Money Supply

Money supply refers to the total stock of money available to the public for the use in connection with their economic activities. In other words, the total stock of money circulating in an economy at a given point of time is the money supply.

According to the standard concept of money supply, it is composed of the following two elements:

1. Currency with the public:

In order to arrive at the total currency with the public of a country, following items are added:

a. currency notes in circulation issued by the central bank
b. the number of rupee notes and coins in circulation
c. small coins in circulation

Paper currency or coins are fiat money, which means that currency notes and metallic coins serve as money on the bases of the fiat (i.e. order) of the Government. In other words, on the authority of the Government no one can refuse to accept them in payment for the transaction made. That is why they are also called legal tender.

2. Demand deposits with the public

Demand deposits held by the public are also called bank money or deposit money. Deposits with the banks are broadly divided into two types: demand deposits and time deposits. Demand deposits in the banks are those deposits which can be withdrawn by drawing cheques on them.

Measures of Money Supply:

In India money supply is done on the basis of **Minimum Reserve System since 1956**. The RBI required holding a reserve of Gold and foreign securities and it is empowered to issue currency to any extent. Since 1957, the Minimum Reserve System changed to **Gold reserve of Rs. 115 cr. and rupee securities of 85 cr.** Hence RBI needs to keep 200 cr. as security to print any amount of currency in the economy.

Monetary Aggregates according to RBI

- **M0** (**Reserve Money**): Currency in circulation + Bankers' deposits with the RBI + 'Other' deposits with the RBI = Net RBI credit to the Government + RBI credit to the commercial sector + RBI's claims on banks + RBI's net foreign assets + Government's currency liabilities to the public – RBI's net non-monetary liabilities.
- **M1 (Narrow Money)**: Currency with the public + Deposit money of the public (Demand deposits with the banking system + 'Other' deposits with the RBI).
- **M**2: M1 + Savings deposits with Post office savings banks.
- **M3 (Broad Money)**: M1+ Time deposits with the banking system = Net bank credit to the Government + Bank credit to the commercial sector + Net foreign exchange assets of the banking sector + Government's currency liabilities to the public – Net non-monetary liabilities of the banking sector (Other than Time Deposits).
- **M4 (Broad Money)**: M3 + All deposits with post office savings banks (excluding National Savings Certificates).
  Money Supply M3 in India increased to 112200.55 INR Billion in October from 110835.65 INR Billion in September of 2015. Money Supply M3 in India averaged 18279.23 INR Billion from 1972 until 2015, reaching an all time high of 112200.55 INR Billion in October of 2015 and a record low of 123.52 INR Billion in January of 1972. Money Supply M3 in India is reported by the Reserve Bank of India.

Determinants of Money Supply:

In order to explain the determinants of money supply in an economy we shall use M, which is the most fundamental concept of money supply. This concept of money supply is composed of currency held by the public (C_p) and demand deposits with the banks (D). Thus

$$M = C_p + D \ldots(1)$$

Where, M = Total money supply with the public

C_p = Currency with the public
D = Demand deposits held by the public

The two important determinants of money supply as described in equation (1) are (a) the amounts of high-powered money which is also called Reserve Money by the Reserve Bank of India and (b) the size of money multiplier.

We explain below the role of these two factors in the determination of money supply in the economy:

1. High-Powered Money (H):

The high-powered money which we denote by H consists of the currency (notes and coins) issued by the Government and the Reserve Bank of India. A part of the

currency issued is held by the public, which we designate as C_p and a part is held by the banks as reserves which we designate as R.
A part of these currency reserves of the banks is held by them in their own cash vaults and a part is deposited in the Reserve Bank of India in the Reserve Accounts which banks hold with RBI. Accordingly, the high-powered money can be obtained as sum of currency held by the public and the part held by the banks as reserves. Thus

$$H = C_p + R \ldots(2)$$

Where, H = the amount of high-powered money

C_p = Currency held by the public
R = Cash Reserves of currency with the banks.

