CHAPTER

8

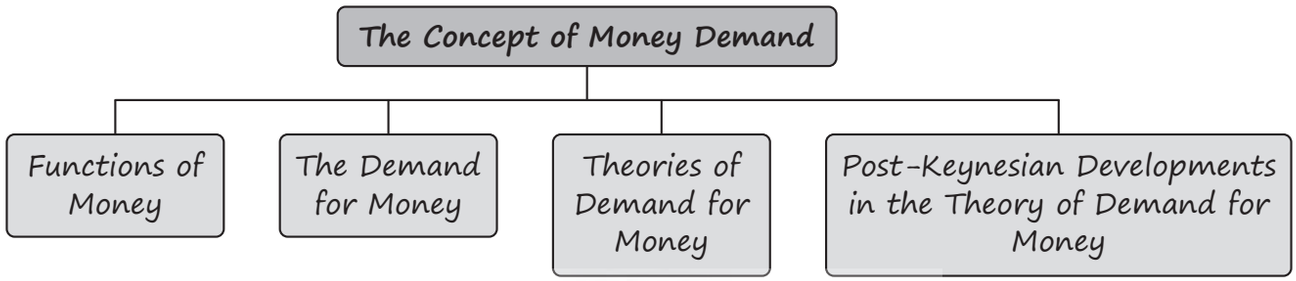
Money Market

- **Unit 1:** Concept of Money Demand
- **Unit 2:** Important theories of Demand for Money
- **Unit 3:** Monetary Policy

UNIT

1

Concept of Money Demand



MONEY- MEANING AND BASICS

Money refers to assets which are commonly used and accepted

1. As a means of payment or
2. As a medium of exchange or
3. Medium of transferring purchasing power.
   (a) Anything that would act as a medium of exchange is not necessarily money. For example, a bill of exchange may also be a medium of exchange, but it is not money since it is not generally accepted as a means of payment. Money is a totally liquid asset as it can be used directly, instantly, conveniently and without any costs or restrictions to make payments.
   (b) In modern days, money is not necessarily a physical item; it may also constitute electronic records.

FIAT MONEY

Fiat money is a government-issued currency that is not backed by a physical commodity, such as gold or silver, but rather by the government that issued it.

CHARACTERISTICS OF MONEY

Money, though not having any inherent power to directly satisfy human wants, by acting as a medium of exchange, it commands purchasing power and its possession enables us to purchase goods and services to satisfy our wants. Following are characteristics of Money

1. Generally Acceptable: Anything which is used as money must be easily accepted by all.
2. Durable or Long-lasting: Money don't get spoilt or destroyed easily.
3. Cognizability: money is easily recognizable and distinguishable.

4. Difficult to Counterfeit: Not easily reproducible by people
5. Relatively Scarce but has elasticity of supply
6. Portable or easily transported: it is easy to carry from one place to another.
7. Possessing Uniformity: Money of a particular denomination must be identical in all features; and
8. Divisibility: Divisible into smaller parts in usable quantities or fractions without losing value.

TRY YOUR UNDERSTANDING 8.1.1

1. Choose the incorrect statement
   (a) Anything that would act as a medium of exchange is money
   (b) Money has generalized purchasing power and is generally acceptable in settlement of all transactions
   (c) Money is a totally liquid asset and provides us with means to access goods and services
   (d) Currency which represents money does not necessarily have intrinsic value.
2. Money performs all of the three functions mentioned below, namely
   (a) medium of exchange, price control, store of value
   (b) unit of account, store of value, provide yields
   (c) medium of exchange, unit of account, store of value
   (d) medium of exchange, unit of account, income distribution
3. Money refers to assets which are commonly used and accepted
   (a) As a means of payment or
   (b) As a medium of exchange or
   (c) Medium of transferring purchasing power.
   (d) All of the above

Answer Key

1. (a) 2. (c) 3. (d)

DEMAND FOR MONEY

1. Demand for money is people's desire to hold money and this demand is derived demand.
2. The Demand for Money is because of its liquidity and ability to store value.
3. Demand for money reflects decision about how much of individual's wealth is held as money.
4. Although money gives little or no return (unlike other assets), economic agents hold money. This is because it is the most liquid and convenient way to accomplish the daily tasks
5. Demand for money plays significant role in determination of economy's interest, prices and income.

6. Variables or factors which influence demand for money are:
   (a) Income and Expenditure – Higher the income and expenditure, higher will be the demand of the money. This is because with the higher income the tendency to expend will also rise and thus demand will also rise i.e. there is direct relation of income and demand for money.
   (b) General price Index - If the general price index is high, high should be the holding of money.
   (c) Interest (Opportunity cost) – Opportunity cost is the interest rate a person could earn on other assets. Thus, higher the rate more will be temptation to invest in other assets i.e. there is inverse relationship between interest rate and demand for money.
   (d) Degree of Financial Innovation – Financial innovation like internet banking, ATM, UBI based payments etc. reduces the need of holding the money. Google pay and Paytm

THEORIES OF DEMAND FOR MONEY

1. Classical Approach or Fisher's Approach - Quantity theory of Money (QTM)
2. Neo-classical Approach or Cambridge Approach - Cash Balance Approach
3. Liquidity Preference Theory - Keynesian Theory
4. Post Keynesian Theories –
   (a) Inventory Approach- Baumol
   (b) Friedman Theory, and
   (c) Demand for Money as Behavior towards Risk-Tobin

CLASSICAL APPROACH - QUANTITY THEORY OF MONEY [QTM]

1. The quantity theory of money was propounded by Irving Fisher of Yale University in his book "The Purchasing Power of Money" published in 1911.
2. This approach suggests that the money is demanded only for Transaction purpose.
3. It shows a strong relationship between money and price level. The theory asserts that quantity of money is the main determinant of price level.
4. As per Fisher's approach-

   Supply of Money = Demand of Money

   $MV = PT$

   Where,

   M = Total Amount of Money in circulation

   V = Transaction Velocity of Circulation- means average number of times a unit of money is spent in purchasing goods and services.

   Note: Velocity of money remains Constant

P = Average Price Level

T= Total Number of Transactions

5. Fisher later extended this equation. The expanded equation can be written as

   MV + M'V'= PT

   Where,

   M' = Total quantity of credit money

   V' = Velocity of circulation of credit money

6. Total volume of transaction (T) is multiplied by the price level (P) denotes demand for money.
7. The demand of money (PT) is equal to the supply of money MV + M'V'
8. Fisher did not mention anything about money demand. However the same is embedded in his theory as dependent variable on total value of transactions.
9. There is aggregate demand of money for transaction purpose.
10. More the number of transactions, greater will be demand for money.

CASH BALANCE APPROACH/NEO CLASSIC APPROACH/ CAMBRIDGE APPROACH

1. In the early 1900s, Cambridge Economists Alfred Marshall, A.C. Pigou and others put forward neo- classical theory or cash balance approach.
2. As per the Cambridge version the demand of the money is because of the following two reasons-
   (a) Transaction Motive: Money split-up sale and purchase to two different points of time rather than being simultaneous. i.e. avoiding double coincidence of wants.
   (b) Precautionary need: Acting as a hedge against uncertainty.
3. As per this theory, demand for money depends partly on income and partly on other factors such as interest rates, wealth etc.
4. Higher the income, the greater the quantity of purchases and as a result greater will be the need for money as temporary abode of value to overcome Transaction cost.
5. Cambridge equation is stated as

   Where,

   Md = Demand for money

   Md = k PY

   K = Cambridge k (proportion of nominal income that people wish to hold as cash balances)

   P = Average price level of goods and services

   Y = Real national income (Output) [Constant as Economy is operating @ full employment level]

   PY = Nominal Income

   Higher the income, higher will be the quantity purchased and thus greater money amount of money will be needed.

TRY YOUR UNDERSTANDING 8.1.2

1. Demand for money is
   (a) Derived demand
   (b) Direct demand
   (c) Real income demand
   (d) Inverse demand
2. Higher the ..... higher would be ..... of holding cash and lower will be the .....
   (a) demand for money, opportunity cost, interest rate
   (b) price level, opportunity cost, interest rate
   (c) real income, opportunity cost, demand for money
   (d) interest rate, opportunity cost, demand for money

Answer Key
1. (a) 2. (d)

LIQUIDITY THEORY OF DEMAND/KEYNESIAN THEORY OF DEMAND FOR MONEY

"Liquidity preference" denotes people's desire to hold money rather than securities or long-term interest- bearing investments"

According to Keynes, people hold money (M) in cash for three motives:

1. Transactions motive,
2. Precautionary motive, and
3. Speculative motive.

Total demand for money = Transaction Demand + Precautionary Demand + Speculative Demand

1. Transaction Motive
   (a) It represents need for cash for carrying pout current transaction for personal and business exchange.
   (b) This need arises due to timing gap between Receipt of Income and Planned Expenditures.
   (c) This need is further classified into-
      (i) Income motive (for individuals & households), and
      (ii) Trade Motive (for Business Firms).
   (d) Transaction Demand is directly related to the level of Income and unaffected by interest rates.
      Transactions Demand (Lr) = KY

Where,

Y= Earnings

K= Ratio of income which is kept for transaction purposes

(e) Keynes considered that aggregate demand for transaction purpose is a function of national income

2. Precautionary Motive

(a) Individuals & businesses keep a portion of their income to finance unforeseen, unpredictable and unanticipated Expenditures.

