Money is what we use when we demand other goods.

Demand for money is a question of how much of wealth individuals wish to hold in the form of money at any point in time. Individuals must decide how to allocate their wealth between different kinds of assets, for example a house, income-earning securities, a checking account, and cash.

It is important to note the demand for money is demand for the actual services yielded by the possession of a real stock of money, and not simply a demand for a nominal amount of cash denominated in any currency.

Cost of holding money

1. Money earns little or no interest.
2. There is an opportunity cost of holding money, which is interest rate (or any type of return) foregone minus transactions cost
3. Money loses purchasing power to inflation.

Reasons to hold money

Why would anyone hold part of his wealth as money, whether cash or checking deposits? Wouldn't it be more sensible to hold all wealth in the form of assets that yield income?

Some theories that will be discussed below attempted to answer these questions.
THEORIES OF MONEY DEMAND

First: Quantity Theory of Money

✧ Quantity theory of money is a classical theory that related the amount of money in the economy to nominal income. Nominal income is determined solely by movements in the quantity of money.

✧ It states the changes in the quantity of money tend to affect the purchasing power of money inversely, that is, with every increase in the quantity of money, each monetary unit (such as dinar or dollar) tends to buy a smaller quantity of goods and services while a decrease in the quantity of money has the opposite effect. Although a change in the quantity of money may eventually affect all prices, it does not and cannot affect all prices in the same manner, to the same degree or at the same time.

✧ Economist Irving Fisher is given credit for the development of this theory. It begins with an identity known as the equation of exchange:

\[ MV = PY \]

Where

- \( M \) is the quantity of money (or money supply).
- \( V \) is velocity, which serves as the link between money and output.
- \( P \) is the price level.
- \( Y \) is aggregate output (aggregate income).
- \( PY \) is the total amount of spending on final goods and services produced in the economy (aggregate nominal income or nominal GDP).

✧ The equation of exchange states that the quantity of money multiplies by number of times this money is spent in a given year must equal to nominal GDP (PY).

✧ Rearranging the equation of exchange we get the velocity of money equation

\[ V = \frac{PY}{M} = \frac{\text{Total Spending}}{\text{Quantity of Money}} \]
✧ **Velocity of money** \( (V) \) is the average number of times per year that a monetary unit such as dinar or dollar is spent used to buy goods and services produced in the economy.

✧ Because this theory tells us how much money is held for a given amount of aggregate income, it is also a theory of demand for money.

✧ The most important feature of this theory is that it suggests that interest rates have no effect on the demand for money.

✧ **Example:**

If nominal GDP \((P \times Y) = BD5\) Billion and quantity of money \((M) = BD\ 2\) Billion

Then, \(V = \frac{5}{2} = 2.5\), which means that the average Bahraini dinar bill is spent 2.5 times in purchasing final goods and services.

✧ The equation of exchange is an identity because it must be true that the quantity of money, times how many times it is used to buy goods equals the amount of goods times their price.

✧ To move towards the quantity theory of money, Fisher makes two key assumptions:

1. Fisher viewed velocity as constant in the short run. This is because he felt that velocity is affected by institutions and technology that change slowly over time.
2. Fisher, like all classical economists, believed that flexible wages and prices guaranteed output, \(Y\), to be at its full-employment level, so it was also constant in the short run.

✧ Putting these two assumptions together lets look again at the equation of exchange:

\[
MV = PY
\]

✧ If both \(V\) and \(Y\) are constant, then changes in \(M\) must cause changes in \(P\) to preserve the equality between \(MV\) and \(PY\).

✧ This is the quantity theory of money: a change in the money supply, \(M\), results in an equal percentage change in the price level \(P\).
We can further modify this relationship by dividing both sides by \( V \):

\[ M = \frac{l}{V} \times PY \]

Since \( V \) is constant we can replace \( \frac{l}{V} \) with some constant, \( k \), so \( k = \frac{l}{V} \),

and when the money market is in equilibrium, \( M^d = M \). So our equation becomes

\[ M^d = k \times PY \]

So under the quantity theory of money, money demand is a function of income and does not depend on interest rates.

