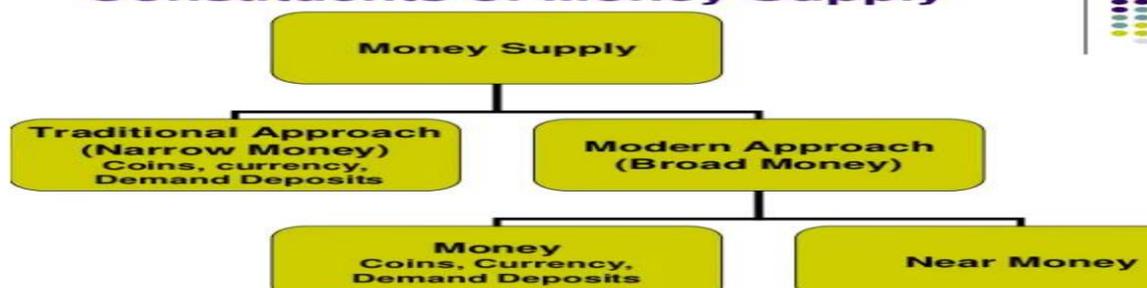# Determination of Money Supply and Demand

Determination of Money Supply

Money Supply

- **Definition of Money Supply:**
  It refers to the amount of money which is in circulation in an economy at any given time.

- Money supply plays a crucial role in the determination of price level and interest rates.

- Growth of money supply helps in acceleration of Economic development and price stability.

- There must be a controlled expansion of money supply i.e
  No inflation or Deflation in the Economy.

Constituents of Money Supply

- **Money Supply**
  - **Traditional Approach (Narrow Money)** Coins, currency, Demand Deposits
  - **Modern Approach (Broad Money)**
    - **Money** Coins, Currency, Demand Deposits
    - **Near Money**

Concepts related to Money Supply

- It is the total stock of money held by the people (household, firms and institutions)

- It the total sum of money available to the public in the economy at a *point of time*

- It includes money held by the public and in circulation but it does not include money held by Central Bank or Commercial Bank as they are money creating agencies.

- *The separation of producers of money from the users of money is important from the viewpoint of both Monetary theory and policy*

- **It composed of two elements**

- **Currency with the Public (High Powered Money)**
  - Currency notes in circulation issued by Reserve Bank of India
  - The number of rupee notes and coins in circulation
  - Small coins in circulation

- **Demand Deposits with Public (Secondary Money)**
  Deposit of the public with the banks – Bank Money
  - Demand Deposits
  - Time Deposits

Traditional Approach (M1)

- It includes those items which can be spent immediately or readily accepted as a medium of Exchange.

- Money that be spent directly, such as cash and current accounts in banks.

  M1= C +D + OD
  C= Currency with the Public
  D = Demand Deposits with the public in the commercial and
      co-operative banks
  OD = Other deposits held by the public with RBI

- Time deposits are excluded from it as its not possible to draw a cheque against them.

Modern Approach

- Coins
- Currency with the Public (High Powered Money)
- Demand Deposits with Public (Secondary Money)
- Time Deposits with banks
- Financial assets – deposits non-banking financial intermediaries
- Bills – Treasury and Exchange bills
- Bonds and equities

Modern view extends the phenomenon of money to the whole spectrum of liquidity in the assets portfolio of individuals in modern economy.

Measurement

- Money Supply is classified into various measures

- On the basis of its functions is that effective predictions can be made about the likely affects on the economy of changes in different components of Money Supply.

- RBI has adopted 4 concepts of Money Supply

Measurement

M0 :

Currency in circulation and in bank vaults. Its called as the monetary base- the base from which other forms of money are created.

A measure of the money supply which combines any liquid or cash assets held within a central bank and the amount of physical currency circulating in the economy

M1 / Narrow Money

M1 = C + D + OD

C = Currency with the Public

D = Demand Deposits with the public in the commercial and co-operative banks

OD = Other deposits held by the public with RBI

Measurement

Money Supply M2

M2 = M1 + Saving deposit with the post office saving banks

The small saving deposits are not as liquid as demand deposits but are more liquid than the time deposits.

M3 / Broad Money

M3 = M1 + Time Deposits with the banks

Time deposits are nit as liquid however loans from the banks can be obtained against them and they can also be withdrawn any time by forgoing interest earned on them.
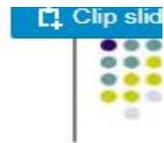
Measurement

Money Supply M4

M4 = M3 + Total post office deposits (TPOD)

TPOD = Includes saving and time deposits of the public with the post offices

Monetary Aggregates: New Series

- Under the Working group on Money supply(WGMS), the RBI has revised monetary data since April 1992, and since 1999, has started publishing the new monetary aggregates, namely M0(monetary base), NM1(narrow money), NM2 (intermediate monetary aggregate) and NM3 (broad money) based on the residency concept.

- The new series clearly distinguishes between monetary aggregates and liquidity aggregates.

Monetary Aggregates: New Series

- **NM1**
  = Currency with   + Demand liabilities portion of savings deposits with the banking system

- **NM2**
  = NM1+ time liabilities portion of savings deposits with the banking system+ certificates of deposits issued by banks + term deposits of residents with a contractual; maturity upto and including one year with the banking system (excluding CDS)

- **NM3**
  = NM2+ Long-term deposits of residents + Call/Term funding from financial institutions =

  Nm2 + term deposits of residents with a contractual maturity of over one year with the banking system+ Call/Term borrowings from non-depository financial corporations by the banking system.

Monetary Aggregates: New Series

- NM1includes only non-interest bearing assets monetary liabilities of the banking sector,

- NM3, on the other hand, is an all encompassing measure that includes long-term deposits.