(b) Precautionary demand depends on the size of income, prevailing economic & political conditions and personal traits of the individual such as Optimism / pessimism, farsightedness etc.

(c) Precautionary Motive Cash Balances are considered Income- Elastic and by itself not very sensitive to Rate of Interest.

3. Speculative Motive

(a) This need reflects people's desire to hold cash, in order to be equipped to exploit any attractive investment opportunity requiring cash expenditure. i.e. to take advantage of favorable business situation

(b) The theory explains the portion of cash to be kept in asset portfolio depending upon the interest rate prevailing.

(c) In Keynes theory, rate of interest refers to the returns on bond.

(d) Higher the interest rate, lower the speculative demand for money, and vice-versa.

(e) According to Keynes, people demand to hold money balances to take advantage of the future changes in the rate of interest, which is the same as future changes in bond prices.

(f) Keynes assumed that the expected return on money is zero, while the expected returns on bonds are of two types, namely:

(i) The interest payment

(ii) Capital gain.

(g) The market value of bonds and the market rate of interest are inversely related. A rise in the market rate of interest leads to a decrease in the market value of the bond, and vice versa.

(h) Investors have a relatively fixed conception of the "normal" or "critical" interest rate RC and compare the current rate of interest RN with such "normal" or "critical" rate of interest.

If current Rate (Rn) > Critical Rate (Rc)

Investors expect a fall in the Interest Rate (rise in Bond Prices), and now they will convert their cash into Bonds since-

1. They can earn high rate of return on Bonds.

2. They expect Capital Gains resulting from a rise in Prices.

If Current rate (Rn) < Critical Rate (Rc)

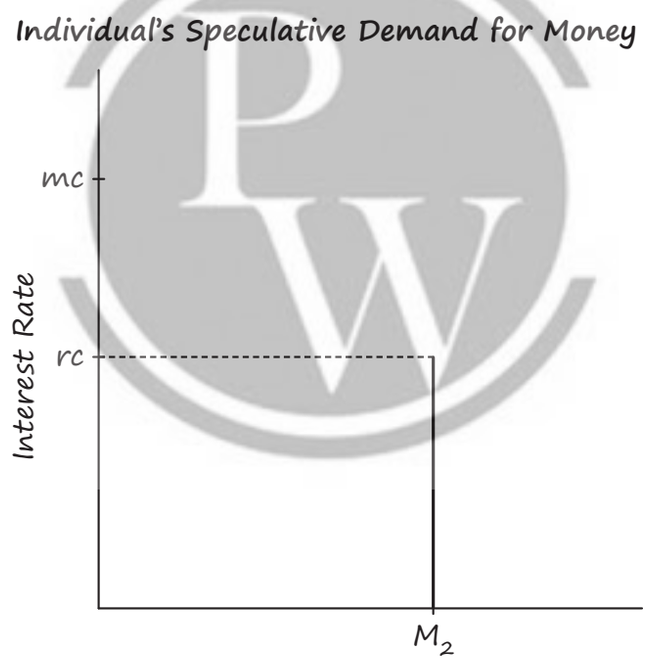
Investors expect a rise in Interest Rate (fall in Bond Prices), and hence they hold their wealth in Liquid Cash because–

1. Loss, i.e Interest foregone is small.
2. Anticipated capital losses (fall in prices) is avoided.
3. Return on Money will be high than that on Bonds.
4. If interest rate does increase in the future, the bond price will fall, and idle cash balances can be used to buy bonds at a lower price and thereby, investors make capital gain.

Asset portfolio would consist wholly of Money / Cash.

If current & Critical Interest Rate is equal, a wealth holder is indifferent to either holding Cash or Bonds.

SPECULATIVE DEMAND FOR MONEY BY INDIVIDUAL

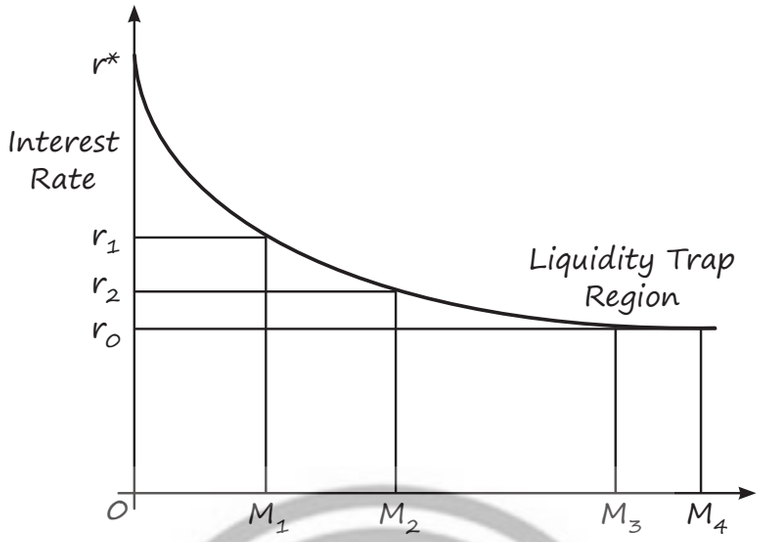


Speculative Demand for Money

1. In Diag, discontinuous portfolio decision of individual is depicted.
2. Rn is current rate while Rc is the critical rate.
3. When Rn>Rc individual hold his entire wealth in the form of bonds
4. If Rn falls below Rc (Rn<Rc), individual will hold his entire wealth in the form of speculative cash

AGGREGATE SPECULATIVE DEMAND FOR MONEY

Aggregate Speculative Demand for Money



1. When we move from individual speculative demand to aggregate speculative demand, the discontinuity in the individual's demand curve disappears.
2. Hence, we get continuous downward sloping demand function. It shows the inverse relationship between the current rate of interest and speculative demand for money.

Rise in income will lead to rise in transaction and precautionary demand whereas; rise in interest rate will lead to fall in speculative demand.

LIQUIDITY TRAP

1. If Interest Rates reach a high level, the Opportunity Cost of holding money (i.e. Interest Foregone) is high and therefore, people will hold no money in speculative balances.
2. When Interest Rates fall to very low levels, the expectation is that since the Interest Rate is very low it cannot go further lower and that in all possibility it will move upwards.
3. From such low levels, when the Interest Rates rise, the Bond Prices will fall (since Interest Rates and Bond Prices are inversely related). To hold Bonds at this low Interest Rate leads to almost certain risk of a capital loss (as the Interest Rate rises and Bond Prices fall). Therefore, the desire to hold Bonds is very low and approaches zero, and the demand to hold money in liquid form as alternative to Bond-holding approaches infinity.
4. In other words, Investors would maintain Cash Savings rather than hold Bonds.
5. The Speculative Demand becomes perfectly elastic with respect to Interest Rate and the Speculative Money Demand Curve becomes parallel to the X-axis. This situation is called a "Liquidity Trap".

6. In such situation, Monetary Policy to stimulate the economy will also be ineffective. This is because, the Opportunity Cost of holding money is zero (low interest rates), even if the Monetary Authority increases money supply to stimulate the economy, people would prefer to hoard money. Consequently, excess funds may not be converted into new investment.

