

MONEY MARKET



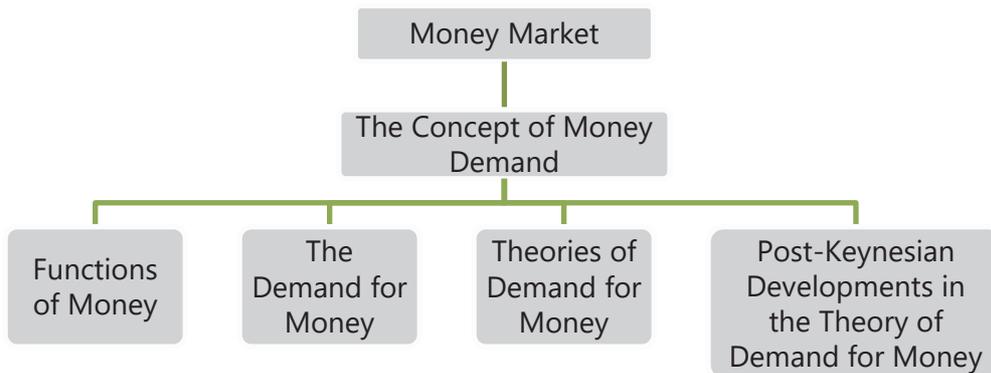
UNIT I: THE CONCEPT OF MONEY DEMAND: IMPORTANT THEORIES

LEARNING OUTCOMES

At the end of 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

UNIT OVERVIEW



1.1 INTRODUCTION

Money is at the centre of every economic transaction and plays a significant role in all economies. In simple terms 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. For policy purposes, money may be defined as the set of liquid financial assets, the variation in the stock of which will have 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 (RBI, 2007).

Money 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. Anything that would act as a medium of exchange is not necessarily money. For example, a bill of exchange may also be a medium of exchange, but it is not money since it is not generally accepted as a means of payment. Money is a totally liquid asset as it can be used directly, instantly, conveniently and without any costs or restrictions to make payments. At the fundamental level, money provides us with a convenient means to access goods and services.

Money represents a certain value, but currency which represents money does not necessarily have intrinsic value. When money takes the form of a commodity with intrinsic value, it is called commodity money. For e.g. gold, silver or any other such elements may be used as money. As you know, fiat money (also known as token money) has no intrinsic value, that is, it has no value if it were not used as

money. Fiat money is used as a medium of exchange because the government has, by law, made them "legal tender," which means, they serve, by law, as means of payment. In modern days, money is not necessarily a physical item; it may also constitute electronic records. Money is, in fact, only one among many kinds of financial assets which households, firms, governments and other economic units hold in their asset portfolios. Unlike other financial assets, money is an essential element in conducting most of the economic transactions in an economy.

'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)

1.2 FUNCTIONS OF MONEY

Money performs many important functions in an economy which not only remove the difficulties of barter but also support trade and industry. These functions are as follows-

- (i) Money is a convenient medium of exchange or it is an instrument that facilitates easy exchange of goods and services. Money, though not having any inherent power to directly satisfy human wants, by acting as a medium of exchange, it commands purchasing power and its possession enables us to purchase goods and services to satisfy our wants. By acting as an intermediary, money increases the ease of trade and reduces the inefficiency and transaction costs involved in a barter exchange. In a barter economy every transaction has to involve an exchange of goods (and /or services) on both sides of the transaction. By decomposing the single barter transaction into two separate transactions of sale and purchase, money eliminates the need for double coincidence of wants. Money also facilitates separation of transactions both in time and place and this in turn enables us to economize on time and efforts involved in transactions.
- (ii) Money is an explicitly defined unit of value or unit of account. A unit of account is the yardstick people use to post prices and record debts. All economic values are measured and recorded in terms of money. As a measure of value, money works as a common denominator, as a unit of

account. We know, Rupee is the unit of account in India in which the entire money is denominated.

The monetary unit measures and express the value of all goods and services. In fact, money helps in expressing the value of each good or service in terms of price, which is nothing but the number of monetary units for which the good or service can be exchanged. It is convenient to trade all commodities in exchange for a single commodity. So also, it is convenient to measure the prices of all commodities in terms of a single unit, rather than record the relative price of every good in terms of every other good. Thus, an obvious advantage of having a single unit of account is that it greatly reduces the number of exchange ratios between goods and services. Use of money as a unit of account can encourage trade by making it easier for individuals to know how much one good is worth in terms of another.

A common unit of account facilitates a system of orderly pricing which is crucial for rational economic choices. Goods and services which are otherwise not comparable are made comparable through expressing the worth of each in terms of money.