It is worth noting that Reserve Bank of India and Government are producers of the high-powered money and the commercial banks do not have any role in producing this high-powered money (H).

But for producing demand deposits or credit, banks have to keep with themselves cash reserves of currency which have been denoted by R in equation (2) above. Since these cash reserves with the banks serve as a basis for the multiple creations of demand deposits which constitute an important part of total money supply in the economy, it provides high-powered-ness to the currency issued by Reserve Bank and Government.

A glance at equations (1) and (2) above will reveal that the difference in the two equations, one describing the total money supply and the other high-powered money, is that whereas in the former, demand deposits (D) are added to the currency held by the public, in the latter it is cash reserves (R) of the banks that are added to the currency held by the public.

In fact, it is against these cash reserves (R) that banks are able to create a multiple expansion of credit or demand deposits due to which there is large expansion in money supply in the economy. The theory of determination of money supply is based on the supply of and demand for high- powered money. How the high-

powered money (H) is related to the total money supply is graphically depicted in Fig. below.

The base of this figure shows the supply of high-powered money (H), while the top of the figure shows the total stock of money supply. It will be seen that the total stock of money supply (that is, the top) is determined by a multiple of the high-powered money (H). It will be further seen that whereas currency held by the public (C_p) uses the same amount of high-powered money, that is, there is one-to-one relationship between currency held by the public and the money supply.
In sharp contrast to this, bank deposits (D) are a multiple of the cash reserves (R) of the banks which are part of the supply of high-powered money. That is, one rupee of high- powered money kept as bank reserves gives rise to much more amount of demand deposits. Thus, the relationship between money supply and the high-powered money is determined by the money multiplier.

The money multiplier which we denote by m is the ratio of total money supply (M) to the stock of high-powered money, that is, m = M/H. The size of money multiplier depends on the preference of the public to hold currency relative to deposits, (that is, ratio of currency to deposits which we denote by K) and banks' desired cash reserves ratio to deposits which we call r. We explain below the precise multiplier relationship between high-powered money and the total stock of money supply.

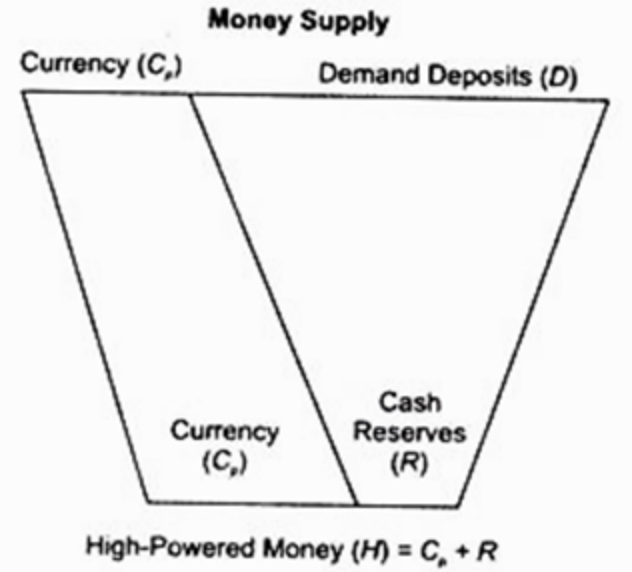


Fig. 16.1. *The High-Powered Money and the Stock of Total Money Supply*

It follows from above that if there is increase in currency held by the public which is a part of the high-powered money with demand deposits remaining unchanged, there will be a direct increase in the money supply in the economy because this constitutes a part of the money supply.

If instead currency reserves held by the banks increase, this will not change the money supply immediately but will set in motion a process of multiple creation of demand deposits of the public in the banks. Although banks use these currency reserves held by the public which constitutes a part of the high- powered money to give more loans to the businessmen and thus create demand deposits, they do not affect either the amount of currency or the composition of high-powered money. The amount of high-powered money is fixed by RBI by its past actions. Thus, changes in high-powered money are the result of decisions of Reserve Bank of India or the Government which owns and controls it.