POST-KEYNESIAN DEVELOPMENTS IN THE THEORY OF DEMAND FOR MONEY

Post Keynesian theories mainly highlight the store of value/asset function of money. These Theories are as follows:

1. Inventory Approach to transaction balances
   (a) Baumol and Tobin developed a deterministic theory of transaction demand for money, known as Inventory Theoretic Approach.
   (b) In this approach "real cash balance" was essentially viewed as an inventory held for transaction purposes.
   (c) Inventory models assume that there are two media for storing value-
      (i) Money
      (ii) interest-bearing alternative financial asset.
   (d) As per Baumol, receipt of income, say Y takes place once per unit of time but expenditure is spread at a constant rate over the entire period of time. Excess cash over and above what is required for transactions during the period under consideration will be invested in bonds or put in an interest-bearing account. Money holdings on an average will be lower if people hold bonds or other interest yielding assets.
   (e) The higher the income, the higher is the average level or inventory of money holdings i.e. there us direct relation between income level and average level of money holdings.
      Baumol has proved that the average amount of cash withdrawal which minimises cost is given by -
      $C = \sqrt{2bY/r}$
      This means that the average amount of cash withdrawal which minimises cost is the square root of the two times broker's fee multiplied by the size of an individual's income and divided by the interest rate. This is also called Square Root Rule.
   (f) Holding cash involves opportunity cost and thus they hold an optimum combination of Bonds and cash balance to minimize the opportunity cost.
   (g) Average Transaction Balance (Money) holding is a function of the number of times the transfer between Money & Bonds takes place (i.e Transfers). Higher the number of transfers, lesser will be the Average Transaction Balance Holdings.
   (h) Individual or business firms try to hold optimum cash balance so that balance between opportunity cost and transaction cost is met.
   (i) As per Baumol model, optimum cash balance is given by
      $(2AT/i)1/2$

Where,

A = annual cash requirement

T = transaction cost/transaction I = interest/annum

2. FRIEDMAN'S RESTATEMENT OF THE QUANTITY THEORY

(a) Milton Friedman (1956) treats the demand for money as for demand for capital assets.

(b) According to this theory, demand for money is affected by:

(i) permanent income (present expected value of all future income)

(ii) relative return on assets

(c) Friedman stated that permanent income and not the current income as stated in Keynesian theory.

(d) According to Friedman, there are 4 determinants of demand for money. The nominal demand for money:

(i) Is a function of total wealth (permanent income / discount rate). It includes average return on five asset classes, viz., Money, Bonds, equity, physical capital and human capital

(ii) Is positively related to price level

(iii) Is inversely related to opportunity cost of money holdings (returns on bond and stock)

(iv) Is influenced by inflation. Positive inflation reduced the real value of money balances and thus, raises the opportunity cost of money holdings. Ultimately, it results in lower demand for money holdings.

3. Demand for money as a Behaviour towards risk

James Tobin, an American economist, in his analysis makes a valid assumption that people prefer more wealth to less. According to him, an investor is faced with a problem of what proportion of his portfolio of financial assets he should keep in the form of ready money (which earns no interest) and in the form of investment (which earns interest) such as bonds. An individual's portfolio may also consist of more risky assets such as shares.

According to Tobin, when individuals are faced with various safe and risky assets, they diversify their portfolio by holding a balanced combination of safe and risky assets.

According to Tobin, an individual's behaviour shows risk aversion, which means they prefer less risk to more risk at a given rate of return.

If an individual chooses to hold a greater proportion of risky assets such as bonds or shares in his portfolio, then he will be earning a higher average return but will bear a higher degree of risk. Tobin argues that a risk averter will not choose such a portfolio with all risky bonds or a greater proportion of them.

In the other case, an individual who, in his portfolio of wealth, holds only safe and riskless assets such as money in form of cash or demand deposits, he will be taking almost zero risk but will also be getting no return. Therefore, people prefer a mixed or diversified portfolio of money, bonds and shares, with each person opting for a little different balance between risk and return.

TRY YOUR UNDERSTANDING 8.1.3

1. J. M. Keynes propounded the theory of:
   (a) Liquidity Preference (b) Demand
   (c) Supply (d) Distribution

Answer Key

1. (a)

Tobin's Liquidity Preference Function

Tobin derived his liquidity preference function showing the relationship between rate of interest and demand for money. He argues that with the increase in the rate of return on bonds, individuals will be attracted to hold a greater proportion of their wealth in bonds and less in the form of ready money.

At a higher rate of interest, the demand for holding money will be less and people will hold more bonds in their portfolio and vice versa.

In Tobin's portfolio approach demand function for money as an asset slopes downwards, where horizontal axis shows the demand for money and vertical axis shows the rate of interest. The downward sloping liquidity preference function curve shows that the asset demand for money in the portfolio increases as the rate of interest on bonds falls. In this way Tobin derives the aggregate liquidity preference curve by determining the effects of changes in the interest rate on the asset demand for money in the portfolio of peoples.

Tobin's liquidity preference theory has been found to be true by the empirical studies conducted to measure interest elasticity of the demand for money as an asset.

EXERCISE

1. Choose the incorrect statement
   (a) Anything that would act as a medium of exchange is money
   (b) Money has generalized purchasing power and is generally acceptable in settlement of all transactions
   (c) Money is a totally liquid asset and provides us with means to access goods and services
   (d) Currency which represents money does not necessarily have intrinsic value.
2. Money performs all of the three functions mentioned below, namely
   (a) medium of exchange, price control, store of value
   (b) unit of account, store of value, provide yields
   (c) medium of exchange, unit of account, store of value
   (d) medium of exchange, unit of account, income distribution
3. Demand for money is
   (a) Derived demand (b) Direct demand
   (c) Real income demand (d) Inverse demand

4. Higher the be the ..... higher would be ..... of holding cash and lower will be the .....
   (a) demand for money, opportunity cost, interest rate
   (b) price level, opportunity cost, interest rate
   (c) real income, opportunity cost, demand for money
   (d) interest rate, opportunity cost, demand for money
5. The quantity theory of money holds that
   (a) changes in the general level of commodity prices are caused by changes in the quantity of money
   (b) there is strong relationship between money and price level and the quantity of money is the main determinant of the price
   (c) changes in the value of money or purchasing power of money are determined first and foremost by changes in the quantity of money in circulation
   (d) All the above
6. The Cambridge approach to quantity theory is also known as
   (a) Cash balance approach
   (b) Fisher's theory of money
   (c) Classical approach
   (d) Keynesian Approach
7. Fisher's approach and the Cambridge approach to demand for money consider
   (a) money's role in acting as a store of value and therefore, demand for money is for storing value temporarily.
   (b) money as a means of exchange and therefore demand for money is termed as for liquidity preference
   (c) money as a means of transactions and therefore, demand for money is only transaction demand for money.
   (d) None of the above
8. Real money is
   (a) nominal money adjusted to the price level
   (b) real national income
   (c) money demanded at given rate of interest
   (d) nominal GNP divided by price level
9. The precautionary money balances people want to hold
   (a) as income elastic and not very sensitive to rate of interest
   (b) as income inelastic and very sensitive to rate of interest
   (c) are determined primarily by the level of transactions they expect to make in the future.
   (d) are determined primarily by the current level of transactions
10. Speculative demand for money
   (a) is not determined by interest rates
   (b) is positively related to interest rates

(c) is negatively related to interest rates
(d) is determined by general price level

11. According to Keynes, if the current interest rate is high
(a) people will demand more money because the capital gain on bonds would be less than return on money
(b) people will expect the interest rate to rise and bond price to fall in the future.
(c) people will expect the interest rate to fall and bond price to rise in the future.
(d) Either (a) or (b) will happen

12. The inventory-theoretic approach to the transactions demand for money
(a) explains the negative relationship between money demand and the interest rate.
(b) explains the positive relationship between money demand and the interest rate.
(c) explains the positive relationship between money demand and general price level
(d) explains the nature of expectations of people with respect to interest rates and bond prices

13. According to Baumol and Tobin's approach to demand for money, the optimal average money holding is:
(a) a positive function of income Y and the price level P
(b) a positive function of transactions costs c,
(c) a negative function of the nominal interest rate i
(d) All the above

14. ..... considered demand for money is as an application of a more general theory of demand for capital assets
(a) Baumol (b) James Tobin (c) JM Keynes (d) Milton Friedman

15. The nominal demand for money rises if
(a) the opportunity costs of money holdings – i.e. bonds and stock returns, rÅ and rε, respectively– decline and vice versa
(c) the opportunity costs of money holdings – i.e. bonds and stock returns, r, and re respectively– rises and vice versa
(c) the opportunity costs of money holdings – i.e. bonds and stock returns, rs and re, respectively remain constant
(d) (b) and (c) above

Answer Key									
1. (a)	**2.** (c)	**3.** (a)	**4.** (d)	**5.** (d)	**6.** (a)	**7.** (c)	**8.** (a)	**9.** (a)	**10.** (c)
11. (c)	**12.** (a)	**13.** (d)	**14.** (d)	**15.** (a)					

❑❑❑

UNIT

2

Important theories of Demand for Money

MEANING AND INTRODUCTION

"Money supply" denotes the Total Quantity of Money available to the people in the economy. The Quantity of money at any point of time is a measurable concept.

SUPPLY OF MONEY- STOCK OR FLOW CONCEPT

It refers to the total amount of money at any particular point of time, thus it is a Stock Concept.Change in the Stock of Money (i.e increase or decrease per month or year), is a Flow Variable.

STOCK OF MONEY

Stock of money refers to the Stock of money available to "Public" as means of payments and store of value. Such stock of money is always less than the total Stock of Money that really exists in an Economy.