Money is a useful measuring rod of value only if the value of money remains constant. The value of money is linked to its purchasing power, i.e the quantity of goods and services that can be bought with a unit of money. Purchasing power of money is the inverse of the average or general level of prices as measured by the consumer price index. As such the value of money decreases when prices rise and increase when prices fall.

- (iii) Money serves as a unit or standard of deferred payment i.e money facilitates recording of deferred promises to pay. Money is the unit in terms of which future payments are contracted or stated. It simplifies credit transactions. By acting as a standard of deferred payments, money helps in capital formation both by the government and business enterprises. This function of money enables the growth of financial and capital markets and helps in the growth of the economy. However, variations in the purchasing power of money due to inflation or deflation reduce the efficacy of money in this function.
- (iv) Like nearly all assets such as stocks, bonds and other forms of wealth, money is a store of value. A store of value is an item that people can use to transfer purchasing power from the present to the future. People prefer to hold it as an asset, that is, as part of their stock of wealth. The splitting of

purchases and sale into two transactions involves a separation in both time and space. This separation is possible because money can be used as a store of value or store of means of payment during the intervening time. Again, rather than spending one's money at present, one can store it for use at some future time. Thus, money functions as a temporary abode of purchasing power in order to efficiently perform its medium of exchange function.

Money also functions as a permanent store of value. There are many other assets such as government bonds, deposits and other securities, land, houses etc. which also store value. Despite having the advantages of potential income yield and appreciation in value over time, these other assets are subject to limitations such as storage costs, lack of liquidity and possibility of depreciation in value. Money is the only asset which has perfect liquidity. Additionally, money also commands reversibility as its value in payment equals its value in receipt. All assets other than money lack perfect reversibility in the sense that their value in payment is not equal to their value in receipt. Even financial assets like the riskless government bonds do not command perfect reversibility as their purchase and sale are subject to certain brokerage costs although this may be quite small.

The effectiveness of an asset as a store of value depends on the degree and certainty with which the asset maintains its value over time. Hence, in order to serve as a permanent store of value in the economy, the purchasing power or the value of money should either remain stable or should monotonically rise over time.

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



1.3 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.

When we study demand for money, our interest is in why consumers and firms hold money as opposed to an asset with a higher rate of return. One might think why is it important to study about demand for money? 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.

The role of money in the macro economy is usually examined in a supply/demand framework. 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.

1.4 THEORIES OF DEMAND FOR MONEY

1.4.1 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 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.

We shall now look into the classical idea of the demand for money. Fisher did not specifically mention anything about the demand for money; but the same is embedded in his theory as dependent on the total value of transactions undertaken in the economy. That is people would hold money in a quantity proportional to total transactions irrespective of interest rate. Thus, there is an aggregate demand for money for transactions purpose 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.

1.4.2 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 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 transactions 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:

$$M_d = k PY$$

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.

1.4.3 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:

$$L_r = kY$$

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 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,

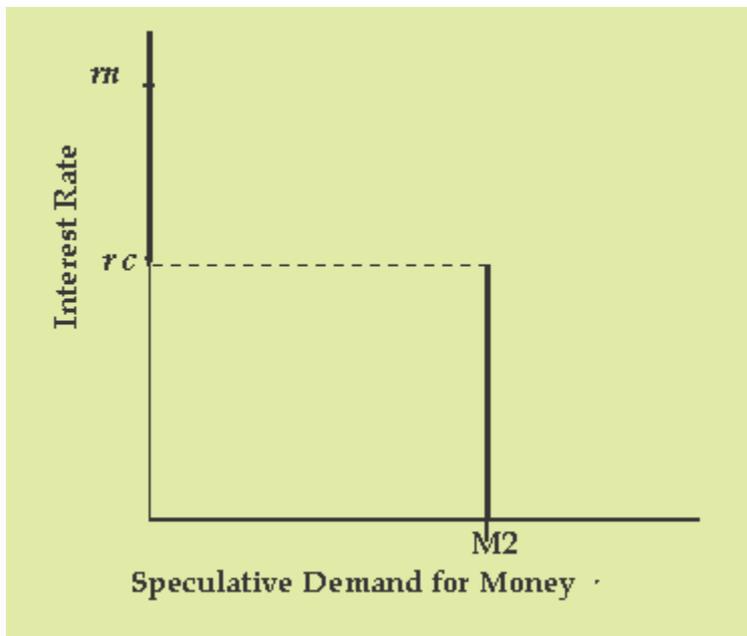
- (ii) they can avoid the capital losses that would result from the anticipated increase in interest rates, and
- (iii) the return on money balances will be greater than the return on alternative assets
- (iv) If the interest rate does increase in future, the bond prices will fall and the idle cash balances 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

