MONEY MARKET
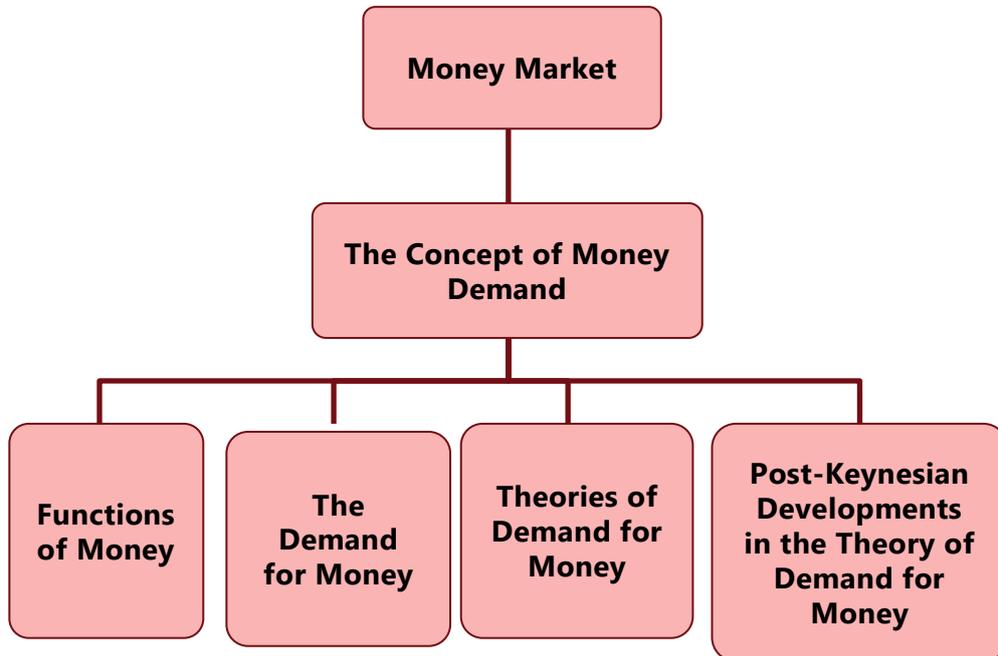
UNIT - 1: THE CONCEPT OF MONEY DEMAND: IMPORTANT THEORIES

LEARNING OUTCOMES

After studying this Unit, you will be able to –

♦ Define money and describe its nature and characteristics

♦ Explain the functions performed by money

♦ Describe the various theories related to demand for money

♦ Identify the factors that affect the demand for money.

♦ Distinguish between the different variables considered by each of the theories of demand for money

CHAPTER OVERVIEW

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1.1   INTRODUCTION

Money may make the world go around, it plays an essential role in causing the things in life to work as they should; to underlie the fulfilment of the needs of human existence. And most people in the world probably have handled money, many of them on a daily basis. But despite its familiarity, probably few people could tell you exactly what money is, or how it works.

In short, money can be anything that can serve as a

(1)   store of value, which means people can save it and use it later—smoothing their purchases over time;

(2)   unit of account, that is, provide a common base for prices; or

(3)   medium of exchange, something that people can use to buy and sell from one another.

Perhaps the easiest way to think about the role of money is to consider what would change if we did not have it.

If there were no money, we would be reduced to a barter economy. Every item someone wanted to purchase would have to be exchanged for something that person could provide.

For example, a person who specialises in fixing cars and needed to trade for food would have to find a farmer with a broken car. But what if the farmer did not have anything that needed to be fixed? Or what if a farmer could only give the mechanic more eggs than the mechanic could reasonably use? Having to find specific people to trade with makes it very difficult to specialise. People might starve before they were able to find the right person with whom to barter.

But with money, you don't need to find a particular person. You just need a market in which to sell your goods or services. In that market, you don't barter for individual goods. Instead you exchange your goods or services for a common medium of exchange—that is, money. You can then use that money to buy what you need from others who also accept the same medium of exchange. As people become more specialised, it is easier to produce more, which leads to more demand for transactions and, hence, more demand for money.

To put it a different way, money is something that holds its value over time, can be easily translated into prices, and is widely accepted. Many different things have been used as money over the years—among them, cowry shells, barley, peppercorns, gold, and silver.

Fiat Money

Until relatively recently, gold and silver were the main currency people used. Gold and silver are heavy, though, and over time, instead of carrying the actual metal around and exchanging it for goods, people found it more convenient to deposit precious metals at banks and buy and sell using a note that claimed ownership of the gold or silver deposits. Anyone who wanted to could go to the bank and get the precious metal that backs the note. Eventually, the paper claim on the precious metal was delinked from the metal. When that link was broken, fiat money was born. Fiat money is materially worthless, but has value simply because a nation collectively agrees to ascribe a value to it. In short, money works because people believe that it will. As the means of exchange evolved, so did its source—from individuals in barter, to some sort of collective acceptance when money was barley or shells, to governments in more recent times.

'There is no unique definition of 'money', either as a concept in economic theory or as measured in practice. Money can be defined for policy purposes as the set of liquid financial assets, the variation in the stock of which could impact on aggregate economic activity. As a statistical concept, money could include certain liquid liabilities of a particular set of financial intermediaries or other issuers'. (Reserve Bank of India Manual on Financial and Banking Statistics, 2007)

There are some general characteristics that money should possess in order to make it serve its functions as money. Money should be:

- generally acceptable

- durable or long-lasting

- effortlessly recognizable.

- difficult to counterfeit i.e. not easily reproducible by people

- relatively scarce, but has elasticity of supply

- portable or easily transported

- possessing uniformity; and

- divisible into smaller parts in usable quantities or fractions without losing value

How money is measured

In official statistics, the amount of money in an economy is generally measured through what is called broad money, which encompasses everything that providers a store of value and liquidity. Liquidity refers to the extent to which financial assets can be sold at close to full market value at short notice. That is, they can easily be converted into another form of money, such as cash. Although currency and transferable deposits (narrow money) are included by all countries in broad money, there are other components that may also provide sufficient store of value and liquidity to count as broad money. Among the things the IMF (2000) says can be counted as broad money are the following:

National currencies (generally issued by the central government).

Transferable deposits, which include demand deposits (transferable by check or money order), bank checks (if used as a medium of exchange), travelers checks (if used for transactions with residents), and deposits otherwise commonly used to make payments (such as some Foreign-Currency deposits).

Other deposits, such as nontransferable savings deposits., term deposits (funds left on deposit for a fixed period of time), or repurchase agreements (in which one party sells a security and agrees to buy it back at a fixed price).

Securities other than shares of stock. Such as tradable certificates of deposit and commercial paper (which is essentially a corporate IOU).

Source : IMF

1.2   THE DEMAND FOR MONEY

Having understood the role of money in an economy, we shall now examine the concept of demand for money. If people desire to hold money, we say there is demand for money. As we are aware, the demand for money is in the nature of derived demand; it is demanded for

its purchasing power. The demand for money is a demand for real balances.   In other words, people demand money because they wish to have command over real goods and services with the use of money. Demand for money is actually demand for liquidity and demand to store value. The demand for money is a decision about how much of one's given stock of wealth should be held in the form of money rather than as other assets such as bonds. Although it gives little or no return, individuals, households as well as firms hold money because it is liquid and offers the most convenient way to   accomplish their day to day transactions.

Demand for money has an important role in the determination of interest, prices and income in an economy. Understanding money demand and how various factors affect that demand is the basic requirement in setting a target for the monetary authority.