MEANING OF PUBLIC

The term "Public" includes all Economic Units-

1. Households, Firms, and Institutions,
2. Quasi-Governmental Institutions,
3. Non- banking Financial Institutions,
4. Non- Departmental Public Sector Undertakings,
5. Foreign Central Banks and Foreign govt.
6. International Monetary Fund which holds a part of Indian Money in India in the form of Deposits with RBI.

The term "Public" excludes Producers of Money

1. Government, which includes-
   - Central Government and
   - All State Governments and
   - Local Bodies.

2. Banking System, which means
   - Reserve Bank of India, and
   - All banks that accept Demand Deposits (Note)

SIGNIFICANCE OF MEASURING SUPPLY OF MONEY IN MARKET

Measurement of money is important because of two reasons:

1. Money supply analysis facilitates analysis of Monetary Developments to provide a deeper understanding of the causes of Money Growth.
2. It is important from monetary policy perspective as it provides a framework to evaluate whether the stock of money in market is consistent with standard for price stability and to understand nature of deviation from standard.

SOURCES OF MONEY SUPPLY

There are 2 Sources of Money Supply:

1. Central Bank
2. Bankining System

CENTRAL BANK

1. Decision of central bank determines money supply in an economy.
2. The Central Banks of all the countries are empowered to issue Currency, and hence it is primary source of Money Supply in all Counties.
3. High powered money is issued by monetary authorities is source of all other forms of money.
4. The Currency issued by the Central Bank is "Fiat Money" and is backed by supporting Reserves and its value is guaranteed by the Government.
5. However, in practice, most countries opt 'minimum reserve system' whereby central bank issues currency to any extent only be keeping certain minimum amount of gold and forex reserves.

BANKING SYSTEM

1. The supply response of Commercial banking system of country to policy of central bank also determines money supply.
2. Total Money Supply in the Economy is determined by the extent of Credit created by the Commercial Banks.
3. Banks create Money Supply in the process of borrowing and lending transactions with the public which is termed as credit money.
4. Supply of Credit money is responses of the Commercial Banking system of the country to various policies and norms of central bank of a country.

MEASUREMENT OF MONEY SUPPLY IN INDIA

In India RBI has formulates various Aggregates for measurement of Money Supply. Since 1967-68 RBI has been publishing data on four alternative measures of money supply Denoted by M1, M2, M3 and M4. These are known as Monetary Aggregates.

The following will explain what is included in Monetary Aggregates

- M1 – Narrow Money

  It is the first and basic measure of money supply. It is also known as **'transaction money'** as it can be directly used for making transactions.

  Currency notes and coins with the Public + Net Demand Deposits of Banks (CASA Deposits) + Other Deposits of RBI. (Other than those held by government)

  - Currency = Paper currency and coins with public.
  - Demand Deposits = Current account deposits and demand deposit portion of savings deposits, all held by public. These are also called CASA Deposits and these are cheapest source of finance for commercial bank, due to nil interest on current accounts and low rate of interest on savings account.
  - Net Demand Deposits = Total Demand Deposits Less Inter – Bank Deposits
  - Other deposits of RBI = RBI deposits other than those held by central/state government.
- M2

  M1 + Savings Deposits with Post Office Savings Banks.
- M3 - Broad Money

  MI + Net time Deposits with the Banking System.
- M4

  M3 + Total deposits with Post Office Savings banks (excluding National Savings Certificates)

  Important Facts about Measures of Money Supply

  (a) The four measures of money supply represent different degrees of liquidity, with M_1 being the most liquid and M_4 being the least liquid.

  (b) M_3 is widely used as a measure of money supply and it is also known as 'aggregate monetary resources of the society'.

  (c) M1 and M2 are generally known as narrow money supply concepts, whereas, M3 and M4 are broad money supply concept

TRY YOUR UNDERSTANDING 8.2.1

1. Reserve money is also known as

   (a) central bank money (b) base money

   (c) high powered money (d) all the above

2. Choose the correct statement from the following

   (a) Money is deemed as something held by the public and therefore only currency held by the public is included in money supply.

   (b) Money is deemed as something held by the public and therefore inter-bank deposits are included in money supply.

(c) Since inter-bank deposits arc not hold by the public, therefore interbank deposits are excluded from the measure of money supply.

(d) Both (a) and (c) above.

3. Reserve Money is composed of

(a) currency in circulation + demand deposits of banks (Current and Saving accounts) + Other deposits with the RBI.

(b) currency in circulation + Bankers' deposits with the RBI + Other deposits with the RBI.

(c) currency in circulation + demand deposits of banks + Other deposits with the RBI.

(d) currency in circulation + demand and time deposits of banks + Other deposits with the RBI.

4. M1 is the sum of

(a) currency and coins with the people + demand deposits of banks (Current and Saving accounts) + other deposits of the RBI.

(b) currency and coins with the people + demand and time deposits of banks (Current and Saving accounts) + other deposits of the RBI.

(c) currency in circulation + Bankers' deposits with the RBI + Other deposits with the RBI

(d) none of the above

Answer Key

1. (d) 2. (c) 3. (b) 4. (a)

DETERMINATION OF MONEY SUPPLY

1. There are two views regarding how money supply is determined. Money Supply is determined

(a) Exogenously, i.e. money supply is determined by the central bank by printing currency

(b) Endogenously, i.e. money supply is determined by changes in economic activities. These changes affects people desire to hold currency relative to deposits.

2. Current Practice: Now, determinants of money supply are explained on the basis of money multiplier approach. It focuses on the relation between money stock and supply of high powered money. According to this approach, total supply of nominal money is determined jointly through behavior of central bank, commercial banks and public.

Three factor as immediate determinants of money supply are-

(a) Monetary Base or High – Powered Money – Money Multiplier

(b) ratio of reserves to deposits – Credit Multiplier and

(c) ratio of currency to deposit or currency – deposit ratio

THE CONCEPT OF MONEY MULTIPLIER

The money created by the Reserve Bank of India is the monetary base, also known as high-powered money. Banks create money by making loans. A bank loans or invests its excess reserves to earn more interest. A one-rupee increase in the monetary base causes the money

supply to increase by more than one rupee. The increase in the money supply is the money multiplier.

The money supply is defined as

Money is either currency held by the public or bank deposits: M = C + D.

M = m X MB

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

$$\text{Money Multiplier}(m) = \frac{\text{Money sup ply}}{\text{Monetary base}}$$

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 is the ratio of the stock of money to the stock of high-powered money.

For instance, if there is an injection of Rs.100 Cr through an open market operation by the central bank of the country and if it leads to an increment of Rs.500 Cr. of final money supply, then the money multiplier is said to be 5. Hence, the multiplier indicates the change in monetary base which is transformed into money supply.

The multiplier indicates what multiple of the monetary base is transformed into money supply. In other words, money and high-powered money are related by the money multiplier. We make two simplifying assumptions as follows;

- Banks never hold excess reserves.
- Individuals and non-bank corporations never hold currency.

What determines the size of the money multiplier? The money multiplier is the reciprocal of the reserve ratio. Deposits, unlike currency held by people, keep only a fraction of the high-powered money in reserves and the rest is lent out and culminate in money creation. If R is the reserve ratio in a country for all commercial banks, then each unit of (say Rupee) money reserves generates 1/R money.

Therefore, for any value of R, the Money Multiplier is $\frac{1}{R}$

For example, if R =10 %, the value of money multiplier will be 10. If the reserve ratio is only 5 %, then money multiplier is 20. Thus, the higher the reserve ratio, the less of each deposit banks loan out, and the smaller the money multiplier.

If some portion of the increase in high-powered money finds its way into currency, this portion does not undergo multiple deposit expansion. The size of the money multiplier is reduced when funds are held as cash rather than as demand deposits. In other words, as a rule, an increase in the monetary base that goes into currency is not multiplied, whereas an increase in monetary base that goes into supporting deposits is multiplied.

THE MONEY MULTIPLIER APPROACH TO SUPPLY OF MONEY

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:

1. the stock of high-powered money (H)
2. the ratio of reserves to deposits or reserve-ratio (r) = {Reserves/Deposits R/D} and

3. the ratio of currency to deposits, or currency-deposit ratio c={C/D}

You may note that these represent the behaviour of the central bank, behaviour of the commercial banks and the behaviour of the general public respectively. We shall now describe how each of the above contributes to the determination of aggregate money supply in an economy.

(a) The 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 (H) 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 deposits because the same level of reserves can now support more deposits and the money supply will increase. To sum up, smaller the reserve ratio larger will be the money multiplier.

In actual practice, however, the commercial banks keep only the required fraction of their total deposits in the form of cash reserves. However, for the commercial banking system as a whole, the actual reserves ratio may be greater than the required reserve ratio since the banks keep a higher than the statutorily required percentage of their deposits in the form of cash reserves as a buffer against unexpected events requiring cash.