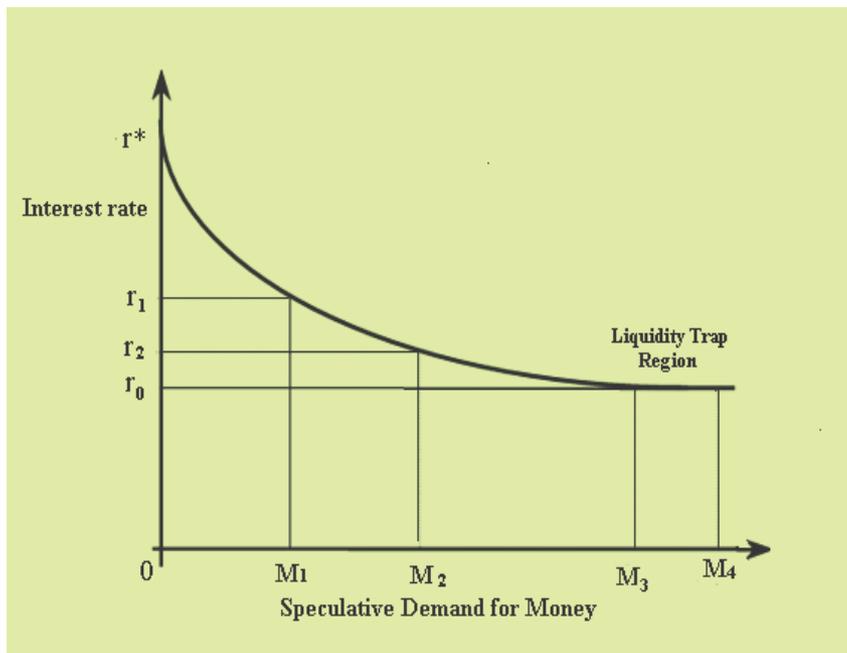


The discontinuous portfolio decision of a typical individual investor is shown in the figure above. When the current rate of interest r_n is higher than the critical rate of interest r_c , the entire wealth is held by the individual wealth-holder in the form of government bonds. If the rate of interest falls below the critical rate of interest r_c , 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

At a very high interest rate, say r^* , the opportunity cost of holding money (in terms of foregone interest) is high and therefore, people will hold no money in speculative balances. When interest rates fall to very low levels, the expectation is that since the interest rate is very low it cannot go further lower and that in all possibility it will move upwards. When interest rates rise, the bond prices will fall (interest rates and bond prices are inversely related). To hold bonds at this low interest rate is to take the almost certain risk of a capital loss (as the interest rate rises and bond prices fall). Therefore, the desire to hold bonds is very low and approaches zero, and the demand to hold money in liquid form as alternative to bond holding approaches infinity. 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.

Empirical evidence of liquidity trap is found during the global financial crisis of 2008 in the United States and Europe. Short-term interest rates moved close to zero. Some economists argued that these developed economies were in a liquidity trap. Even tripling of the monetary base in the US between 2008 and 2011 failed to produce significant effect on the domestic prices.

The sum of the transaction and precautionary demand, and the speculative demand, is the total demand for money. To sum up, an increase in income increases the transaction and precautionary demand for money and a rise in the rate of interest decreases the demand for speculative demand money.



1.5 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.

1.5.1 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 used business inventory approach to analyze the behaviour of individuals. Just as businesses keep money to facilitate their business transactions, people also hold cash balance which involves an opportunity cost in terms of lost interest. Therefore, they hold an optimum combination of bonds and cash balance, i.e., an amount that minimizes the opportunity cost.

Baumol's propositions in his theory of transaction demand for money hold that receipt of income, say Y takes place once per unit of time, but expenditure is spread at a constant rate over the entire period of time. Excess cash over and above what is required for transactions during the period under consideration will be invested in bonds or put in an interest-bearing account. Money holdings on an average will be lower if people hold bonds or other interest yielding assets.

Just as businesses would like to hold an optimal inventory to reduce cost, individuals would like to keep optimal inventory of money and thus ensure minimum cost of money holding. The more cash the individual holds, the less would be the cost on account of broker's fee; but then the opportunity cost in terms of interest forgone would be more. The opposite would be the case if an individual holds less money. Therefore the individual faces a trade off which he should resolve by choosing the level of optimal money holding that would minimise the interest income foregone and broker's fee.