Before we go into the theories of demand for money, we shall have a quick look at some important variables on which demand for money depends on. The quantity of nominal money or how much money people would like to hold in liquid form depends on many factors, such as income, general level of prices, rate of interest, real GDP, and the degree of financial innovation etc. Higher the income of individuals, higher the expenditure; richer people hold more money to finance their expenditure. The quantity which people desire to hold is directly proportional to the prevailing price level; higher the prices, higher should be the holding of money. As mentioned above, one may hold his wealth in any form other than money, say as an interest yielding asset. It follows that the opportunity cost of holding money is the interest rate a person could earn on other assets. Therefore, higher the interest rate, higher would be opportunity cost of holding cash and lower the demand for money. Innovations such as internet banking, application based transfers and automated teller machines reduce the need for holding liquid money. Just as households do, firms also hold money essentially for the same basic reasons.

1.3   THEORIES OF DEMAND FOR MONEY

1.3.1 Classical Approach: The Quantity Theory of Money (QTM)

The quantity theory of money, one of the oldest theories in Economics, was first propounded by Irving Fisher of Yale University in his book 'The Purchasing Power of Money' published in 1911 and later by the neoclassical economists. Both versions of the QTM demonstrate that there is a strong relationship between money and price level and the quantity of money is the main determinant of the price level or the value of money. In other words, changes in the general level of commodity prices or changes in the value or purchasing power of money are determined first and foremost by changes in the quantity of money in circulation.

Fisher's version, also termed as 'equation of exchange' or 'transaction approach' is formally stated as follows:

$$MV = PT$$

Where, M = the total amount of money in circulation (on an average) in an economy

        V = transactions velocity of circulation i.e. the average number of times across all transactions a unit of money (say Rupee) is spent in purchasing goods and services

        P = average price level (P= MV/T)

        T = the total number of transactions.

(Later economists replaced T by the real output Y).

Subsequently, Fisher extended the equation of exchange to include demand (bank) deposits (M') and their velocity (V') in the total supply of money. Thus, the expanded form of the equation of exchange becomes:

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

Where M' = the total quantity of credit money

      V' = velocity of circulation of credit money

The total supply of money in the community consists of the quantity of actual money (M) and its velocity of circulation (V). Velocity of money in circulation (V) and the velocity of credit money (V') remain constant. T is a function of national income. Since full employment prevails, the volume of transactions T is fixed in the short run. Briefly put, the total volume of transactions (T) multiplied by the price level (P) represents the demand for money. The demand for money (PT) is equal to the supply of money (MV + M'V)'. In any given period, the total value of transactions made is equal to PT and the value of money flow is equal to MV+ M'V'.

There is an aggregate demand for money for transaction purposes and more the number of transactions people want, greater will be the demand for money. The total volume of transactions multiplied by the price level (PT) represents the demand for money.

1.3.2 The Cambridge approach

In the early 1900s, Cambridge Economists Alfred Marshall, A.C. Pigou, D.H. Robertson and John Maynard Keynes (then associated with Cambridge) put forward a fundamentally different approach to quantity theory, known as cash balance approach. The Cambridge version holds that money increases utility in the following two ways:

1.   enabling the possibility of split-up of sale and purchase to two different points of time rather than being simultaneous, and

2.   being a hedge against uncertainty.

While the first above represents transaction motive, just as Fisher envisaged, the second points to money's role as a temporary store of wealth. Since sale and purchase of commodities by individuals do not take place simultaneously, they need a 'temporary abode' of purchasing power as a hedge against uncertainty. As such, demand for money also involves a precautionary motive in the Cambridge approach. Since money gives utility in its store of wealth and precautionary modes, one can say that money is demanded for itself.

Now, the question is how much money will be demanded? The answer is: it depends partly on income and partly on other factors of which important ones are wealth and interest rates. The former determinant of demand i.e. income, points to transactions demand such that higher the income, the greater the quantity of purchases and as a consequence greater will be the need for money as a temporary abode of value to overcome transaction costs. The demand for money was primarily determined by the need to conduct transactions which will have a positive relationship to the money value of aggregate expenditure. Since the latter is equal to money national income, the Cambridge money demand function is stated as:

$$Md = k\, PY$$

Where

M_d = is the demand for money balances,

Y   = real national income

P   = average price level of currently produced goods and services

PY = nominal income

k   = proportion of nominal income (PY) that people want to hold as cash   balances

The term 'k' in the above equation is called 'Cambridge k' is a parameter reflecting economic structure and monetary habits, namely the ratio of total transactions to income and the ratio of desired money balances to total transactions. The equation above explains that the demand for money (M) equals k proportion of the total money income.

Thus we see that the neoclassical theory changed the focus of the quantity theory of money to money demand and hypothesized that demand for money is a function of only money income. Both these versions are chiefly concerned with money as a means of transactions or exchange, and therefore, they present models of the transaction demand for money.

1.3.3 The Keynesian Theory of Demand for Money

Keynes' theory of demand for money is known as 'Liquidity Preference Theory'. 'Liquidity preference', a term that was coined by John Maynard Keynes in his masterpiece 'The General Theory of Employment, Interest and Money' (1936), 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:

(i)   Transactions motive,

(ii)   Precautionary motive, and

(iii)   Speculative motive.

(a)   **The Transactions Motive**

The transactions motive for holding cash relates to 'the need for cash for current transactions for personal and business exchange.' The need for holding money arises because there is lack of synchronization between receipts and expenditures. The transaction motive is further classified into income motive and business (trade) motive, both of which stressed on the requirement of individuals and businesses respectively to bridge the time gap between receipt of income and planned expenditures.

Keynes did not consider the transaction balances as being affected by interest rates. The transaction demand for money is directly related to the level of income. The transactions demand for money is a direct proportional and positive function of the level of income and is stated as follows:

$$Lr = kY$$

Where

       L_r,   is the transactions demand for money,

       k   is the ratio of earnings which is kept for transactions purposes

       Y   is the earnings.

Keynes considered the aggregate demand for money for transaction purposes as the sum of individual demand and therefore, the aggregate transaction demand for money is a function of national income.

(b)   **The Precautionary Motive**

Many unforeseen and unpredictable contingencies involving money payments occur in our day to day life. Individuals as well as businesses keep a portion of their income to finance such unanticipated expenditures. The amount of money demanded under the precautionary

motive depends on the size of income, prevailing economic as well as political conditions and personal characteristics of the individual such as optimism/ pessimism, farsightedness etc. Keynes regarded the precautionary balances just as balances under transactions motive as income elastic and by itself not very sensitive to rate of interest.

(c)   The Speculative Demand for Money

The speculative motive reflects people's desire to hold cash in order to be equipped to exploit any attractive investment opportunity requiring cash expenditure. 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. It is implicit in Keynes theory, that the 'rate of interest', i, is really the return on bonds. Keynes assumed that that the expected return on money is zero, while the expected returns on bonds are of two types, namely:

(i)   the interest payment

(ii)   the expected rate of capital gain.

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. Investors have a relatively fixed conception of the 'normal' or 'critical' interest rate and compare the current rate of interest with such 'normal' or 'critical' rate of interest.

If wealth-holders consider that the current rate of interest is high compared to the 'normal or critical rate of interest', they expect a fall in the interest rate (rise in bond prices). At the high current rate of interest, they will convert their cash balances into bonds because:

(i)   they can earn high rate of return on bonds

(ii)   they expect capital gains resulting from a rise in bond prices consequent upon an expected fall in the market rate of interest in future.

Conversely, if the wealth-holders consider the current interest rate as low, compared to the 'normal or critical rate of interest', i.e., if they expect the rate of interest to rise in future (fall in bond prices), they would have an incentive to hold their wealth in the form of liquid cash rather than bonds because:

(i)   the loss suffered by way of interest income forgone is small,

(ii)   they can avoid the capital losses that would result from the anticipated increase in interest rates, and

(iii)   the return on money balances will be greater than the return on alternative assets

(iv)   If the interest rate does increase in future, the bond prices will fall and the idle cash balances held can be used to buy bonds at lower price and can thereby make a capital-gain.