The excess reserves (ER) which are funds that a bank keeps back beyond what is required by regulation form a very important determinant of money supply. 'Excess reserves' are the difference between total reserves (TR) and required reserves (RR). Therefore, ER=TR-RR. If total reserves are Rs 800 billion, whereas the required reserves are Rs 600billion, then the excess reserves are Rs 200 billion.

We know that the cost to a bank while holding excess reserves is in terms of its opportunity cost, i.e. the interest that could have been earned on loans or securities if the bank had chosen to invest in them instead of excess reserves. If interest rate increases, it means that the opportunity cost of holding excess reserves rises because the banks have to sacrifice possible higher earnings and hence the desired ratio of excess reserves to deposits falls. Conversely, a decrease in interest rate will reduce the opportunity cost of excess reserves, and excess reserves will rise. Therefore, we conclude that the banking system's excess reserves ratio r is negatively related to the market interest rate.

If banks fear that deposit outflows are likely to increase (that is, if expected deposit outflows increase), they will want more assurance against this possibility and will increase the excess reserves ratio. Conversely, a decline in expected deposit outflows will reduce the benefit of holding excess reserves and excess reserves will fall.

As we know, money is mostly held in the form of deposits with commercial banks. Therefore, money supply may become subject to 'shocks' on account of behaviour of commercial banks which may present variations overtime either cyclically and more permanently. For instance, in times of financial crises, banks may be unwilling to lend to the small and medium scale industries who may become credit constrained facing a higher risk premia on their borrowings. The rising interest rates on bank credit to the commercial sector reflecting higher risk premia can co-exist with the lowering of policy rates by the central bank. The lower credit demand can lead to a sharp deceleration in monetary growth at a time when the central bank pursues an easy monetary policy.

(c) The Behaviour of the Public

As we know, demand deposits undergo multiple expansions while currency in your hands does not. Hence, when bank deposits are being converted into currency, banks can create only less credit money. The overall level of multiple expansion declines, and therefore, money multiplier also falls. Hence, we conclude that money multiplier and the money supply are negatively related to the currency ratio c.

The currency-deposit ratio (c) represents the degree of adoption of banking habits by the people. This is related to the level of economic activities or the GDP growth and is influenced by the degree of financial sophistication in terms of ease and access to financial services, availability of a richer array of liquid financial assets, financial innovations, institutional changes etc.

The smaller the currency-deposit ratio, the larger would be the money multiplier. This is because a smaller proportion of high powered money is being used as currency and therefore, a larger proportion is available to be reserves which get transformed into money.

The time deposit-demand deposit ratio i.e. how much money is kept as time deposits compared to demand deposits, also has an important implication for the money multiplier and, hence for the money stock in the economy. An increase in TD/DD ratio means that greater availability of free reserves and consequent enlargement of volume of multiple deposit expansion and monetary expansion.

To summarise the money multiplier approach, the size of the money multiplier is determined by the required reserve ratio (r) at the central bank, the excess reserve ratio (e) of commercial banks and the currency ratio (c) of the public. The lower these ratios are, the larger the money multiplier is. In other words, the money supply is determined by high powered money (H) and the money multiplier (m) and varies directly with changes in the monetary base, and inversely with the currency and reserve ratios. Although these three variables do not completely explain changes in the nominal money supply, nevertheless they serve as useful devices for analysing such changes. Consequently, these variables are designated as the 'proximate determinants' of the nominal money supply in the economy.

We may now rewrite the money multiplier including the above variables.

$M = C + D$ ...(1)

$H = C +$ reserves ...(2)

Where C is currency and D is deposits which are assumed to be demand deposits. We summarise the behaviour of the public, banks and the central bank by three variables

namely, currency-deposit ratio c= C/D, reserve-ratio r= Reserves/D, and the stock of high-powered money (H)

Rewriting equation (1) and (2) above as

M = (c+1) D,

H = (c+ r) D

$$M = \frac{1+c}{r+c} \times H = m \times H$$

$$m = \frac{1+c}{r+c}$$

When there are excess reserves, the money multiplier m is expressed as

Money Supply $M = \frac{1+c}{r+e+c} \times H$

The money multiplier is a function of:

1. the currency ratio set by depositors c which depends on the behaviour of the public
2. excess reserves ratio set by banks e, and
3. the required reserve ratio set by the central bank r, which depends on prescribed CRR and the balances necessary to meet settlement obligations.

A simple example will explain the concept

NUMERICAL ILLUSTRATION

1. In Gladys land,

   r = 10%= 0.10

   Currency = 400 billion

   Deposits = 800 billion

   Excess Reserves = 0.8 billion = 800 million

   Money Supply is M = Currency + Deposits = 1200 billion

   c = C/D = 400 billion/800 billion = 0.5 or depositors hold 50 percent of their money as currency

   e = 0.8 billion /800 billion = 0.001 or banks hold 0.1% of their deposits as excess reserves.

   Multiplier $m = \frac{1+c}{r+e+c}$

   $\therefore$ = 1 + 0.5 / 0.1 + 0.001 + 0.5 = 1.5/0.601 = 2.5

   Therefore, a 1 unit increase in H leads to a 2.50 units increase in M.

   The simple deposit multiplier in this example would be 1/r= 1/0.1 = 10

   The difference is due to inclusion of currency and excess reserves in calculating the multiplier.

2. If the reserve ratio is increased to 15 percent, the value of the money multiplier will be,

   = 1+0.5/0.15+0.001+0.5 = 1.5/0.651 =2.3

Obviously, r and m are negatively related: m falls when r rises, and m rises when r falls. The reason is that less multiple deposit creation can occur when r rises, while more multiple deposit creation can occur when r falls.

MONETARY POLICY AND MONEY SUPPLY

If the central bank of a country wants to stimulate economic activity it does so by infusing liquidity into the system. Let us take the example of open market operations (OMO) by central banks. Purchase of government securities injects high powered money (monetary base) into the system. Assuming that banks do not hold excess reserves and people do not hold more currency than before, and also that there is demand for loans from businesses, the credit creation process by the banking system in the country will create money to the tune of

$$\Delta \text{Money supply} = \frac{1}{R} \times \Delta \text{ Reserves } R$$

The effect of an open market sale is very similar to that of open market purchase, but in the opposite direction. In other words, an open market purchase by central bank will reduce the reserves and thereby reduce the money supply.

Is it possible that the value of money multiplier is zero? It may happen when the interest rates are too low and the banks prefer to hold the newly injected reserves as excess reserves with no risk attached to it.

EFFECT OF GOVERNMENT EXPENDITURE ON MONEY SUPPLY

Whenever the central and the state governments' cash balances fall short of the minimum requirement, they are eligible to avail of a facility called Ways and Means Advances (WMA)/ overdraft (OD) facility. When the Reserve Bank of India lends to the governments

under WMA /OD, it results in the generation of excess reserves (i.e., excess balances of commercial banks with the Reserve Bank). This happens because when government incurs expenditure, it involves debiting the government balances with the Reserve Bank and crediting the receiver (for e.g., salary account of government employee) account with the commercial bank. The excess reserves thus created can potentially lead to an increase in money supply through the money multiplier process.

The Credit Multiplier

The Credit Multiplier also referred to as the deposit multiplier or the deposit expansion multiplier, describes the amount of additional money created by commercial bank through the process of lending the available money it has in excess of the central bank's reserve requirements. The deposit multiplier is, thus inextricably tied to the bank's reserve requirement. This measure tells us how much new money will be created by the banking system for a given increase in the high-powered money. It reflects a bank's ability to increase the money supply.

The credit multiplier is the reciprocal of the required reserve ratio. If reserve ratio is 20%, then credit multiplier = 1/0.20 = 5.

$$\text{Credit Multiplier} = \frac{1}{\text{Required Reserve Ratio}}$$

TRY YOUR UNDERSTANDING 8.2.2

1. Under the' minimum reserve system' the central bank is
   (a) empowered to issue currency to any extent by keeping an equivalent reserve of gold and foreign securities.
   (b) empowered to issue currency to any extent by keeping only a certain minimum reserve of gold and foreign securities.
   (c) empowered to issue currency in proportion to the reserve money by keeping only a minimum reserve of gold and foreign securities.
   (d) empowered to issue currency to any extent by keeping a reserve of gold and foreign securities to the extent of' 350 crores
2. The primary source of money supply in all countries is
   (a) the Reserve Bank of India
   (b) the Central bank of the country
   (c) the Bank of England
   (d) the Federal Reserve

Answer Key
1. (b) 2. (b)

NUMERICAL ILLUSTRATIONS

Illustration 1: Calculate Narrow Money (M_1) from the following data

Currency with public	f 90000 crore
Demand Deposits with Banking System	t 200000 crore
Time Deposits with Banking System	? 220000 crore
Other Deposits with RBI	? 280000 crore
Saving Deposits of Post office saving banks	Z 60000 crore

Sol. M_1 = Currency with public + Demand Deposits with Banking System + Other Deposits with the RBI

= 90000 crore + 200000 crore + 280000 crore **= 57 0000 crore**

Illustration 2: Compute credit multiplier if the required reserved ratio is 10% and 12.5% for every f 1, 00,000 deposited in the banking system. What will be the total credit money created by the banking system in each case?