2. Money Multiplier:

Money multiplier is the degree to which money supply is expanded as a result of the increase in high-powered money. Thus

$$m = M/H$$

Rearranging we have, $M = H.m$ …(3)

Thus, money supply is determined by the size of money multiplier (m) and the amount of high- powered money (H). If we know the value of money multiplier, we can predict how much money supply will change when there is a change in the amount of high-powered money.

Change in the high-powered money is decided and controlled by Reserve Bank of India, the money multiplier determines the extent to which decision by RBI regarding the change in high-powered money will bring about change in the total money supply in the economy.

Size of Money Multiplier:

Now, an important question is what determines the size of money multiplier. It is the cash or currency reserve ratio r of the banks and currency-deposit ratio of the public (which we denote by k) which together determines size of money multiplier. We derive below the expression for the size of multiplier.

From equation (1) above, we know that total money supply (M) consists of currency with the public (C_p) and demand deposits with the banks. Thus

$$M = C_p + D \quad \text{...(1)}$$

The public hold the amount of currency in a certain ratio of demand deposits with the banks. Let this currency-deposit ratio be devoted by k,

$$C_p = kD$$

Substituting kD for C_p in equation (1) we have

$$M = kD + D = (k + 1)D \quad \text{...(2)}$$

Now take equation which defines high-powered money (H) as

$$H = C_p + R \quad \text{...(3)}$$

where R represents cash or currency reserves which banks keep as a certain ratio of their deposits and is called cash-reserve ratio and is denoted by r. Thus

$$R = rD$$

Now substituting rD for R and kD for C_p in equation (3) we have

$$H = kD + rD$$

$$H = (k + r)\,D \quad \text{...(4)}$$

Now, money multiplier is ratio of total money supply to the high-powered money, therefore we divide equation (1) by equation (4), to get the value of multiplier, which we denote by m. Thus

$$m = \frac{M}{H} = \frac{(k+1)D}{(k+r)D} = \frac{k+1}{k+r}$$

or, Money multiplier $= \frac{M}{H} = \frac{1+k}{r+k}$

or, $M = H = \frac{1+k}{r+k}$ ...(5)

where r = Cash-reserve ratio of the banks

k = Currency-deposit ratio of the public.

where H is the high-powered money and $\frac{1+k}{r+k}$ is money multiplier

From above it follows that money supply in the economy is determined by the following:

1. H, that is, the amount of high-powered money, which is also called reserve money

2. r, that is, cash reserve ratio of banks (i. e., ratio of currency reserves to deposits of the banks)

This cash reserve ratio of banks determines the magnitude of deposit multiplier.

3. k, that is, currency-deposit ratio of the public.

From the equation (4) expressing the determinants of money supply, it follows that money supply will increase:

1. When the supply of high-powered money (i.e., reserve money) H increases;

2. When the currency-deposit ratio (k)' of the public decreases; and

3. When the cash or currency reserves-deposit ratio of the banks (r) falls.

Velocity of Circulation of Money

The velocity of money is a measurement of the rate at which money is exchanged in an economy. It is the number of times that money moves from one entity to another. It also refers to how much a unit of currency is used in a given period of time. Simply put, it's the rate at which consumers and businesses in an economy collectively spend money.

The velocity of money is usually measured as a ratio of gross domestic product (GDP) to a country's M1 or M2 money supply.

The velocity of money formula can be expressed as follows:

$$\mathbf{V = PQ / M}$$

Where,

V = Velocity of Money

PQ = Represents the GDP (Nominal Gross Domestic Product)

M= Money Supply

The velocity of money is important for measuring the rate at which money in circulation is being used for purchasing goods and services. It is used to help economists and investors gauge the health and vitality of an economy. High money velocity is usually associated with a healthy, expanding economy. Low money velocity is usually associated with recessions and contractions.