According to Fisher, money demand is determined by

1. the level of transactions generated by the level of nominal income \( (PY) \)
2. the institutions in the economy that affect the way people conduct transactions and thus \( V \) and \( k \).
Second: Keynes’s Theory of Money: Liquidity Preference Theory

- In 1936, economist John M. Keynes wrote a very famous and influential book, The General Theory of Employment, Interest Rates, and Money. In this book, he developed his theory of money demand, known as the liquidity preference theory. He developed a theory of money demand that emphasized the importance of interest rate.
- Keynes rejected the classical view that velocity was a constant.
- In his theory, Keynes believed that there are three motives for individuals to hold money: the transaction motive, the precautionary motive, and the speculative motive.

Transaction Motive:
- Keynes agreed with the classical theory that money is used as a medium of exchange. So people’s demand for money is for the purpose of transactions and as income rises, people have more transactions and people will hold more money.

Precautionary Motive:
- In addition to holding money to carry out current transactions, Keynes observed people hold money to be used in future for unexpected needs and emergencies.
- Since this also depends on the amount of transactions people expect to make, money demand is again expected to rise with income.

Speculative Motive
- Keynes suggested that people also hold money as a store of wealth.
- Because wealth is tied closely to income, the speculative motive for money demand is related to income.
- Keynes assumed that people stored wealth with either money or bonds. When interest rates are high, rate would then be expected to fall and bond prices would be expected to rise. So bonds are more attractive than money when interest rates
are high. When interest rates are low, they then would be expected to rise in the future and thus bond prices would be expected to fall. So money is more attractive than bonds when interest rates are low. So under the speculative motive, money demand is negatively related to the interest rate.

Keynes modeled money demand as the demand for the real quantity of money (real balances) or \( \frac{M}{P} \). In other words, if prices double, you must hold twice the amount of \( M \) to buy the same amount of items, but your real balances stay the same. So people choose a certain amount of real balances based on the interest rate, and income:

Thus, Keynes wrote the demand for money equation (LPF),

\[
\frac{M^d}{P} = f(i,Y)
\]

where, \( \frac{M^d}{P} \) is the demand for real money balances, \( i \) is the interest rate, and \( Y \) is the real income.

The importance of interest rates in the Keynesian approach is the big difference between Keynes and Fisher. With this difference also come different implications about the behavior of velocity.

Consider the two equations: \( MV = PY \) and \( \frac{M^d}{P} = f(i,Y) \)

so \( M = \frac{PY}{V} \) in the first equation. Substituting in the second equation and recognizing that \( M^d = M \) (money Supply) because they must be equal in money market equilibrium, we solve for velocity:

\[
\frac{Y}{V} = f(i,Y) \text{ or } V = \frac{Y}{f(i,Y)}
\]

This means that under Keynes' theory, velocity fluctuates with the interest rate. Since interest rates fluctuate, then velocity must too. In fact, velocity and interest
rates will move in the same direction. Both are pro-cyclical, rising with expansions and falling during recessions.

◊ A rise in \( i \) encourages people to hold lower real money balances for a given level of \( Y \). Therefore, the rate at which money turns over (velocity) must be higher.

◊ Another reason to reject the constancy of \( V \) is because changes in people’s expectations about the normal level of \( i \) would cause shifts in \( M^d \) that cause \( V \) to shift as well.

Further Development in the Keynesian Approach

◊ After World War II, Keynes economic theories became very influential and other economists further refined his motives for holding money. One of these economists, James Tobin, later won a Nobel Prize for his contributions.

1) Transaction Demand

◊ James Tobin and William Baumol both independently developed similar money demand model, which demonstrated that even money balances held for transactions purposes are related to the level of \( i \).