Sol. Credit Multiplier is the reciprocal of required reserved ratio.

$$\text{Credit Multiplier} = \frac{1}{\text{Required Reserverd Ratio}}$$

$$\text{For RRR} = 0.10 \text{ i.e. } 10\% \text{ the credit multiplier} = \frac{1}{0.10} = 10$$

For RRR = 0.125i.e. 12.5% the credit multiplier $= \frac{1}{0.125} = 8$

Credit creation = Initial deposits $* \frac{1}{RRR}$

For RRR 0.10 credit creation will be 1, 00,000 x 1 / 0.10 = Rs, 10, 00,000

For RRR 0.125 credit creation will be 1, 00,000 x 1 / 0.125 = Rs, 8, 00,000

Illustration 3: Calculate currency with the Public from the following data (t Crore)

1.1 Notes in Circulation	2496611
1.2 Circulation of Rupee Coin	25572
1.3 Circulation of Small Coins	743
1.4 Cash on Hand with Banks	98305

Sol. Currency with the Public (1.1 + 1.2 + 1.3 – 1.4) = (2496611+25572+743) – 98305
= 2424621

Illustration 4: Calculate M2 from the following data

	(f Crore)
Notes in Circulation	2420964
Circulation of Rupee Coin	25572
Circulation of Small Coins	743
Post Office Saving Bank Deposits	141786
Cash on Hand with Banks	97563
Deposit Money of the Public	1776199
Demand Deposits with Banks	1737692
'Other' Deposits with Reserve Bank	38507
Total Post Office Deposits	14896
Time Deposits with Banks	178694

Sol. M2 = M1+ Post Office Saving Bank Deposits

where M1 = (Notes in Circulation + Circulation of Rupee Coin + Circulation of Small Coins –Cash on Hand with Banks) + Deposit Money of the Public

= (2420964+25572+743– 97563) + 1776199 = 4125915

M2 = M1+ Post Office Saving Bank Deposits = 4125915 +141786= 4267701

Illustration 5: If the required reserve ratio is 10 percent, currency in circulation is t 400 billion, demand deposits are ? 1000 billion, and excess reserves total f 1 billion, find the value of money multiplier.

Sol.r = 10% = 0.10

Currency = 400 billion

Deposits = 1000 billion

Excess Reserves = 1 billion

Money Supply is M = Currency + Deposits = 1400 billion

c = C/D =

400 billion/1000 billion = 0. 4 or depositors hold 40 percent of their money as currency

e = 1 billion /1000 billion = 0.001 or banks hold 0.1% of their deposits as excess reserves.

Multiplier

= 1 + 0.4/0.1 + 0.001 + 0.4 = 1.5/0.501 = 2.79

Therefore, a 1 unit increase in MB leads to a 2.79 units increase in M.

FOR YOUR KNOWLEDGE

Following the recommendations of the Working Group on Money (1998), the RBI has started publishing a set of four new monetary aggregates as: Reserve Money = Currency in circulation + Bankers' deposits with the RBI + Other deposits with the RBI, NM1 = Currency with the public + Demand deposits with the banking system + 'Other' deposits with the RBI, NM2 = NM1 + Short-term time deposits of residents (including and up to contractual maturity of one year), NM3 = NM2 + Long-term time deposits of residents + Call/Term funding from financial institutions

- The Liquidity aggregates are:
  - L1 = NM3 + All deposits with the post office savings banks (excluding National Savings Certificates).
  - L2 = L1 + Term deposits with term lending institutions and refinancing institutions (FIs) + Term borrowing by FIs + Certificates of deposit issued by FIs.

EXERCISE

1. Reserve money is also known as
   (a) central bank money (b) base money
   (c) high powered money (d) all the above
2. Choose the correct statement from the following
   (a) Money is deemed as something held by the public and therefore only currency held by the public is included in money supply.
   (b) Money is deemed as something held by the public and therefore inter-bank deposits are included in money supply.

(c) Since inter-bank deposits are not held by the public, therefore inter-bank deposits are excluded from the measure of money supply.

(d) Both (a) and (c) above.

3. Reserve Money is composed of

(a) currency in circulation + demand deposits of banks (Current and Saving accounts) + Other deposits with the RBI.

(b) currency in circulation + Bankers' deposits with the RBI + Other deposits with the RBI.

(c) currency in circulation + demand deposits of banks + Other deposits with the RBI.

(d) currency in circulation + demand and time deposits of banks + Other deposits with the RBI.

4. M1 is the sum of

(a) currency and coins with the people + demand deposits of banks (Current and Saving accounts) + other deposits of the RBI.

(b) currency and coins with the people + demand and time deposits of banks (Current and Saving accounts) + other deposits of the RBI.

(c) currency in circulation + Bankers' deposits with the RBI + Other deposits with the RBI

(d) none of the above

5. Under the' minimum reserve system' the central bank is

(a) empowered to issue currency to any extent by keeping an equivalent reserve of gold and foreign securities.

(b) empowered to issue currency to any extent by keeping only a certain minimum reserve of gold and foreign securities.

(c) empowered to issue currency in proportion to the reserve money by keeping only a minimum reserve of gold and foreign securities.

(d) empowered to issue currency to any extent by keeping a reserve of gold and foreign securities to the extent of ? 350 crores

6. The primary source of money supply in all countries is

(a) the Reserve Bank of India

(b) the Central bank of the country

(c) the Bank of England

(d) the Federal Reserve

7. The supply of money in an economy depends on

(a) the decision of the central bank based on the authority conferred on it.

(b) the decision of the central bank and the supply responses of the commercial banking system.

(c) the decision of the central bank in respect of high powered money.

(d) both (a) and (c) above.

8. Banks in the country are required to maintain deposits with the central bank

(a) to provide the necessary reserves for the functioning of the central bank

(b) to meet the demand for money by the banking system

(c) to meet the central bank prescribed reserve requirements and to meet settlement obligations.

(d) to meet the money needs for the day to day working of the commercial banks

9. If the behaviour of the public and the commercial banks is constant, then

(a) 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 total supply of nominal money in the economy will vary directly with the rate of interest and inversely with reserve money

(c) the total supply of nominal money in the economy will vary inversely with the supply of high powered money

(d) all the above are possible

10. Under the fractional reserve system

(a) the money supply is an increasing function of reserve money (or high powered money) and the money multiplier.

(b) the money supply is an decreasing function of reserve money (or high powered money) and the money multiplier.

(c) the money supply is an increasing function of reserve money (or high powered money) and a decreasing function of money multiplier.

(d) none of the above as the determinants of money supply are different

11. The money multiplier and the money supply are

(a) positively related to the excess reserves ratio e.

(b) negatively related to the excess reserves ratio e

(c) not related to the excess reserves ratio e.

(d) proportional to the excess reserves ratio e.

12. The currency ratio represents

(a) the behaviour of central bank in the issue of currency.

(b) the behaviour of central bank in respect cash reserve ratio.

(c) the behaviour of the public.

(d) the behaviour of commercial banks in the country.

13. The size of the money multiplier is determined by

(a) the currency ratio (c) of the public,

(b) the required reserve ratio (r) at the central bank, and

(c) the excess reserve ratio (e) of commercial banks.

(d) all the above

14. tells us how much new money will be created by the banking system for a given increase in the high-powered money.

(a) The currency ratio

(b) The excess reserve ratio (e)

(c) The credit multiplier

(d) The currency ratio (c)

15. The money multiplier will be large

(a) for higher currency ratio (c), lower required reserve ratio (r) and lower excess reserve ratio (e)

(b) for constant currency ratio (c), higher required reserve ratio (r) and lower excess reserve ratio (e)

(c) for lower currency ratio (c), lower required reserve ratio (r) and lower excess reserve ratio (e)

(d) None of the above

16. The ratio that relates the change in the money supply to a given change in the monetary base is called the

(a) required reserve ratio. (b) money multiplier.

(c) deposit ratio. (d) discount rate.

17. For a given level of the monetary base, an increase in the required reserve ratio will denote

(a) a decrease in the money supply.

(b) an increase in the money supply.

(c) an increase in demand deposits.

(d) Nothing precise can be said

18. For a given level of the monetary base, an increase in the currency ratio causes the money multiplier to_____ and the money supply to_____.

