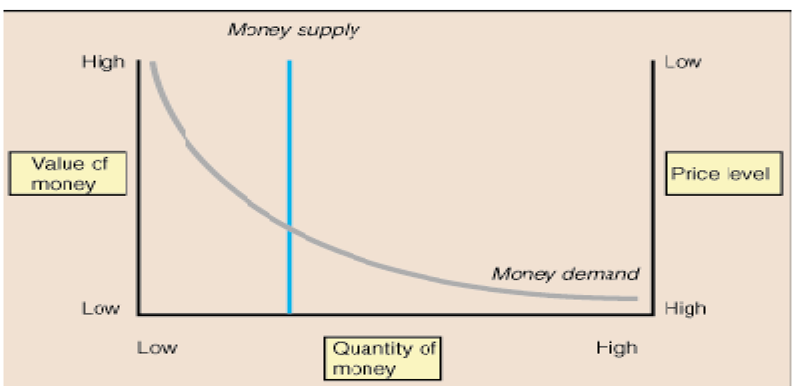
Quantity Theory of Money

The quantity theory of money is a framework to understand price changes in relation to the supply of money in an economy. The theory reflects to the idea that the quantity of money available (money supply) grows at the same rate as price levels do in the long run.

The quantity theory of money states that the general price level of goods and services is directly proportional to the amount of money in circulation, or money supply. For example, if the amount of money in an economy doubles, the theory predicts that price levels will also be double.

One implication of the theory is that the value of money is determined by the amount of money available in an economy. An increase in the money supply results in a decrease in the value of money because an increase in the money supply also causes the rate of inflation to increase. As inflation rises, purchasing power decreases. When the purchasing power of a unit of currency decreases, it requires more units of currency to buy the same quantity of goods or services. The whole are argument can be shown with the help of the following figure.



The above figure depicts the money market in a sample economy. The money supply curve is vertical because the monetary authority (Example, RBI) sets the amount of money available without consideration for the value of money. The money demand curve slopes downward because as the value of money decreases, consumers are forced to carry more money to make purchases because goods and services cost more money. Similarly, when the value of money is high, consumers demand little money because goods and services can be purchased for low prices. The intersection of the money supply curve and the money demand curve shows both the equilibrium value of money as well as the equilibrium price level.

Versions of Quantity Theory of Money

1. Quantity Theory of Money— Fisher's Version:

The most common version, sometimes called the "neo-quantity theory" or Fisherian theory given by an American Economists - Irving Fisher suggests that there is a mechanical and fixed proportional relationship between changes in the money supply and the general price level. According to Irving Fisher, like the price of a commodity, value of money is determined by the supply of money and demand for money. In his theory of demand for money, Fisher attached emphasis on the use of money as a medium of exchange. In other words, money is demanded for transaction purposes.

The Fisher equation is calculated as:

$M \times V = P \times T$ ---------------------(1)

where:

M=money supply

V=velocity of money

P=average price level

T=volume of transactions in the economy

Generally speaking, the quantity theory of money explains how increases in the quantity of money tends to create inflation, and vice versa. In the original theory, V was assumed to be constant and T is assumed to be stable with respect to M, so that a change in M directly impacts P. In other words, if the money supply increases then the average price level will tend to rise in proportion (and vice versa), with little effect on real economic activity. The same argument can be shown with the following numerical example.

Suppose M = Rs. 1,000, V = 4, P = Rs. 2 and T = 2,000.

Thus MV = PT

Rs. 1,000(4) = Rs. 2(2,000)

Rs. 4,000 = Rs. 4,000

If M increases by 50 p.c., i.e., M rises to Rs. 1,500 then P will rise by 50 p.c. from Rs. 2 to Rs. 3.

Rs. 1,500(4) = Rs. 3(2,000)

Rs. 6,000 = Rs. 6,000

or $P = \frac{MV}{T}$

$\text{Rs. } 3 = \frac{1,500(4)}{2,000}$

$M \uparrow \overline{V} \rightarrow M\overline{V} \uparrow \rightarrow P \uparrow, \overline{T}$

Fisher's cash transaction version can be extended by including bank deposits in the definition of money supply. Now money supply comprises not only legal tender money, M but also bank money, M'. This bank money has also a stable velocity of circulation, V'.

Thus the above equation 1 can be written as:

$$MV + M'V' = PT$$

$$\text{or} \quad P = \frac{MV + M'V'}{T}$$

Assuming V, V', T and the ratio of M and M' constant, an increase in M and M', say by 5 p.c., will cause P to rise also by the same percentage.

It is, however, not easier to measure the number of transactions T. Let us replace T by Y. Thus P. Y is the nominal income or output where Y is the total income. Now the quantity theory equation becomes: PY = MV. This is known as the 'income version' of quantity theory of money.

2. Quantity Theory of Money: Cambridge Version:

An alternative version, known as cash balance version, was developed by a group of Cambridge economists like Pigou, Marshall, Robertson and Keynes in the early 1900s. These economists argue that money acts both as a store of wealth and a medium of exchange. Here, by cash balance and money balance we mean the amount of money that people want to hold rather than savings.

According to Cambridge economists, people wish to hold cash to finance transactions and for security against unforeseen needs. They also suggested that an individual's demand for cash or money balances is proportional to his income. Obviously, larger the incomes of the individual, greater is the demand for cash or money balances.

Thus, the demand for cash balances is specified by:

$M_d = kPY$ -------(1)

where

Y is the physical level of aggregate or national output,

P is the average price

k is the proportion of national output or income that people want to hold.

Let us assume that the supply of money, M_s, is determined by the monetary authority, i.e.,

$M_s = M$-------(2)

Equilibrium requires that the supply of money must equal the demand for money, or

$$M_s = M_d$$
$$\text{or } M_d = kPY$$
$$\therefore M = kPY$$
$$\text{or } P = \frac{M}{kY}$$

k and Y are determined independently of the money supply. With k constant given by the transaction demand for money and Y constant because of full employment, increase or decrease in money supply leads to a proportional increase and decrease in price level. This conclusion holds for Fisherian version also. Note that Cambridge 'k' and Fisherian V are reciprocals of one another, that is, 1/k is the same as V in Fisher's equation.