Summing up, so long as the current rate of interest is higher than the critical rate of interest, a typical wealth-holder would hold in his asset portfolio only government bonds, and if the current rate of interest is lower than the critical rate of interest, his asset portfolio would consist wholly of cash. When the current rate of interest is equal to the critical rate of interest, a wealth-holder is indifferent to holding either cash or bonds. The inference from the above is that the speculative demand for money and interest are inversely related.

The speculative demand for money of individuals can be diagrammatically presented as follows:

Figure: 2.1.1
Individual's Speculative Demand for Money
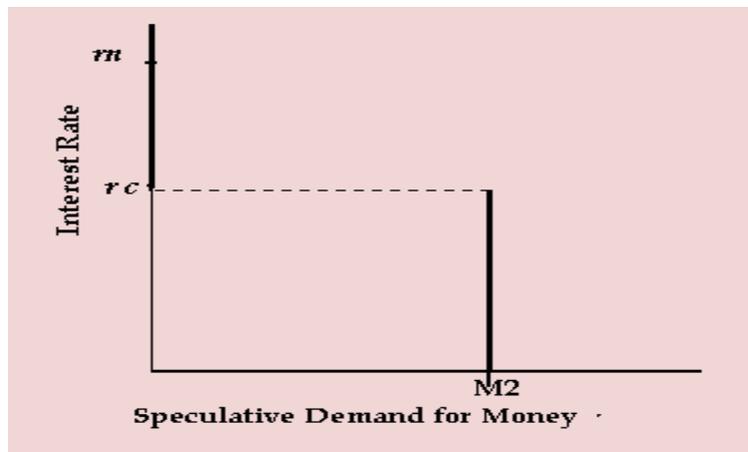
The discontinuous portfolio decision of a typical individual investor is shown in the figure above. When the current rate of interest **rn** is higher than the critical rate of interest **rc**, the entire wealth is held by the individual wealth-holder in the form of government bonds. If the rate of interest falls below the critical rate of interest **rc**, the individual will hold his entire wealth in the form of speculative cash balances.

When we go from the individual speculative demand for money to the aggregate speculative demand for money, the discontinuity of the individual wealth-holder's demand curve for the speculative cash balances disappears and we obtain a continuous downward sloping demand function showing the inverse relationship between the current rate of interest and the speculative demand for money as shown in figure below:

Figure: 2.1.2
Aggregate Speculative Demand for Money
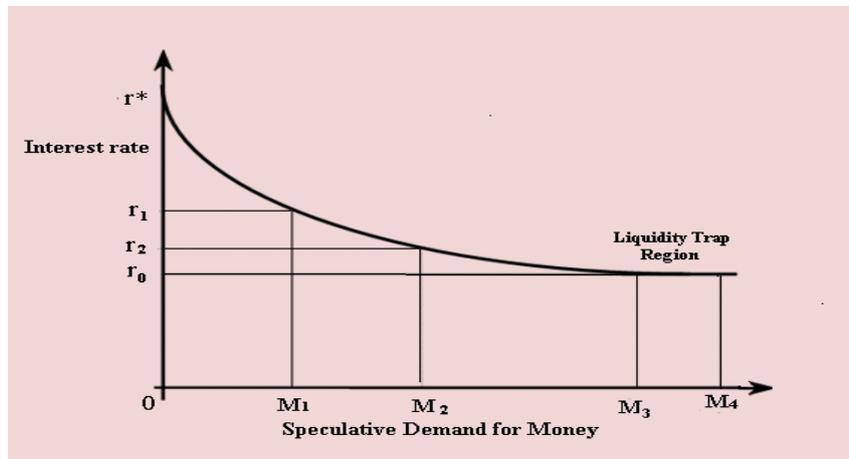
According to Keynes, higher the rates of interest, lower the speculative demand for money, and lower the rate of interest, higher the speculative demand for money.

**The concept of Liquidity Trap**

Liquidity trap is a situation when expansionary monetary policy (increase in money supply) does not increase the interest rate, income and hence does not stimulate economic growth. Liquidity trap is the extreme effect of monetary policy. It is a situation in which the general public is prepared to hold on to whatever amount of money is supplied, at a given rate of interest. They do so because of the fear of adverse events like deflation, war. In that case, a monetary policy carried out through open market operations has no effect on either the interest rate, or the level of income. In a liquidity trap, the monetary policy is powerless to affect the interest rate.

There is a liquidity trap at short term zero percent interest rate. When interest rate is zero, public would not want to hold any bond, since money, which also pays zero percent interest, has the advantage of being usable in transactions.

In other words, investors would maintain cash savings rather than hold bonds. 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'.

In such a situation, the monetary authority is unable to stimulate the economy with monetary policy. Since the opportunity cost of holding money is zero, 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. The liquidity trap is synonymous with ineffective monetary policy.

The Bank of Japan's experience is a real-life example of the Keynesian economic theory of a liquidity trap, in which money printed by a central bank is hoarded in anticipation of further deflation rather than invested. Japan's 10-year yield dropped to a record 0.2 percent.
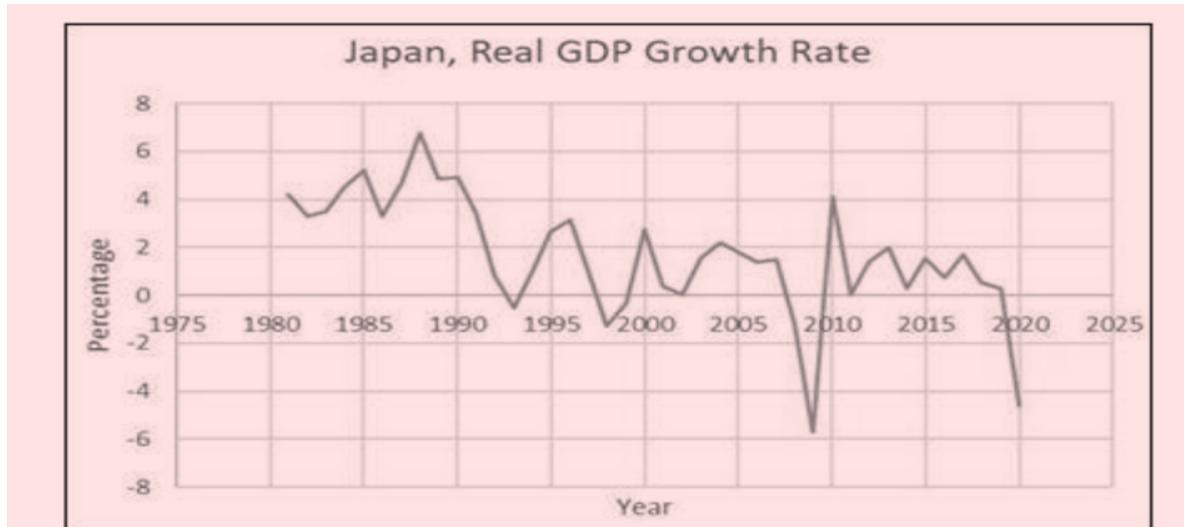
1.4 POST-KEYNESIAN DEVELOPMENTS IN THE THEORY OF DEMAND FOR MONEY

Most post-Keynesian theories of demand for money emphasize the store-of-value or the asset function of money.

1.4.1 Inventory Approach to Transaction Balances

Baumol (1952) and Tobin (1956) developed a deterministic theory of transaction demand for money, known as Inventory Theoretic Approach, in which money or 'real cash balance' was essentially viewed as an inventory held for transaction purposes.

Inventory models assume that there are two media for storing value:

(a)   money and

(b)   an interest-bearing alternative financial asset.

There is a fixed cost of making transfers between money and the alternative assets e.g. broker charges. While relatively liquid financial assets other than money (such as, bank deposits) offer a positive return, the above said transaction cost of going between money and these assets justifies holding money.