(a) decrease; increase (b) increase; decrease

(c) decrease; decrease (d) increase; increase

19. If commercial banks reduce their holdings of excess reserves

(a) the monetary baseincreases. (b) the monetary basefalls.

(c) the money supply increases. (d) the money supply falls.

Answer Key

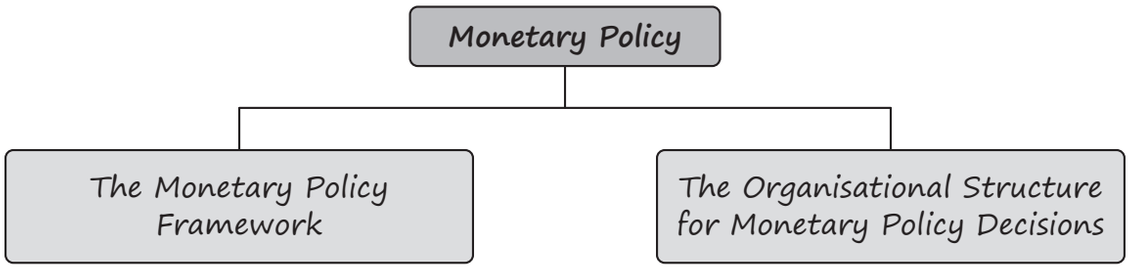
1. (d)	**2.** (c)	**3.** (b)	**4.** (a)	**5.** (b)	**6.** (b)	**7.** (b)	**8.** (c)	**9.** (a)	**10.** (a)
11. (b)	**12.** (c)	**13.** (a)	**14.** (c)	**15.** (c)	**16.** (b)	**17.** (a)	**18.** (c)	**19.** (c)	

❑❑❑

UNIT

3

Monetary Policy



MONETARY POLICY

1. Monetary policy refers to the use of monetary policy instruments by the central bank so as to regulate the availability, cost and use of money and credit with a view to achieve predetermined macroeconomic goals (such as price stability, optimum output and employment, stable currency etc.)
2. It comprises of all actions of the central bank aimed at directly controlling the supply of money and indirectly at regulating the demand from money.
3. Monetary policy operates by stimulating or discouraging investment and consumption spending by individuals/households.

MONETARY POLICY FRAMEWORK

Basic components of monetary policy framework

1. Objectives of monetary policy
2. Analytics of monetary policy
3. Operating procedure

OBJECTIVES OF MONETARY POLICY

1. Reserve Bank of India Act, 1934 –
   (a) Regulating the issue of bank notes and keeping reserves to secure monetary stability.
   (b) Operating currency and credit system to its advantage.
2. monetary policy –Primary objective
   (a) Maintenance of judicious balance between price stability economic growth

3. Objectives of Explicit objectives of developing countries' monetary policy –
   (a) Maintenance of economic growth
   (b) ensuring adequate credit flow to productive sectors
   (c) Sustaining moderate interest rates to encourage investment
   (d) Creation of efficient market of government securities

TRY YOUR UNDERSTANDING 8.3.1

1. Which of the following is the function of monetary policy?
   (a) regulate the exchange rate and keep it stable
   (b) regulate the movement of credit to the corporate sector
   (c) regulate the level of production and prices
   (d) regulate the availability, cost and use of money and credit Answer: 4
2. The main objective of monetary policy in India is
   (a) reduce food shortages to achieve stability
   (b) economic growth with price stability
   (c) overall monetary stability in the banking system
   (d) reduction of poverty and unemployment

Answer Key
1. (d) 2. (b)

TRANSMISSION OF MONETARY POLICY

The transmission of the monetary policy describes how changes made by the Reserve Bank to its monetary policy settings flow through to economic activity and inflation. This process is complex and there is a large degree of uncertainty about the timing and size of the impact on the economy. In simple terms, the transmission can be summarised in two stages.

1. Changes to monetary policy affect interest rates in the economy.
2. Changes to interest rates affect economic activity and inflation.

Although we know that monetary policy does influence output and inflation, we are not certain about how exactly it does so, because the effects of such policy are visible often after a time lag which is not completely predictable.

CHANNELS OF MONETARY POLICY TRANSMISSION

Saving and Investment Channel: Monetary policy influences economic activity by changing the incentives for saving and investment. This channel typically affects consumption, housing investment, and business investment.

- Lower interest rates on bank deposits reduce the incentives households must save their money. Instead, there is an increased incentive for households to spend their money on goods and services.
- Lower interest rates for loans can encourage households to borrow more as they face lower repayments. Because of this, lower lending rates support higher demand for assets, such as housing.

- Lower lending rates can increase investment spending by businesses (on capital goods like new equipment or buildings). This is because the cost of borrowing is lower, and because of increased demand for the goods and services they supply. This means that returns on these projects are now more likely to be higher than the cost of borrowing, helping to justify going ahead with the projects. This will have a more direct effect on businesses that borrow to fund their projects with debt rather than those that use the business owners' funds.

CASH-FLOW CHANNEL

Monetary policy influences interest rates, which affects the decisions of households and businesses by changing the amount of cash they have available to spend on goods and services. This is an important channel for those that are liquidity constrained (for example, those who have already borrowed up to the maximum that banks will provide).

A reduction in lending rates reduces interest repayments on debt, increasing the amount of cash available for households and businesses to spend on goods and services. For example, a reduction in interest rates lowers repayments for households with variable-rate mortgages, leaving them with more disposable income.

At the same time, a reduction in interest rates reduces the amount of income that households and businesses get from deposits, and some may choose to restrict their spending.

These two effects work in opposite directions, but a reduction in interest rates can be expected to increase spending in the Indian economy through this channel (with the first effect larger than the second)

Asset Price and wealth channel:

1. Asset prices respond to monetary policy changes and consequently affect output, employment and inflation.
2. With rise in the interest rates, investment in debt instruments becomes attractive and hence, investment in equity tends to fall. This causes fall in equity prices and thereby leads to reduction in household financial wealth. The reduced wealth ultimate leads to fall in consumption, output and employment.
3. Higher asset prices also increase the equity (collateral) of an asset that is available for banks to lend against. This can make it easier for households and businesses to borrow.
4. An increase in asset prices increases people's wealth. This can lead to higher consumption and housing investment as households generally spend some share of any increase in their wealth.

EXCHANGE RATE CHANNEL

The exchange rate can have an important influence on economic activity and inflation. It is typically more important for sectors that are export-oriented or exposed to competition from imported goods and services.

- If the Reserve Bank lowers the cash rate it means that interest rates in India have fallen compared with interest rates in the rest of the world (all else being equal).
- Lower interest rates reduce the returns investors earn from assets in India (relative to other countries). Lower returns reduce demand for assets in India (as well as for Indian rupees) with investors shifting their funds to foreign assets (and currencies) instead.

- A reduction in interest rates (compared with the rest of the world) results in a lower exchange rate, making foreign goods and services more expensive compared with those produced in India. This leads to an increase in exports and domestic activity. A lower exchange rate also adds to inflation because imports become more expensive in Indian rupees.

TRY YOUR UNDERSTANDING 8.3.2

1. The monetary transmission mechanism refers to
   (a) how money gets circulated in different sectors of the economy post monetary policy
   (b) the ratio of nominal interest and real interest rates consequent on a monetary policy
   (c) the process or channels through which the evolution of monetary aggregates affects the level of product and prices
   (d) none of the above
2. A contractionary monetary policy-induced increase in interest rates
   (a) increases the cost of capital and the real cost of borrowing for firms
   (b) increases the cost of capital and the real cost of borrowing for firms and households
   (c) decreases the cost of capital and the real cost of borrowing for firms
   (d) has no interest rate effect on firms and households

Answer Key	
1. (c)	2. (b)

OPERATING PROCEDURES AND INSTRUMENTS

Quantitative tools

The tools applied by the policy that impact money supply in the entire economy, including sectors such as manufacturing, agriculture, automobile, housing, etc.

Reserve Ratio

Banks are required to keep aside a set percentage of cash reserves or RBI approved assets. Reserve ratio is of two types:

Cash Reserve Ratio (CRR)

Banks are required to set aside this portion in cash with the RBI. The bank can neither lend it to anyone nor can it earn any interest rate or profit on CRR.

Statutory Liquidity Ratio (SLR)

Banks are required to set aside this portion in liquid assets such as gold or RBI approved securities such as government securities. Banks are allowed to earn interest on these securities, however it is very low.

Open Market Operations (OMO)

In order to control money supply, the RBI buys and sells government securities in the open market. These operations conducted by the Central Bank in the open market are referred to as Open Market Operations.

When the RBI sells government securities, the liquidity is sucked from the market, and the exact opposite happens when RBI buys securities. The latter is done to control inflation. The objective of OMOs are to keep a check on temporary liquidity mismatches in the market, owing to foreign capital flow.