- NM2 is an intermediate monetary aggregate that stands in between narrow money NM1 and Broad money NM3.

- M4 is *abolished* in the new series

Liquidity Indicators

- Along with the above monetary aggregates for the proper assessment of the liquidity the RBI also complies and evaluates three different liquidity indicators L1, L2 andL3.

- L1= NM3+All deposits with the post office savings banks (excluding National Savings Certificate)

- L2= L1+ Term deposits with term lending institutions and refinancing institutions (FIs) + Term borrowing by FIs +Certificate of deposits issued by FIs

- L3= L2+ Public deposits of non-banking financial companies.

Determinants of Money Supply

- $M = Cp + D$

- The two important determinant of Money supply are

  - Reserve Money or Amount of High Powered Money

  - Size of Money Multiplier

High Powered Money - H

- It denotes currency and coins issued by the Government and **Reserve bank of India.**

  $H = Cp + R$

  Cp = Currency held by the public
  R= Cash reserve s of currency with the banks

- RBI and Government are producers of high- powered money and Banks are producers of demand deposits.
- For producing demand deposits or credit, banks have to keep with themselves *cash reserves of currency.*
- *As cash reserves leads to multiple creation of DD and larger expansion of money supply.*

Money Multiplier -m

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

    - **M= H.m**

    - **Money supply will increase:**

    1. When the supply of high – pwered money H increases
    2. When currency- deposit ratio of public decreses
    3. CRR ratio falls

THE MONEY MULTIPLIER APPROACH TO SUPPLY OF MONEY

The money supply is defined as

$$M = m \times MB$$

Where M is the money supply, m is money multiplier and MB is the monetary base or high powered money. From the above equation we can derive the money multiplier (m) as

$$\text{Money Multiplier (m)} = \frac{\text{Money supply}}{\text{Monetary base}} \dots$$

Money multiplier m is defined as a ratio that relates the changes in the money supply to a given change in the monetary base. It denotes by how much the money supply will change for a given change in high-powered money. The multiplier indicates what multiple of the monetary base is transformed into money supply.

The money multiplier approach to money supply propounded by Milton Friedman and Anna Schwartz, (1963) considers three factors as immediate determinants of money supply, namely:

(a)   the stock of high-powered money (H)

(b)   the ratio of reserves to deposites, $e = \{ER/D\}$ and

(c)   the ratio of currency to depoists, $c = \{C/D\}$

The behaviour of the central bank, behaviour of the commercial banks and the behaviour of the general public respectively contributes to the determination of aggregate money supply in an economy.

a)   Behaviour of the Central Bank

The behaviour of the central bank which controls the issue of currency is reflected in the supply of the nominal high-powered money. Money stock is determined by the money multiplier and the monetary base is controlled by the monetary authority. If the behaviour of the public and the commercial banks remains unchanged over time, the total supply of nominal money in the economy will vary directly with the supply of the nominal high-powered money issued by the central bank.

b)   The Behaviour of Commercial Banks

By creating credit, the commercial banks determine the total amount of nominal demand deposits. The behaviour of the commercial banks in the economy is reflected in the ratio of their cash reserves to deposits known as the 'reserve ratio'. If the required reserve ratio on demand deposits increases while all the other variables remain the same, more reserves would be needed. This implies that banks must contract their loans, causing a decline in deposits and hence in the money supply. If the required reserve ratio falls, there will be greater expansions of

c)   The Behaviour of the Public

The behaviour of the public in respect of the amount of nominal currency in hand (how much money they wish to hold as cash) is in a position to influence the amount of the nominal demand deposits of the commercial banks. The behaviour of the public influences bank credit through the decision on ratio of currency to the money supply designated as the 'currency ratio'. The currency-deposit ratio (c) represents the degree of adoption of banking habits by the people. The time deposit-demand ratio means that greater availability of free reserves and consequent enlargement of volume of multiple deposit expansion and monetary expansion.

Determinants of demand for money

Some of the key determinants of demand for money specified by Friedman are:

1. Total wealth: For the ultimate wealth owner, total wealth is the analogue of the budget constraint in the consumer demand theory. It is the total that must be divided among various forms of assets.Due to difficulty of getting estimates of total wealth, Friedman substituted permanent income (Y) for wealth in his demand- for-money function. Permanent income is the expected income flow from total wealth

2. Human and Non-Human Wealth: Total wealth includes both human and non-human wealth, but there exist legal and institutional constraints in converting human into non-human wealth. Therefore, Friedman introduces the ratio of non-human to human wealth (w) as a variable in the demand function.

3. Money: The nominal rate of return on money may be zero as on currency, or positive as on saving deposits or even negative if current account deposits are subject to net service charges. But money is demanded for the services it yields and these services arise because of money's command over goods and services.

4. Bond: Bond is considered to be a perpetual security, or consol, which yields an income stream whose value, is fixed in nominal terms. Thus, the yield on bond (r) consists of the sum of its coupon plus any anticipated capital gain due to an expected fall in the market interest rate or less any anticipated capital loss due to an expected rise in the market rate.

5. Equity: The equity is identical to the bond except that it contains a cost- of-living escalator so that its income stream always maintains constant purchasing power. The yield on equity (r) is composed of three elements: (a) its coupon yield, (b) any expected capital gains or losses due to changes in interest rates, and (c) any expected changes in the general price level

6. Commodities: Physical goods held by wealth-owners yield income in kind (i.e., utility) which cannot be measured by an explicit interest rate. However, their real return is affected by the changes in the price level. Friedman uses the nominal yield on commodities (r) to consist of their expected rate of price change per unit of time.

7. Human Capital: In the absence of slavery, no market price for human capital exists and thus a rate of return on this form of wealth cannot be computed directly.