Baumol put forward a new approach to demand for money which explains the transaction demand for money from the viewpoint of the inventory management. Baumol asserts that individuals hold money (inventory of money) for the transaction purposes.

According to him, individuals have to keep optimum inventory of money for their day to day transaction purposes. They also incur cost when they hold inventories of money and the cost forgone is the interest rate which they could have earned if they had kept their wealth in saving deposits or fixed deposits or invested in bonds or shares. This forgone cost is also called opportunity cost. Money that people hold in the form of currency and demand deposits which are very safe and riskless but pays no interest. While bonds or shares provide returns (interest) but are risky and may also involve capital loss if people invest in them.

But saving deposits in banks is quite safe and risk free but also gives some interest. So, Baumol questions why people hold money in the form of currency or cash or demand deposits instead of saving deposits which are quite safe and risk free and also earn some interest as well.

According to him, it is for convenience and capability of it being easily used for transactions purposes. Baumol and Tobin proclaim that transactions demand for money depends on the rate of interest.

As interest rates on savings deposits go up people will hold less money in the form of currency or cash or demand deposits and vice versa. So, individuals compare the costs and benefits of funds in the form of money with no interest with the money in the form of savings deposits with some interest. According to Baumol, the cost forgone when people hold money is the opportunity cost of these funds.

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.

The inventory-theoretic approach also suggests that the demand for money and bonds depend on the cost of making a transfer between money and bonds e.g. the brokerage fee**.** An increase in the brokerage fee raises the marginal cost of bond market transactions and consequently lowers the number of such transactions. The increase in the brokerage fee raises the transactions demand for money and lowers the average bond holding over the period. This result follows because an increase in the brokerage fee makes it more costly to switch funds temporarily into bond holdings. An individual combines his asset portfolio of cash and bond in such proportions that his overall cost of holding the assets is minimised.

1.4.2 Friedman's Restatement of the Quantity Theory

Milton Friedman (1956) extended Keynes' speculative money demand within the framework of asset price theory. Friedman treats the demand for money as nothing more than the application of a more general theory of demand for capital assets. Demand for money is affected by the same factors as demand for any other asset, namely

1.   Permanent income.

2.   Relative returns on assets. (which incorporate risk)

Friedman maintains that it is *permanent income*– and not *current income* as in the Keynesian theory – that determines the demand for money. Permanent income which is Friedman's measure of wealth is the present expected value of all future income. To Friedman, money is a good as any other durable consumption good and its demand is a function of a great number of factors.

Friedman identifies the following four determinants of the demand for money. The nominal demand for money:

•   is a function of total wealth, which is represented by permanent income divided by the discount rate, defined as the average return on the five asset classes in the monetarist theory world, namely money, bonds, equity, physical capital and human capital.

•   is positively related to the price level, P. If the price level rises the demand for money increases and vice versa.

•   rises if the opportunity costs of money holdings (i.e. returns on bonds and stock) decline and vice versa.

•   is influenced by inflation, a positive inflation rate reduces the real value of money balances, thereby increasing the opportunity costs of money holdings.

1.4.3 The Demand for Money as Behaviour toward 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.

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.

1.5 CONCLUSION

We have discussed the important theories pertaining to demand for money. All the theories have provided significant insights into the concept of demand for money. While the transactions version of Fisher focused on the supply of money as determining prices, **the cash balance approach of the Cambridge University economists established the formal relationship between demand for real money and the real income. Keynes developed the money demand theory on the basis of explicit motives for holding money and formally introduced the interest rate as an additional explanatory variable that determines the demand for real balances.** The post-Keynesian economists developed a number of models to provide alternative explanations to confirm the formulation relating real

money balances with real income and interest rates. However, we find that all these theories establish a positive relation of demand for money to real income and an inverse relation to the rate of return on earning assets, i.e. the interest rate. However, the propositions in these theories need to be supported by empirical evidence. As countries differ in respect of various determinants of demand for money, we cannot expect any uniform pattern of behaviour. Broadly speaking, real income, interest rates and expectations in respect to inflation   are significant predictors of demand for money.

SUMMARY

- ♦   Money refers to assets which are commonly used and accepted as a means of payment or as a medium of exchange or for transferring purchasing power.

- ♦   Money is totally liquid, has generalized purchasing power and is generally acceptable in settlement of all transactions and in discharge of other kinds of business obligations including future payments.

- ♦   The functions of money are: acting as a medium of exchange to facilitate easy exchanges of goods and services, providing a 'common measure of value' or 'common denominator of value', serving as a unit or standard of deferred payments and facilitating storing of value both as a temporary abode of purchasing power and as a permanent store of value.

- ♦   Money should be generally acceptable, durable, difficult to counterfeit, relatively scarce, easily transported, divisible without losing value and effortlessly recognizable.

- ♦   The demand for money is derived demand and is a decision about how much of one's given stock of wealth should be held in the form of money rather than as other assets such as bonds.

- ♦   Both versions of the theory of money, namely, the classical approach and the neoclassical approach demonstrate that there is strong relationship between money and price level and the quantity of money is the main determinant of the price level or the value of money.

- ♦   Keynes' theory of demand for money is known as the 'liquidity preference theory'. 'Liquidity preference', is a term that was coined by John Maynard Keynes in his masterpiece 'The General Theory of Employment, Interest and Money' (1936).

- ♦   According to Keynes, people hold money (M) in cash for three motives: the transactions, precautionary and speculative motives.

♦ The transaction motive for holding cash is directly related to the level of income and relates to 'the need for cash for the current transactions for personal and business exchange.'

♦ The amount of money demanded under the precautionary motive is to meet unforeseen and unpredictable contingencies involving money payments and depends on the size of the income, prevailing economic as well as political conditions and personal characteristics of the individual such as optimism/ pessimism, farsightedness etc.

♦ The speculative motive reflects people's desire to hold cash in order to be equipped to exploit any attractive investment opportunity requiring cash expenditure. The speculative demand for money and interest are inversely related.

♦ So long as the current rate of interest is higher than the critical rate of interest (rc), a typical wealth-holder would hold in his asset portfolio only government bonds while if the current rate of interest is lower than the critical rate of interest, his asset portfolio would consist wholly of cash.

♦ Liquidity trap is a situation where the desire to hold bonds is very low and approaches zero, and the demand to hold money in liquid form as an alternative approaches infinity. People expect a rise in interest rate and the consequent fall in bond prices and the resulting capital loss. The speculative demand becomes perfectly elastic with respect to interest rate and the speculative money demand curve becomes parallel to the X axis.

♦ Baumol (1952) and Tobin (1956) developed a deterministic theory of transaction demand for 'real cash balance', known as Inventory Theoretic Approach, in which money is essentially viewed as an inventory held for transaction purposes.

♦ People hold an optimum combination of bonds and cash balance, i.e., an amount that minimizes the opportunity cost.

♦ The optimal average money holding is: a positive function of income Y, a positive function of the price level P, a positive function of transactions costs c, and a negative function of the nominal interest rate i.

♦ Milton Friedman (1956) extending Keynes' speculative money demand within the framework of asset price theory holds that demand for money is affected by the same factors as demand for any other asset, namely, permanent income and relative returns on assets.

♦ The nominal demand for money is positively related to the price level, P; rises if bonds and stock returns, r_b and r_e, respectively decline and vice versa; is influenced by inflation; and is a function of total wealth

♦ The Demand for Money as Behaviour toward 'aversion to risk' propounded by Tobin states that money is a safe asset but an investor will be willing to exercise a trade-off and sacrifice to some extent, the higher return from bonds for a reduction in risk

♦ According to Tobin, rational behaviour induces individuals to hold an optimally structured wealth portfolio which is comprised of both bonds and money and the demand for money as a store of wealth depends negatively on the interest rate.