Qualitative tools

Unlike quantitative tools which have a direct effect on the entire economy's money supply, qualitative tools are selective tools that have an effect in the money supply of a specific sector of the economy.

Margin requirements

The RBI prescribes a certain margin against collateral, which in turn impacts the borrowing habit of customers. When the margin requirements are raised by the RBI, customers will be able to borrow less.

Moral suasion

By way of persuasion, the RBI convinces banks to keep money in government securities, rather than certain sectors.

Selective credit control

Controlling credit by not lending to selective industries or speculative businesses.

Market Stabilisation Scheme (MSS) –

Policy Rates

Bank Rate: The interest rate at which RBI lends long term funds to banks is referred to as the bank rate. However, presently RBI does not entirely control money supply via the bank rate. It uses Liquidity Adjustment Facility (LAF) – repo rate as one of the significant tools to establish control over money supply.

Bank rate is used to prescribe penalty to the bank if it does not maintain the prescribed SLR or CRR.

Liquidity Adjustment Facility (LAF): RBI uses LAF as an instrument to adjust liquidity and money supply. The following types of LAF are:

Repo rate: Repo rate is the rate at which banks borrow from RBI on a short-term basis against a repurchase agreement. Under this policy, banks are required to provide government securities as collateral and later buy them back after a pre-defined time.

Reverse Repo rate: It is the reverse of repo rate, i.e., this is the rate RBI pays to banks in order to keep additional funds in RBI. It is linked to repo rate in the following way:

Reverse Repo Rate = Repo Rate – 1

Marginal Standing Facility (MSF) Rate: MSF Rate is the penal rate at which the Central Bank lends money to banks, over the rate available under the rep policy. Banks availing MSF Rate can use a maximum of 1% of SLR securities.

MSF Rate = Repo Rate + 1MSF Rate = Repo Rate + 1

TRY YOUR UNDERSTANDING 8.3.4

1 ..... is a money market instrument, which enables collateralised short term borrowing and lending through sale/purchase operations in debt instruments.

(a) OMO (b) CRR (c) SLR (d) Repo

2. ..... is the part of total deposits of commercial banks which they have to keep with RBI.

(a) CRR (b) SLR (c) Bank rate (d) Repo rate

Answer Key

1. (a) **2.** (a)

THE ORGANISATIONAL STRUCTURE FOR MONETARY POLICY DECISIONS

We have discussed above the instruments of monetary policy. An understanding of the organizational structure for monetary policy decisions is necessary to understand the way monetary policy is conducted in India.

The Reserve Bank of India (RBI) Act, 1934 was amended on June 27, 2016, for giving a statutory backing to the Monetary Policy Framework Agreement (MPFA) and for setting up a Monetary Policy Committee (MPC). The Monetary Policy Framework Agreement is an agreement reached between the Government of India and the Reserve Bank of India (RBI) on the maximum tolerable inflation rate that the RBI should target to achieve price stability. The amended RBI Act (2016) provides for a statutory basis for the implementation of the 'flexible inflation targeting framework'.

Announcement of an official target range for inflation is known as inflation targeting. The Expert Committee under Urijit Patel to revise the monetary policy framework, in its report in January, 2014 suggested that RBI abandon the 'multiple indicator' approach and make inflation targeting the primary objective of its monetary policy. The inflation target is to be set by the Government of India, in consultation with the Reserve Bank, once in every five years. Accordingly,

- The Central Government has notified 4 per cent Consumer Price Index (CPI) inflation as the target for the period from August 5, 2016 to March 31, 2021 with the upper tolerance limit of 6 per cent and the lower tolerance limit of 2 per cent.
- The RBI is mandated to publish a Monetary Policy Report every six months, explaining the sources of inflation and the forecasts of inflation for the coming period of six to eighteen months.
- The following factors are notified by the central government as constituting a failure to achieve the inflation target:

- The average inflation is more than the upper tolerance level of the inflation target for any three consecutive quarters; or
- The average inflation is less than the lower tolerance level for any three consecutive quarters.

The choice of CPI was made because it closely reflects cost of living and has larger influence on inflation expectations compared to other anchors. With this step, India is following countries such as the New Zealand, the USA, the UK, European Union, and Brazil. In recent times many countries are moving away from this approach and are targeting nominal GDP growth.

EXERCISE

MULTIPLE CHOICE QUESTIONS

1. Which of the following is the function of monetary policy?
   (a) regulate the exchange rate and keep it stable
   (b) regulate the movement of credit to the corporate sector
   (c) regulate the level of production and prices
   (d) regulate the availability, cost and use of money and credit
2. The main objective of monetary policy in India is ..... :
   (a) reduce food shortages to achieve stability
   (b) economic growth with price stability
   (c) overall monetary stability in the banking system
   (d) reduction of poverty and unemployment
3. The monetary transmission mechanism refers to
   (a) how money gets circulated in different sectors of the economy post monetary policy
   (b) the ratio of nominal interest and real interest rates consequent on a monetary policy
   (c) the process or channels through which the evolution of monetary aggregates affects the level of product and prices
   (d) none of the above
4. A contractionary monetary policy-induced increase in in terest rates
   (a) increases the cost of capitol and the real cost of borrowing for firms
   (b) increases the cost of capital and the real cost of borrowing for firms and households
   (c) decreases the cost of capitol and the real cost of borrowing for firms
   (d) has no interest rate effect on firms and households

5. During deflation

(a) the RBI reduces the CRR in order to enable the banks to expand credit and increase the supply of money available in the economy

(b) the RBI increases the CRR in order to enable the banks to expand credit and increase the supply of money available in the economy

(c) the RBI reduces the CRR in order to enable the banks to contract credit and increase the supply of money available in the economy

(d) the RBI reduces the CRR but increase SLR in order to enable the banks to contract credit and increase the supply of money available in the economy

6. Which of the following statements is correct?

(a) The governor of the RBI in consultation with the Ministry of Finance decides the policy rate and implements the same

(b) While CRR has to be maintained by banks as cash with the RBI, the SLR requires holding of approved assets by the bank itself

(c) When repo rates increase, it means that banks can now borrow money through open market operations (OMO)

(d) None of the above

7. RBI provides financial accommodation to the commercial banks through repos/reverse repos under

(a) Market Stabilisation Scheme (MSS)

(b) The Marginal Standing Facility (MSF)

(c) Liquidity Adjustment Facility (LAF).

(d) Statutory Liquidity Ratio (SLR)

8. ..... is a money market instrument, which enables collateralised short term borrowing and lending through sale/purchase operations in debt instruments.

(a) OMO (b) CRR (c) SLR (d) Repo

9. In India, the term 'Policy rate' refers to

(a) The bank rate prescribed by the RBI in its half yearly monetary policy statement

(b) The CRR and SLR prescribed by RBI in its monetary policy statement

(c) the fixed repo rote quoted for sovereign securities in the overnight segment of Liquidity Adjustment Facility (LAF)

(d) the fixed repo rate quoted for sovereign securities in the overnight segment of Marginal Standing Facility (MSF)

10. Reverse repo operation takes place when

(a) RBI borrows money from banks by giving them securities

(b) banks borrow money from RBI by giving them securities

(c) banks borrow money in the overnight segment of the money market

(d) RBI borrows money from the central government

11. The Monetary Policy Framework Agreement is on
    (a) the maximum repo rate that RBI can charge from government
    (b) the maximum tolerable inflation rate that RBI should target to achieve price stability.
    (c) the maximum repo rate that RBI can charge from the commercial banks
    (d) the maximum reverse repo rate that RBI can charge from the commercial banks

12. An open market operation is an instrument of monetary policy which involves buying or selling of ..... from or to the public and banks
    (a) bonds and bills of exchange (b) debentures and shares
    (c) government secur ities (d) none of these

13. Which statement (s) is (are) t rue about Monetary Policy Committee?
    I. The Reserve Bank of India (RBI) Act, 1934 was amended on June 2 7, 2076, for giving a statutory backing to the Monetary Policy Framework Agreement and for setting up a Monetary Policy Committee
    II. The Monetary Policy Committee shall determine the policy rate through debate and majority vote by a panel of experts required to achieve the inflation target.
    III. The Monetary Policy Committee shall determine the policy rate through consensus from the governor of RBI
    IV. The Monetary Policy Committee shall determine the policy rate through debate and majority vote by a panel of bankers chosen for eth purpose
    (a) I only (b) I and II only
    (c) III and IV (d) III only

Answer Key

1. (d)	**2.** (b)	**3.** (c)	**4.** (b)	**5.** (a)	**6.** (b)	**7.** (c)	**8.** (d)	**9.** (c)	**10.** (a)
11. (b)	**12.** (c)	**13.** (b)							

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