and then you work through the similar logic on the other three.

What would happen if there were a decrease in the money supply (shift of money supply curve left)? If you stay at the old interest rate of when the supply of money falls, then the demand for money will exceed the supply of money. What would you do if you were running a bank and more people came in demanded money than there were coming in and supplying money? Wouldn't your natural reaction be to increase the interest rate in the hope that the higher interest rate would decrease the demand for money? Remember that at a higher interest rate, the asset demand for money will be less. As the interest rate goes up, the demand for money and the supply of money will eventually

come into equilibrium again at a higher interest rate. You can use similar logic to analyze each of the other three scenarios.

Section 5: Variety of Interest Rates

Interest rates act as the price of money, and equilibrate the supply of money from savers with the demand for money by borrowers. Our previous discussion referred to the interest rate as though there was only one in the economy. The reality is that there are many interest rates. The interest rate on your credit card is different than the interest rate for a car loan, which is different than the rate you might be charged on a home loan.

Because there are many different financial instruments through which people lend and borrow money, there are also many different interest rates. There are four interest rates that we want to be concerned with in this class:

Federal Funds Rate (also known simply as the **Fed Funds rate**)—the rate paid by banks when they borrow money from other banks. Typically these are over-night or short-term loans. This is the "driving rate" of the U.S. economy. When the Federal Reserve acts to raise or lower interest rates, it initiates changes to the Fed Funds rate, and all other rates begin to adjust accordingly.

Discount Rate—the rate paid by banks to borrow from the Federal Reserve System. Typically these are over-night or short-term loans, and the discount rate is usually one-half to one full point higher than the Fed Funds rate.

Prime Rate—the rate on loans to major corporations posted by at least 75 percent of the 30 largest banks in the United States. In essence, the prime rate represents the lowest interest rate banks will give to their best commercial customers.

Real Interest Rate—the rate at which money is traded, after adjusting for expected inflation. The real interest rate is found by using the following equation:

$$\text{Real Interest Rate} = \text{Nominal Interest Rate} - \text{Expected Inflation Rate}$$

Suppose you want to borrow \$35,000 for a new car purchase. If the banker expects inflation to be rising by 7 percent over the term of the loan, the interest rate on your loan (i.e., the nominal rate) will be the sum of the banker's real cost of funds, say 3 percent, plus an additional 7 percent to cover the expected inflation. Your interest rate will be 10 percent in this case. Alternatively, if the expected rate of inflation were zero, then you could borrow the same amount for only 3 percent. As you can see, it is not only important for policy makers to control inflation itself, but to also contain inflationary expectations as well.

There are four main factors that determine whether or not an interest rate is high or low. Let's consider four factors that will influence the interest rate in any given situation.

Term or maturity

- a) Shorter term loans have a lower interest rates
- b) Longer term loans have a higher interest rates

Risk

- a) Riskier loans have a higher interest rates
- b) Safer loans have a lower interest rates

Liquidity

- a) Liquid loans have a lower interest rates
- b) Illiquid loans have a higher interest rates

Administrative Costs

- a) Loans that have a high cost to administer have a higher interest rates
- b) Loans that have a low cost to administer have a lower interest rates

Summary

Key Terms

Administrative Costs
American Banking System
Asset Demand
Barter Systems
Cost of Holding Money
Demand for Money
Discount Rate
Divisible
Double Coincidence of Wants
Fed
Fed Funds Rate
Federal Funds Rate
Federal Reserve System
Foregone Interest Rate
Interest Rates
Liquid
Liquidity
Liquidity (Factors)
M1
M2
Maturity
Measure of Value
Medium of Exchange
Money Demand
Money Supply
Money Supply Curve
Net Worth
Prime Rate
Real Interest Rate
Risk
Shifts of Money Demand and Money Supply
Speculative Demand for Money
Store of Value
Term
Total Assets
Total Demand for Money
Total Liabilities
Total Money Demand Curve
Transactions Demand
Unit of Account
Unit of Value
Wealth