TEST YOUR KNOWLEDGE

Multiple Choice Type Questions

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 _____, 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) J M 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, r_B and r_E, respectively- decline and vice versa

(b) the opportunity costs of money holdings – i.e. bonds and stock returns, r_B and r_E, respectively- rises and vice versa

(c) the opportunity costs of money holdings – i.e. bonds and stock returns, r_B and r_E, respectively remain constant

(d) b) and c) above

ANSWERS

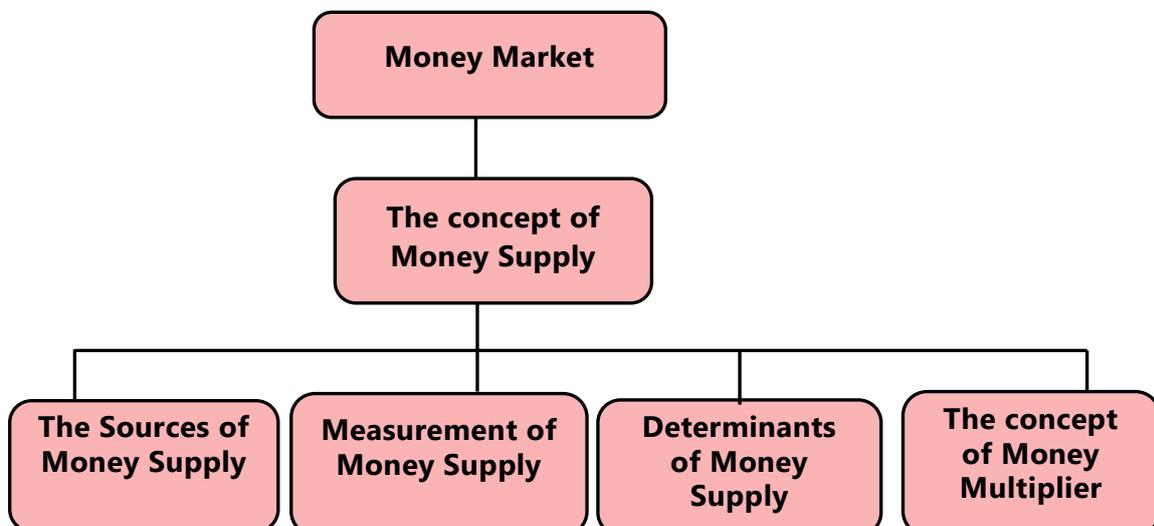| 1.	(a)	2.	(c)	3.	(a)	4.	(d)	5.	(d)	6	(a)
7.	(c)	8.	(a)	9.	(a)	10.	(c)	11.	(c)	12	(a)
13.	(d)	14.	(d)	15.	(a)						

UNIT – 2: CONCEPT OF MONEY SUPPLY

LEARNING OUTCOMES

After studying this Unit, you will be able to –

♦ Define money supply and describe its different components

♦ List out the need for and rationale of measuring money supply

♦ Elucidate the different sources of money supply

♦ Illustrate the various measures of money supply

♦ Distinguish between money multiplier and credit multiplier, and

♦ Describe the different determinants of money supply

UNIT OVERVIEW 👉

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                    ┌─────────────────┐
                    │  Money Market   │
                    └────────┬────────┘
                             │
                    ┌────────┴────────┐
                    │ The concept of  │
                    │  Money Supply   │
                    └────────┬────────┘
         ┌───────────────┬───┴───────┬────────────────┐
┌────────────────┐ ┌──────────────┐ ┌──────────────┐ ┌──────────────┐
│ The Sources of │ │Measurement of│ │ Determinants │ │ The concept  │
│ Money Supply   │ │Money Supply  │ │  of Money    │ │ of Money     │
│                │ │              │ │   Supply     │ │ Multiplier   │
└────────────────┘ └──────────────┘ └──────────────┘ └──────────────┘
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2.1   INTRODUCTION

In the previous unit, we discussed the theories related to the demand for money. Money as a means of payment and thus a lubricant that facilitates exchange. Irrespective of the form of money, in any economy, money performs three primary functions – a medium of exchange, a unit of account, and a store of value. Money as a medium of exchange may be used for any transactions wherein goods or services are purchased or sold. Money as a unit of account can be used to value goods or services and express it in monetary terms. Money can also be stored or conserved for future purposes.

In the real world, however, money provides monetary services along with tangible remuneration. It is for this reason that money must have a relationship with the activities that economic entities pursue. Money can, therefore, be defined for policy purposes as a set of liquid financial assets, the variation in the stock of which could impact aggregate economic activity.

Economic stability requires that the supply of money at any time should to be maintained at an optimum level. A pre-requisite for achieving this is to accurately estimate the stock of money supply on a regular basis and appropriately regulate it in accordance with the monetary requirements of the country. In this unit, we shall look into various aspects related to the supply of money.

Money Supply on December 30th, 2022

Item	Outstanding as on	
	2022	2022
	March 31	December 30
1	2	3
M3 (In Crores)	2,04,93,729	2,18,59.358
Components (i+ii+iii+iv)		
i) Currency with the Public	30,35,689	31,22,019
ii) Demand deposits with Banks	22,12,992	23,41,912
iii) Time Deposits with Banks	1,51,86,605	1,63,32,494
iv) 'Other' Deposits with Reserve Bank	58,444	62,932
Source (i+ii+iii+iv – v)		
i) Net Bank Credit to Government Sector (a+b)	64,77,629	65,65,472
(a) Reserve Bank	14,50,596	11,70,253

	(b) Other Banks	50,27,033	53,95,219
ii)	Bank Credit to Commercial Sector (a+b)	1,26,16,520	1,40,44,417
	(a) Reserve Bank	16,571	19,852
	(b) Other Banks	1,25,99,950	1,40,24,565
iii)	Net Foreign Exchange Assets of Banking Sector	48,54,063	47,46,428
iv)	Government Currency Liabilities to the Public	28,013	29,384
v)	Banking Sector's Net Non-Monetary Liabilities	34,82,496	35,26,343
	of which: Net Non-Monetary Liabilities of R.B.I.	13,08,500	14,94,789

Source : RBI Press Release: 2022-2023/1540

M3 is broad money. M3 = M1 + Time deposits with the banking system. M2 = M1 + Savings deposits of post office savings banks. M1 = Currency with public + Demand deposits with the Banking system (savings account, current account).

Broad money (M3) includes currency, deposits with an agreed maturity of up to two years, deposits redeemable at notice of up to three months and repurchase agreements, money market fund shares/units, and debt securities up to two years

The term 'public' is defined to include all economic units (households, firms, and institutions) except the producers of money (i.e. the government and the banking system).

The government, in this context, includes the central government and all state governments and local bodies; and the banking system means the Reserve Bank of India and all the banks that accept demand deposits (i.e. deposits from which money can be withdrawn by cheque mainly CASA deposits). The word 'public' is inclusive of all local authorities, non-banking financial institutions, and non-departmental public-sector undertakings, foreign central banks and governments and the International Monetary Fund which holds a part of Indian money in India in the form of deposits with the RBI. In other words, while discussing the definition of 'supply of money' and the standard measures of money, interbank deposits and money held by the government and the banking system are not included.

2.2 RATIONALE OF MEASURING MONEY SUPPLY

The empirical analysis of the money supply is important for two reasons:

1.   It facilitates analysis of monetary developments in order to provide a deeper understanding of the causes of money growth.

2. It is essential from a monetary policy perspective as it provides a framework to evaluate whether the stock of money in the economy is consistent with the standards for price stability and to understand the nature of deviations from this standard. The central banks all over the world adopt monetary policy to stabilise price level and GDP growth by directly controlling the supply of money. This is achieved mainly by managing the quantity of monetary base. The success of monetary policy depends to a large extent on the controllability of the monetary base and the money supply.