Following are the factors influencing the velocity of circulation of money:

1. Money Supply:

Velocity of money depends upon the supply of money in the economy. If the supply of money in the economy is more than its requirements, then the

velocity of money will increase and if the money supply is less than its requirement, the velocity of money will fall.

2. Value of Money:
The velocity of money is high during inflation when value of money decreases. During deflation, when the value of money rises, the velocity of money is low because people like to keep money with them.

3. Credit Facilities:
The velocity of money increases with the expansion of lending and borrowing facilities in the country. Therefore, the growth of credit institutions has a favorable effect on the velocity of money.

4. Volume of Trade:
As the volume of trade increases, the number of transactions and the velocity of money increase and as the volume of trade decreases, the velocity of money decreases.

5. Frequency of Transactions:
With the increase in the frequency of transactions, the number of payments and receipts increases and, as a result, velocity of money increases. Similarly, with the decrease in the frequency of transactions, the velocity of money decreases.

6. Business Conditions:
The velocity of money increases during the period of hectic business conditions and decreases during slump conditions.

7. Business Integration:
If business is vertically integrated, the velocity of money will be more and if business is vertically disintegrated, the velocity of money will be less.

8. Payment System:
The velocity of money is also determined by the frequency with which the labour force is paid (i.e., weekly or monthly) and the speed with which the bills for goods are settled.

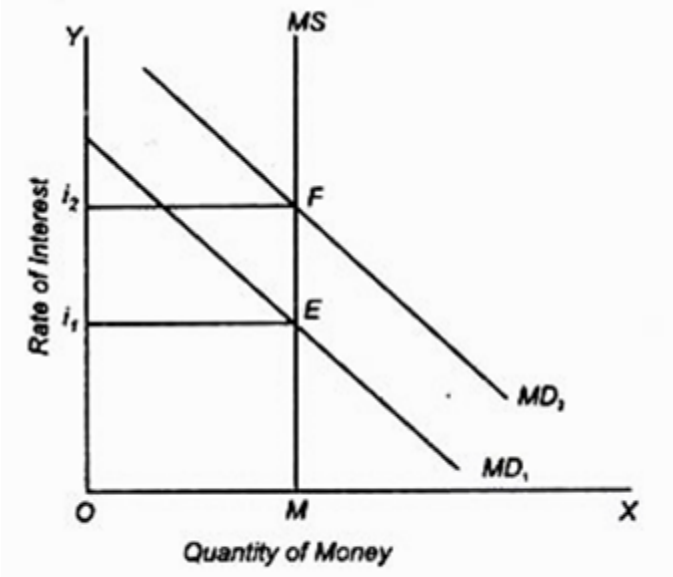
9. Regularity of Income:

If people receive income at regular intervals, they will spend their income more freely and the velocity of money will increase. But, if people receive their income at irregular intervals, they will prefer to hold more cash balances to meet the uncertain conditions in future and the velocity of money will fall.

10. Propensity to Consume:
Greater the tendency of the people to consume, other things remaining the same, higher will be the velocity of money. On the contrary, lower the propensity to consume, lesser will be the velocity of money. Saving, or not consuming, has an adverse effect on the velocity of money.

Money Market Equilibrium

Money market is in equilibrium when at a rate of interest demand for and supply of money are equal.



In the diagram, assuming that the quantity of money remains unchanged at M, the shift in the money demand curve from MD_1 to MD_2, the rate of interest rises from

i_1 to i_2 because at i_2, the new demand for money is in equilibrium with the supply of money OM.

It is worth noting that when the money demand curve shifts from MD_1 to MD_2, the amount of money held does not increase; it remains OM as before. Only the rate of interest rises from i_1 to $i_2$to equilibrate the new liquidity preference or money demand with the available quantity of money OM.