The higher the income, the higher is the average level or inventory of money holdings. The level of inventory holding also depends upon the carrying cost, which is the interest forgone by holding money and not bonds, net of the cost to

the individual of making a transfer between money and bonds, say for example brokerage fee. The individual will choose the number of times the transfer between money and bonds takes place in such a way that the net profits from bond transactions are maximized.

The average transaction balance (money) holding is a function of the number of times the transfer between money and bonds takes place. The more the number of times the bond transaction is made, the lesser will be the average transaction balance holdings. In other words, the choice of the number of times the bond transaction is made determines the split of money and bond holdings for a given income.

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 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 minimized.

1.5.2 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.

1.5.3 The Demand for Money as Behaviour toward Risk

In his classic article, 'Liquidity Preference as Behaviour towards Risk' (1958), Tobin established that the risk-avoiding behaviour of individuals provided the foundation for the liquidity preference and for a negative relationship between the demand for money and the interest rate. The risk-aversion theory is based on the principles of portfolio management. According to Tobin, the optimal portfolio structure is determined by

- (i) the risk/reward characteristics of different assets
- (ii) the taste of the individual in maximizing his utility consistent with the existing opportunities

In his theory which analyzes the individual's portfolio allocation between money and bond holdings, the demand for money is considered as a store of wealth. Tobin hypothesized that an individual would hold a portion of his wealth in the form of money in the portfolio because the rate of return on holding money was more certain than the rate of return on holding interest earning assets and entails no capital gains or losses. It is riskier to hold alternative assets vis-à-vis holding just money alone, because government bonds and equities are subject to market price volatility, while money is not. Thus, bonds pay an expected return of r , but as asset, they are unlike money because they are risky; and their actual return is uncertain. Despite this, the individual will be willing to face this risk because the expected rate of return from the alternative financial assets exceeds that of money.

According to Tobin, the rational behaviour of a risk-averse economic agent induces him to hold an optimally structured wealth portfolio which is comprised of both bonds and money. The overall expected return on the portfolio would be higher if the portfolio were all bonds, but an investor who is 'risk-averse' will be willing to exercise a trade-off and sacrifice to some extent the higher return for a reduction in risk.

Tobin's theory implies that the amount of money held as an asset depends on the level of interest rate. An increase in the interest rate will improve the terms on which the expected return on the portfolio can be increased by accepting greater risk. In response to the increase in the interest rate, the individual will increase the proportion of wealth held in the interest-bearing asset, say bonds, and will decrease the holding of money. Within Tobin's framework, an increase in the rate of interest can be considered as an increase in the payment received for undertaking risk. When this payment is increased, the individual investor is willing to put a greater proportion of the portfolio into the risky asset, (bonds) and thus a smaller proportion into the safe asset, money. His analysis implies that the demand for money as a store of wealth will decline with an increase in the interest rate. Tobin's analysis also indicates that uncertainty about future changes in bond prices, and hence the risk involved in buying bonds, may be a determinant of money demand. Just as Keynes' theory, Tobin's theory implies that the demand for money as a store of wealth depends negatively on the interest rate.



1.6 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 (r_c), 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

I 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

II. Short Answer Type Questions

1. Define money.
2. What is meant by the term "legal tender,"
3. Write notes on the function of money as a medium of exchange,
4. Outline how money is useful as a 'common denominator of value'.

5. Examine the relationship between purchasing power of money and general price level
6. Critically examine money's function as standard of deferred payment
7. List the general characteristics that money should possess?
8. Explain the concept of demand for money.
9. Why do we say that money demand is derived demand?
10. Why is it important to study about demand for money?
11. Explain how higher the interest rate affect the demand for money.
12. Describe the main postulates of quantity theory of money
13. Describe the Keynesian view of different motives of holding cash
14. Compare transaction demand for money according to Keynes and Baumol & Tobin

III. Long answer Type Questions

1. Define money and describe its nature and characteristics
2. Explain the functions performed by money
3. 'The quantity theory of money is not a theory about money at all, rather it is a theory of the price-level' Elucidate
4. Describe the various theories related to demand for money
5. Define 'real cash balance'. Describe the Inventory Theoretic Approach to demand for money
6. Explain why bond prices move inversely to market interest rates
7. Distinguish between classical and Cambridge version of quantity theory of money
8. Explain the Keynesian theory of demand for money. What motives did Keynes ascribe to demand for money? Illustrate your answer.
9. List out the factors that determine the demand for money in the Baumol-Tobin analysis of transactions demand for money? How does a change in each factor affect the quantity of money demanded?
10. To what extent does Friedman's Restatement of the Quantity Theory explain the demand for money?