2.3 THE SOURCES OF MONEY SUPPLY

The supply of money in the economy depends on:

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

(b) the supply responses of the commercial banking system of the country to the changes in policy variables initiated by the central bank to influence the total money supply in the economy.

Money either has intrinsic value or represents title to commodities that have intrinsic value or title to other debt instruments. In modern economies, the currency is a form of money that is issued exclusively by the sovereign (or a central bank as its representative) and is legal tender. Paper currency is such a representative money, and it is essentially a debt instrument.

It is a liability of the issuing central bank (and sovereign) and an asset of the holding public. The central banks of all countries are empowered to issue currency and, therefore, the central bank is the primary source of money supply in all countries. In effect, high powered money issued by monetary authorities is the source of all other forms of money. The currency issued by the central bank is **'fiat money'** and is backed by supporting reserves and its value is guaranteed by the government.

The currency issued by the central bank is, in fact, a liability of the central bank and the government. Therefore, in principle, it must be backed by an equal value of assets mainly consisting of gold and foreign exchange reserves. In practice, however, most countries have adopted a 'minimum reserve system' wherein the central bank is empowered to issue currency to any extent by keeping only a certain minimum reserve of gold and foreign securities.

The second major source of money supply is the banking system of the country. The total supply of money in the economy is also determined by the extent of credit created by the commercial banks in the country. Banks create money supply in the process of borrowing and lending transactions with the public. Money so created by the commercial banks is called 'credit money'. The high-powered money and the credit money broadly constitute the most

common measure of money supply, or the total money stock of a country. (For a brief note on the process of creation of credit money, refer to Box 1, end of this chapter).

With the developments in the economy and the evolution of the payments system, the form and functions of money has changed over time, and it will continue to influence the future course of currency. The concept of money has experienced evolution from Commodity to Metallic Currency to Paper Currency to Digital Currency. The changing features of money are defining new financial landscape of the economy. Further, with the advent of cutting-edge technologies, digitalization of money is the next milestone in the monetary history. Advancement in technology has made it possible for the development of new form of money viz. Central Bank Digital Currencies (CBDCs).

Recent innovations in technology-based payments solutions have led central banks around the globe to explore the potential benefits and risks of issuing a CBDC so as to maintain the continuum with the current trend in innovations. RBI has also been exploring the pros and cons of introduction of CBDCs for some time and is currently engaged in working towards a phased implementation strategy, going step by step through various stages of pilots followed by the final launch, and simultaneously examining use cases for the issuance of its own CBDC (Digital Rupee (e₹)), with minimal or no disruption to the financial system. Currently, we are at the forefront of a watershed movement in the evolution of currency that will decisively change the very nature of money and its functions.

Reserve Bank broadly defines CBDC as the legal tender issued by a central bank in a digital form. It is akin to sovereign paper currency but takes a different form, exchangeable at par with the existing currency and shall be accepted as a medium of payment, legal tender and a safe store of value. CBDCs would appear as liability on a central bank's balance sheet.

The Crypto currencies face significant legislative uncertainties and are not legally recognized in India as currency. Hence, these are not categorized as money. In a massive development for crypto traders in India, the Reserve Bank of India (RBI) has said that banks or other financial entities cannot cite RBI's 2018 order that barred them from dealing with virtual cryptocurrencies.

2.4   MEASUREMENT OF MONEY SUPPLY

There is virtually a profusion of different types of money, especially credit money, and this makes measurement of money supply a difficult task. Different countries follow different practices in measuring money supply. The measures of money supply vary from country to country, from time to time and from purpose to purpose. Reference to such different measures is beyond the scope of this unit. Just as other countries do; a range of monetary and liquidity

measures are compiled and published by the RBI. Money supply will change if the magnitude of any of its constituents changes.

In this unit, we shall be concentrating on the Indian case only and in the following discussion, we shall focus on the alternative measures of money supply prepared and published periodically by the Reserve Bank of India.

Since July 1935, the Reserve Bank of India has been compiling and disseminating monetary statistics. Till 1967-68, the RBI used to publish only a single 'narrow measure of money supply' (M1) defined as the sum of currency and demand deposits held by the public. From 1967-68, a 'broader' measure of money supply, called 'aggregate monetary resources' (AMR) was additionally published by the RBI. From April 1977, following the recommendations of the Second Working Group on Money Supply (SWG), the RBI has been publishing data on four alternative measures of money supply denoted by M1, M2, M3 and M4 besides the reserve money. The respective empirical definitions of these measures are given below:

M_1 = Currency notes and coins with the people + demand deposits with the banking system (Current and Saving deposit accounts) + other deposits with the RBI.

M_2 = M1 + savings deposits with post office savings banks.

M_3 = M1 + time deposits with the banking system.

M_4 = M3 + total deposits with the Post Office Savings Organization (excluding National Savings Certificates).

2.5 DETERMINANTS OF MONEY SUPPLY

There are two alternate theories in respect of determination of money supply. According to the first view, money supply is determined *exogenously* by the central bank. The second view holds that the money supply is determined endogenously by changes in the economic activities which affect people's desire to hold currency relative to deposits, rate of interest, etc. The current practice is to explain the determinants of money supply based on 'money multiplier approach' which focuses on the relation between the money stock and money supply in terms of the monetary base or high-powered money. The monetary base is the sum of currency in circulation and bank reserves. This approach holds that total supply of nominal money in the economy is determined by the joint behaviour of the central bank, the commercial banks and the public. Before we discuss the determinants of money supply, it is necessary that we know the concept of money multiplier.

2.6 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.

$$M = m \times MB$$

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

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

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.

2.7 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:

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

(b)   the ratio of reserves to deposits or reserve-ratio r = {Reserves/Deposits R/D} and

(c)   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. (Refer Box *1 below).

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.

$$M = C+D \qquad (1)$$
$$H = C+ \text{reserves} \qquad (2)$$

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

$M = (c+1) D,$

$H = (c+ r) D$

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

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

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

$m = \dfrac{1+c}{r+e+c}$

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

The money multiplier is a function of:

(a)   the currency ratio set by depositors c which depends on the behaviour of the public

(b)   excess reserves ratio set by banks e, and

(c)   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

(a)   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 $m = \dfrac{1+c}{r+e+c}$

∴ = 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.

(b)   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.

2.8   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

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

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.

2.9   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.

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

The existence of the credit multiplier is the outcome of fractional reserve banking. It explains how increase in money supply is caused by the commercial banks' use of depositors' funds to lend money. When a bank uses the deposited money for lending, the bank generates another claim on a given amount of deposited money. For example, if A deposits ₹ 1000/ in cash at a bank (Bank X), this constitutes the bank's current total cash deposits. If the required reserve is 10 percent, the bank would lend ₹ 900/ to B. By lending B ₹ 900/, the bank creates a deposit for ₹ 900/ that B can now use. It is as though B owns ₹ 900/. This in turn means that A will continue to have a claim against ₹ 1000/ while B will have a claim against ₹ 900/. The bank has ₹ 1000/ in cash against claims of ₹ 1900/. In short, the bank has created ₹ 900/ out of "thin air" since these ₹ 900/ are not supported by any genuine money. At any time, the fractional reserve commercial banks have more cash liabilities than cash in their vaults.

Now suppose B buys goods worth ₹ 900/ from C and pays C by cheque. C places the cheque with his bank, Bank Y. After clearing the cheque, Bank Y will have an increase in cash of ₹ 900/, which it may take advantage of and use to lend out ₹ 810/ to D which may again be deposited in another bank, say Bank Z. Again 10 per cent of ₹ 810 (₹ 81) has to be kept as required reserves and the remaining ₹ 719/ can be lent out, say to E. This sequence keeps on continuing until the initial deposit amount ₹ 1,000 grows exactly by the multiple of required reserves (in

this case, 10%). Ultimately, the expanded credit availability would be 1000 + 900 (90% of 1000) + 810 (90% of 900) + 729 (90% of 810) + (90% of 719) +....... This summation would end with an amount which is equivalent to 1/10% of 1000, which is ₹ 10,000. Thus, in our example, the initial deposit is capable of multiplying itself out 10 times. In short, we find that the fact that banks make use of demand deposits for lending it sets in motion a series of activities leading to expansion of money that is not backed by money proper. It is interesting to know that there is no difference between the type of money created by commercial banks and that which are issued by the central bank.