◊ In their models, money, which earns zero interest, is held only to carry out transactions.

◊ If a person’s average money balance during the course of the year is BD500 and his yearly nominal income is BD12000 then

\[
V = \frac{PY}{M} = \frac{12000}{500} = 24
\]

◊ As \( i \) increases, the amount of cash held for transactions purposes will decrease, which in turn means \( V \) will increase as \( i \) increase. The transaction component of \( M^d \) is negatively related to the level of \( i \).

◊ The basic idea in their analysis is that there is an opportunity cost of holding money, the interest that can be earned on other assets.
✧ There is also a benefit of holding money, the avoidance of transaction costs.
✧ Baumol-Tobin model revealed that the transaction demand for money, and not just the speculative demand, would be sensitive to $i$.

2) Precautionary Demand
✧ There is an opportunity cost of holding money for precautionary purposes. As $i$ increases the opportunity cost increases so the holding of money decreases.
✧ The precautionary $M^d$ is negatively related to $i$.

3) Speculative Demand
✧ One problem with Keynes' speculative demand is that his theory predicted that people would hold wealth as either money or bonds, but not both at once. That is not realistic.
✧ Tobin avoided this problem by observing that not only do people care about the expected return on asset versus another when they decide what to hold in their portfolio, but they also care about the riskiness of the returns from each asset.
✧ Tobin assumed that most people are risk averse that they would be willing to hold on asset with a lower expected return if it is less risky.
✧ So even if the expected returns on bonds exceed the expected return on money, people might still want to hold money as a store of wealth because it has less risk associated with its return than bond do
✧ People can reduce risk by diversifying their portfolio, by holding both money and bonds simultaneously as stores of wealth.
Third: Friedman’s Modern Quantity Theory of Money

- Milton Friedman (another Nobel Prize winner) developed a theory of demand for money. He stated that the $M^d$ is influenced by the same factors that influence the demand for any asset. He then applied the theory of asset demand to money.
- The theory of asset demand indicates that the demand for money should be a function of the resources available to individuals (their wealth) and the expected returns on other assets relative to the expected return on money.
- Friedman’s demand function for real money balances is
  \[
  \frac{M^d}{P} = f(Y_p, r_b - r_m, r_e - r_m, \pi^e - r_m)
  \]
  where,
  - $\frac{M^d}{P}$ is the demand for real balances, $Y_p$ is permanent income (expected average of long run income) which is Friedman’s measure of wealth, $r_m$ is the expected return on money, $r_b$ is the expected return on bonds, $r_e$ is the expected return on equity, and $\pi^e$ is the expected inflation rate.
- Money demand is positively related to permanent income.
- Since permanent income is a long-run average, it is more stable than current income, so this will not be the source of a lot of fluctuation in money demand.
- The other terms in Friedman’s money demand function are the expected returns on bonds, stocks and goods relative to the expected return on money ($r_b - r_m$, $r_e - r_m$, and $\pi^e - r_m$).
- These terms are negatively related to money demand: the higher the returns of bonds, equity and goods relative to the expected return on money, the lower the quantity of money demanded.
- For example, if the expected inflation rate is 10%, then goods prices are expected to increase at a 10% rate and their expected return is 10%. If this expectation increases, the relative expected return on money decreases and $M^d$ decreases as well.
Friedman did not assume the return on money to be zero. The return on money depends on the services provided on bank deposits (check cashing, bill paying, etc) and the interest on some checkable deposits.

Distinguishing between the Friedman and Keynesian Theories

When comparing the money demand frameworks of Friedman and Keynes, several differences arise

1. While Keynes put all financial assets in one category – bonds- because he felt that their returns generally move together, Friedman introduces several assets as alternative to money and considers multiple relative rates of return to be important

2. Friedman viewed money and goods as substitutes. People choose between them when deciding how much money to hold

3. Friedman viewed permanent income as more important than current income in determining money demand

4. Friedman believed that changes in interest rates have little effect on the expected returns on other assets relative to money. Thus, in contrast to Keynes he viewed interest rate \((i)\) has insignificant impact on \(M^d\).

