CHAPTER 8

MONEY MARKET

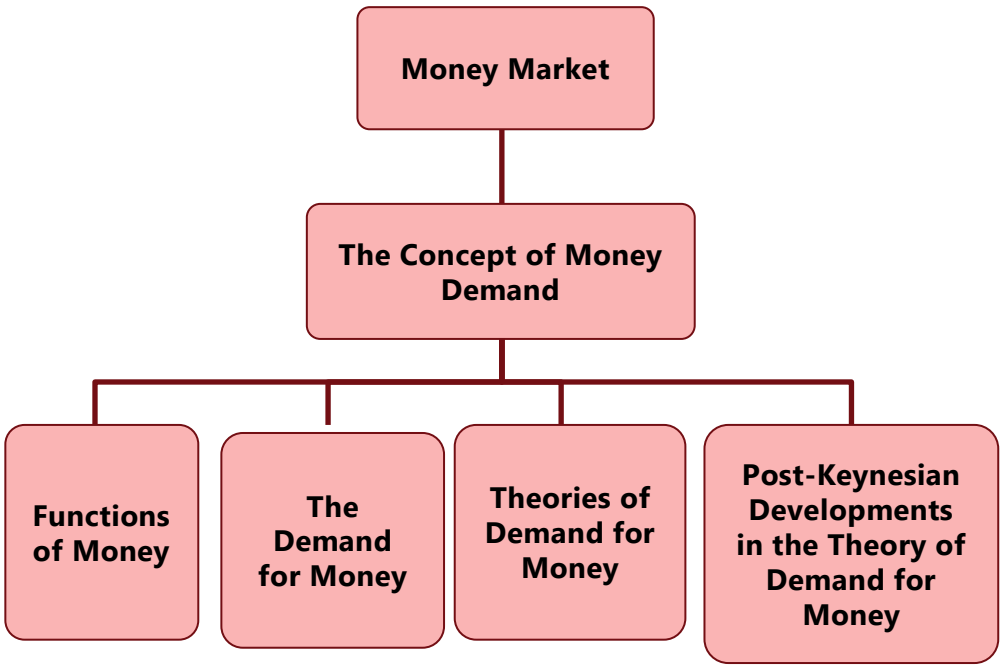
UNIT - 1: THE CONCEPT OF MONEY DEMAND: IMPORTANT THEORIES

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



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

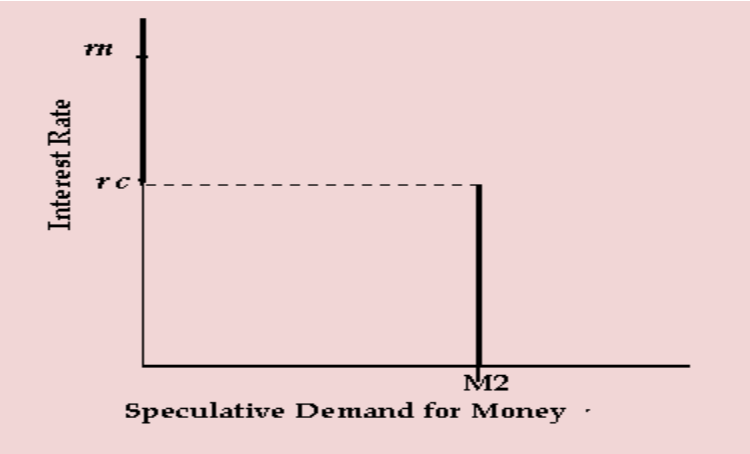
(iii) the return on money balances will be greater than the return on alternative assets

(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:

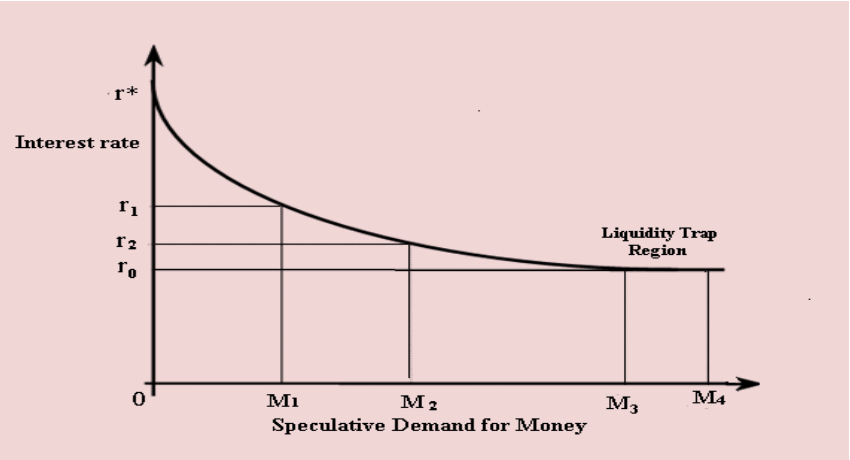
Figure: 2.1.1
Individual's Speculative Demand for Money



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)**						