The deposit multiplier and the money multiplier though closely related are not identical because:

a)   generally banks do not lend out all of their available money but instead maintain reserves at a level above the minimum required reserve.

b)   all borrowers do not spend every Rupee they have borrowed. They are likely to convert some portion of it to cash.

We need to keep in mind that creating money through credit by banks does not mean creating wealth. Money creation is not the same as wealth creation.

* 1 NOTE

While the Reserve Bank of India was pursuing all possible measures to encourage lending to combat the negative outcomes of COVID pandemic, the banks were risk averse to lending and were comfortable parking funds under reverse repo despite the very low reverse repo rate of 3.35 per cent. The average deposit of funds in the overnight reverse repo window in India increased more than three times – from an average of Rs 2.4-lakh crore during the March quarter to Rs 7-lakh crores during the June quarter. In the month of May, banks parked nearly ₹ 8-lakh crores under reverse repo on a daily average basis.

Numerical illustrations

ILLUSTRATION 1

Calculate Narrow Money (M₁) from the following data

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

SOLUTION

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

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

ILLUSTRATION 2

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

SOLUTION

Credit Multiplier is the reciprocal of required reserved ratio.

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

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

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

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

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

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

ILLUSTRATION 3

Calculate currency with the Public from the following data (₹ 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

SOLUTION

Currency with the Public (1.1 + 1.2 + 1.3 − 1.4) =(2496611+25572+743) − 98305 =**2424621**

ILLUSTRATION 4

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

SOLUTION

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= 1billion /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.

SUMMARY

- ◆   The measures of money supply vary from country to country, from time to time and from purpose to purpose.

- ◆   The high-powered money and the credit money broadly constitute the most common measure of money supply, or the total money stock of a country.

- ◆   High powered money is the source of all other forms of money. The second major source of money supply is the banking system of the country. Money created by the commercial banks is called 'credit money'.

- ◆   Measurement of money supply is essential from a monetary policy perspective because it enables a framework to evaluate whether the stock of money in the economy is consistent with the standards for price stability, to understand the nature of deviations from this standard and to study the causes of money growth.

- ◆   The stock of money always refers to the total amount of money at any particular point of time i.e. it is the stock of money available to the 'public' as a means of payments and store of value and does not include inter-bank deposits.

◆ The monetary aggregates are:

- ▪ M1 = Currency and coins with the people + demand deposits of banks (Current and Saving accounts) + other deposits of the RBI;

- ▪ M2 = M1 + savings deposits with post office savings banks,

- ▪ M3 = M1 + net time deposits of banks and

- ▪ M4 = M3 + total deposits with the Post Office Savings Organization (excluding National Savings Certificates).

◆ 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.

◆ The Reserve money, also known as central bank money, base money or high powered money determines the level of liquidity and price level in the economy.

◆ The money multiplier approach showing relation between the money stock and money supply in terms of the monetary base or high-powered money holds that total supply of nominal money in the economy is determined by the joint behaviour of the central bank, the commercial banks, and the public.

◆ M= m X MB; Where M is the money supply, m is money multiplier and MB is the monetary base or high powered money. It shows the relationship between the reserve money and the total money stock.

◆ The money multiplier is a function of the currency ratio which depends on the behaviour of the public, excess reserves ratio of the banks and the required reserve ratio set by the central bank.

♦   The additional units of high-powered money that goes into 'excess reserves' of the commercial banks do not lead to any additional loans, and therefore, these excess reserves do not lead to the creation of deposits.

♦   When the required reserve ratio falls, there will be greater multiple expansions for demand deposits.

♦   Excess reserves ratio e is negatively related to the market interest rate i. If interest rate increases, the opportunity cost of holding excess reserves rises, and the desired ratio of excess reserves to deposits falls.

♦   An increase in time deposit-demand deposit ratio (TD/DD) means that greater availability of free reserves for banks and consequent enlargement of volume of multiple deposit expansion and monetary expansion.

♦   When the Reserve Bank 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).

TEST YOUR KNOWLEDGE

Multiple Choice Type Questions

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 base increases.*

     (b)   *the monetary base falls.*

     (c)   *the money supply increases.*

     (d)   *the money supply falls.*

ANSWERS

| 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.	**(d)**	14.	**(c)**	15.	**(c)**	16.	**(b)**	17.	**(a)**	18	**(c)**
19.	**(c)**										

UNIT - 3: MONETARY POLICY

LEARNING OUTCOMES

After studying this Unit, you will be able to –

♦ Define monetary policy and describe its objectives

♦ Elucidate different components of the monetary policy framework

♦ Illustrate the analytics of monetary policy

♦ Explain the operating procedures and instruments of monetary policy, and

♦ Describe the organizational structure for monetary policy decisions

UNIT OVERVIEW

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                    ┌─────────────────────────┐
                    │      Money Market        │
                    └─────────────────────────┘
                                 │
                    ┌─────────────────────────┐
                    │     Monetary Policy      │
                    └─────────────────────────┘
                        │                 │
        ┌───────────────────────┐  ┌──────────────────────────────┐
        │  The Monetary Policy   │  │  The Organisational Structure │
        │      Framework         │  │  for Monetary Policy Decisions│
        └───────────────────────┘  └──────────────────────────────┘
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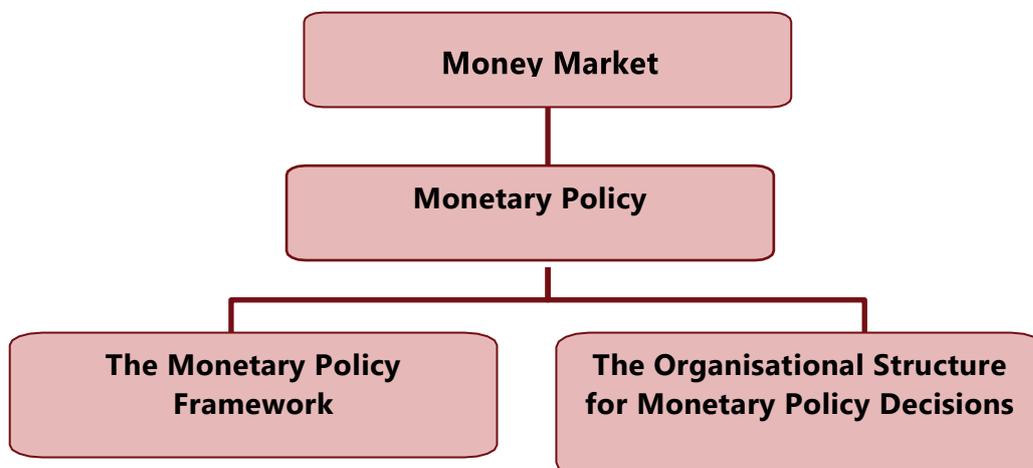
3.1 INTRODUCTION

We observe that the Reserve Bank of India is occasionally manipulating policy rates for manoeuvring liquidity conditions with reasons thereof explicitly notified. In fact, we have only a limited understanding of the monetary phenomena which could strengthen or paralyse the domestic economy. The discussion that follows is an attempt to throw light on the well-acknowledged monetary measures undertaken by governments to fight economic instability.

3.2 MONETARY POLICY DEFINED

Reserve Bank of India uses monetary policy to manage economic fluctuations and achieve price stability, which means that inflation is low and stable. Reserve Bank of India conducts monetary policy by adjusting the supply of money, usually through buying or selling securities in the open market. Open market operations affect short-term interest rates, which in turn influence longer-term rates and economic activity. When central banks lower interest rates, monetary policy is easing. When it raises interest rates, monetary policy is tightening.