5. Friedman differed from Keynes in stressing that the \(M^d\) function does not undergo substantial shifts and is therefore stable. Therefore, Friedman’s \(M^d\) function depends essentially on \(Y_p\)

6. In contrast to Keynes, Friedman suggested that random fluctuations in the \(M^d\) are small and \(M^d\) can be predicted accurately by \(M^d\) function. When this combined with his view that the \(M^d\) is insensitive to changes in \(i\), this means that \(V\) is highly predictable

\[
V = \frac{Y}{f(Y_p)}
\]

Because the relationship between \(Y\) and \(Y_p\) is usually predictable, \(V\) is also predictable.
In brief,

- **Keynesians**: generally argue that $M_d$ is relatively unstable (implying great variability in velocity) and MS effectively endogenous beyond authorities’ control. They play down the importance of Monetary Policy *per se* and advocate superiority of Fiscal Policy.

- **Monetarists**: generally argue that $M_d$ is relatively stable (implying stable if not constant velocity) and monetary authorities can control MS effectively, reinforcing belief in efficacy of Monetary policy.

However, there is a broad agreement that

1. Income (however defined) is positively related to $M_d$;
2. Interest rate is negatively related with $M_d$.

These two relations are supported by almost all empirical evidence, but considerable variation in values of regression coefficients.

**CONCLUSION**

- In conclusion, economists identify three reasons why people will demand money, or desire to hold a certain stock of money.

1. **Transactions Motive:**
   - The main reason people hold money is its function as medium of exchange. We expect to use money to buy something sometime soon. In other words, we expect to make transactions for goods or services.
   - The transactions demand for money depends on three things:
     a. **Aggregate income**: If income increases so do people’s expenditures to buy output produced in the goods markets, and clearly there will be a larger volume of transactions. Thus, people will need to hold a larger volume of money to meet these transactions and make payments. The opposite is true.
b. **Price level**: as the overall price level of goods and services changes, transactions demand will change with it. If prices rise, then people will need to hold a higher level of money balances to meet their payments transactions. If prices fall, people will need a lower volume of money balances to support a given level of transactions.

c. **Interest rate**: Holding money is just one of many ways to hold wealth. There are alternative forms to hold wealth such as savings deposits, certificate of deposits, mutual funds, stock, or even real estate. For many of these alternative assets, interest payments, or some type of positive rate of return, may be obtained. Most assets that considered money, such as currency and most checking account deposits do not pay any interest, and some such as NOW account earn low interest. Thus, holding money is costly. To hold money implies giving up the opportunity of holding other assets that pay interest. It is likely that as average interest rates rise, the opportunity cost of holding money for all money holders will also rise, and vice versa. As the cost of holding money rises, people should demand less money.

2. **Precautionary Motive**:
   
   o People hold money balances for the cases of unforeseen expenditures and in case of emergency such as unforeseen medical bill, unexpected accidents in properties. Although the precautionary motive varies between individuals, it is reasonable to expect that in the aggregate, it is related to income and to price level.
3. **Speculative Motive for Holding Money**
   - "Speculative" simply means speculating that the value of an asset will change and you can profit by it.
   - Usually we think of speculating in terms of buying an asset: if an investor expects that real estate in Bahrain is about to rise in value, he might buy some now in hope of selling after the price rises. But if he thinks that an asset's price is about to fall, he can also speculate by holding cash, so that he can buy it after the price drops.
   - In general, when interest rates are high, people speculate that they will not stay high, but will fall. If this is the case, then people will demand less money holdings and move into bonds. When (or if) interest rates do fall, their bonds will rise in value.
   - But, if interest rates are low, people expect that they will go up. So they prefer to hold on to money balances, and will move out of bonds, for fear that the value of those bonds will fall when (or if) interest rates rise in the future.