11. What factors determine demand for money in Friedman's modern quantity theory? How does each of the factors affect demand for money?
12. Examine the influence of different variables on demand for money according to Inventory Theoretic Approach?
13. 'Risk-avoiding behaviour of individuals provided the foundation for the liquidity preference and for a negative relationship between the demand for money and the interest rate' Elucidate with examples
14. Critically examine the post Keynesian theories of demand for money.

IV. Application Oriented Question

1. (a) Why should you hold money balances?
 (b) Will you choose to hold only interest bearing assets?
 (c) What would your choice be if you can pay for nearly all transactions through online transfers?
 (d) Do you think money is a unique store of value?
2. (a) Calculate M
 Velocity 19
 Price 108.5
 Volume of transactions 120 billion
 (b) What will be the effect on money supply if velocity is 25?
3. (a) Calculate velocity of money
 Money Supply 5000 billion
 Price 110
 Volume of transaction 200
 (b) What will be the outcome if volume of transaction increases to 225?

ANSWERS/HINTS

I. Multiple Choice Type Questions

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)

II. Short answer Type Questions

1. Assets which are commonly used and accepted as a means of payment or as a medium of exchange or of transferring purchasing power. Also defined as the set of liquid financial assets, the variation in the stock of which will have impact on aggregate economic activity.
2. They serve by law as means of payment –legally bound to accept in settlement of obligations
3. Money facilitate easy exchanges of goods and services increases the ease of trade and reduces the inefficiency and transaction costs involved in a barter exchange
4. The monetary unit is the unit of measurement in terms of which the value of all goods and services is measured and expressed.
5. Value of money is linked to its purchasing power. Purchasing power is the inverse of the average or general level of prices as measured by the consumer price index.
6. Money facilitates recording of deferred promises to pay. Money is the unit in terms of which future payments are contracted or stated.
7. Money should be generally acceptable, durable, difficult to counterfeit, relatively scarce, uniform, easily transported, divisible without losing value, elastic in supply and effortlessly recognizable.
8. 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. Demand for money is actually demand for liquidity and a demand to store value.
9. Demand for money is in the nature of derived demand; it is demanded for its purchasing power. Basically people demand money because they wish to have command over real goods and services with the use of money
10. Demand for money has an important role in the determination of interest, prices and income in an economy.
11. Important determinant of demand for money. Higher the interest rate, higher would be opportunity cost of holding cash and lower the demand for money.

12. The main postulates of the theory are: the proportionality of m and p , the active or causal role of m , neutrality of money on real variables, exogenous nature of nominal money supply and the monetary theory of the price level.
13. According to Keynes, people hold money in cash for three motives: the transactions, precautionary and speculative motives.
14. In contrast to the Keynesian demand for transaction balances which is interest-inelastic, the transaction demand of Baumol and Tobin is interest-elastic.

III Hints to Long Answer Type Questions

- I. The length of the answer should relate to the marks allotted.
- II. The answer should be structured in three parts in the following style.
 - (a) Explain the economic fundamentals underlying the action/issue by integrating the course material in innovative ways; not necessarily confined to one unit. This part provides an opportunity for students to explain their understanding of the underlying theory. The examiner may easily discern the level of cognition of the student. This should be a compulsory component with a reasonably high proportion of marks earmarked.
 - (b) Analyse the issue at hand (given the framework and tools) and explain the policy position by applying the fundamentals as explained in (a) above.
 - (c) Substantiate with illustrations from current economic scenario

IV Application Oriented Questions

1.
 - (a) Transaction, precautionary and speculative demand – depends on the nature of the holder- institutional payments mechanisms and the gap between receipt and use of money, amount of income and changes in incomes, general level of prices, cost of conversion from near money to money etc.
 - (b) Not always- Partly held in assets- Depends on costs in terms of time and resources to keep moving in and out of bonds or other assets, the levels of interest payments, expectations about bond prices, future price levels- concept of speculative demand for money

- (c) Depends on financial infrastructure, how costless and immediate are transfers, preferences, attitude towards risks and the opportunity costs.
- (d) Financial assets other than money are also performing the function of store of value. Just as money has, the financial assets have fixed nominal value over time and represent generalized purchasing power. Therefore, money is not a unique store of value.
2. (a) $MV = PT$,
 $M \times 19 = 108.5 \times 120$; Therefore M **685.26**
- (b) For $V = 25$, with given p and T , M will be **520.8**
3. (a) $MV = PT$;
 $5000 \times V = 110 \times 200$, Therefore $V = 4.4$
- (b) If Volume of transaction 225, then $V = 4.95$