3.3 THE MONETARY POLICY FRAMEWORK

The central bank, in its execution of monetary policy, functions within an articulated monetary policy framework which has three basic components, viz.

(i)   the objectives of monetary policy,

(ii)   the analytics of monetary policy which focus on the transmission mechanisms, and

(iii)   The operating procedure which focuses on the operating targets and instruments.

3.3.1 The Objectives of Monetary Policy

The objectives set for monetary policy are important because they provide explicit guidance to policymakers. The monetary policy of a country is in fact a reflection of its economic policy and therefore, the objectives of monetary policy generally coincide with the overall objectives of economic policy.

The Reserve Bank of India Act, 1934, in its preamble sets out the objectives of the Bank as 'to regulate the issue of bank notes and the keeping of reserves with a view to securing monetary stability in India and generally to operate the currency and credit system of the country to its advantage'. Fundamentally, the primary objective of monetary policy has been the maintenance of a judicious balance between price stability and economic growth.

Given the development needs of developing countries, the monetary policy of such countries also incorporates explicit objectives such as:

(i)   maintenance the economic growth,

(ii)   ensuring an adequate flow of credit to the productive sectors,

(iii)   sustaining - a moderate structure of interest rates to encourage investments, and

(iv)   creation of an efficient market for government securities.

Considerations of financial and exchange rate stability have assumed greater importance in India recently on account of the increasing openness of the economy and the progressive economic and financial sector reforms.

3.3.2 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 Prices and Wealth Channel

- Asset prices and people's wealth influence how much they can borrow and how much they spend in the economy. The asset prices and wealth channel typically affects consumption and investment.

- Lower interest rates support asset prices (such as housing and equities) by encouraging demand for assets. One reason for this is that the present discounted value of future income is higher when interest rates are lower.

- 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.

- 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.

3.3.3 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

3.4 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:

  (a) The average inflation is more than the upper tolerance level of the inflation target for any three consecutive quarters; or

  (b) 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.

3.5 CONCLUSION

The theoretical exposition of monetary policy might appear uncomplicated. However, the choice of a monetary policy action is rather complicated in view of the surrounding uncertainties and the need for exercising complex judgment to balance growth and inflation concerns. Additional complexities arise in the case of an emerging market like India. There are many challenges which need to be addressed, such as rudimentary and non-competitive financial systems, lack of integrated money and interbank markets, external uncertainties and issues related to operational autonomy of the central bank. Explicit inflation targeting requires a good degree of operational autonomy for the central bank and a system in which there is a good coordination between fiscal and monetary authorities.

SUMMARY

- Monetary policy refers to the use of monetary policy instruments which are at the disposal of the central bank to regulate the availability, cost and use of money and credit so as to promote economic growth, price stability, optimum levels of output and employment, balance of payments equilibrium, stable currency or any other goal of government's economic policy.

- The monetary policy framework which has three basic components, viz. the objectives of monetary policy, the analytics of monetary policy which focus on the transmission mechanism, and the operating procedure which focuses on the operating targets and instruments.

- Though multiple objectives are pursued, the most commonly pursued objectives of monetary policy of the central banks across the world has become maintenance of price stability (or controlling inflation) and achievement of economic growth.

- The process or channels through which the evolution of monetary aggregates affects the level of production and price level is known as 'monetary transmission mechanism' i.e how they impact real variables such as aggregate output and employment.

- There are mainly four different mechanisms, namely, the interest rate channel, the exchange rate channel, the quantum channel, and the asset price channel.

- A contractionary monetary policy-induced increase in interest rates increases the cost of capital and the real cost of borrowing for firms and households who respond by cut back on their investment and consumption respectively.

♦   The exchange rate channel works through expenditure switching between domestic and foreign goods on account of appreciation / depreciation of the domestic currency with its impact on net exports and consequently on domestic output and employment.

♦   Two distinct credit channels- the bank lending channel and the balance sheet channel- operate by altering access of firm and household to bank credit and by the effect of monetary policy on the firm's balance sheet respectively.

♦   Asset prices generate important wealth effects that impact, through spending, output and employment.

♦   The operating framework of monetary policy relates to all aspects of implementation namely, choosing the operating target, choosing the intermediate target, and choosing the policy instruments.

♦   The day-to-day implementation of monetary policy by central banks through various instruments is referred to as 'operating procedures'.

♦   Monetary policy instruments are the various tools that a central bank can use to influence money market and credit conditions and pursue its monetary policy objectives. There are direct instruments and indirect instruments.

♦   The Cash Reserve Ratio (CRR) refers to the fraction of the total net demand and time liabilities (NDTL) of a scheduled commercial bank in India which it should maintain as cash deposit with the Reserve Bank irrespective of its size or financial position.

♦   The Statutory Liquidity Ratio (SLR) is what the scheduled commercial banks in India are required to maintain as a stipulated percentage of their total Demand and Time Liabilities (DTL) / Net DTL (NDTL) in Cash, Gold or approved investments in securities.

♦   On the basis of the recommendations of Narsimham Committee on banking sector reforms the RBI introduced Liquidity Adjustment Facility (LAF) under which RBI provides financial accommodation to the commercial banks through repos/reverse repos.

♦   Repurchase Options or in short Repo, is defined as 'an instrument for borrowing funds by selling securities with an agreement to repurchase the securities on a mutually agreed future date at an agreed price which includes interest for the funds borrowed'.

♦   In India, the fixed repo rate quoted for sovereign securities in the overnight segment of Liquidity Adjustment Facility (LAF) is considered as the 'policy rate'.

♦   Repo or repurchase option is a collaterised lending because banks borrow money from Reserve bank of India to fulfil their short term monetary requirements by selling

securities to RBI with an explicit agreement to repurchase the same at predetermined date and at a fixed rate. The rate charged by RBI for this transaction is called the 'repo rate'.

♦ Reverse Repo is defined as an instrument for lending funds by purchasing securities with an agreement to resell the securities on a mutually agreed future date at an agreed price which includes interest for the funds lent.

♦ The Marginal Standing Facility (MSF) refers to the facility under which scheduled commercial banks can borrow additional amount of overnight money from the central bank over and above what is available to them through the LAF window by dipping into their Statutory Liquidity Ratio (SLR) portfolio up to a limit.

♦ Under the Market Stabilisation Scheme (MSS) the Government of India borrows from the RBI (such borrowing being additional to its normal borrowing requirements) and issues treasury-bills/dated securities.

♦ Bank Rate refers to "the standard rate at which the Reserve Bank is prepared to buy or re-discount bills of exchange or other commercial paper eligible for purchase under the Act.

♦ OMOs is a general term used for market operations conducted by the Reserve Bank of India by way of sale/ purchase of Government securities to/ from the market with an objective to adjust the rupee liquidity conditions in the market on a regular basis.

♦ The Monetary Policy Committee (MPC) consisting of six members shall determine the policy rate to achieve the inflation target through debate and majority vote by a panel of experts.

♦ The Monetary Policy Framework Agreement is an agreement reached between the Government of India and the Reserve Bank of India (RBI) to keep the Consumer Price Index CPI) inflation rate between 2 to 6 per cent.

♦ Choice of a monetary policy action is rather complex in view of the surrounding uncertainties and the need for exercising trade-offs between growth and inflation concerns. Additional complexities arise in the case of an emerging market like India where inflation is influenced by factors such as international petroleum prices and food prices.

TEST YOUR KNOWLEDGE

Multiple Choice Type 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 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

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 rate 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 securities

    (d) none of these

13. Which statement (s) is (are) true about Monetary Policy Committee?

    I.   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 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*

ANSWERS

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)**										