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

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.

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.
- 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.

👉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.




Commodity Money

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)

Characteristics of Money

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 Money supply can be adjusted
- 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 provides 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), etc.

Fixed Deposit

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.

THE DEMAND FOR MONEY

Cash

If people desire to hold money, we say there is demand for money

- 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. 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.

The quantity of nominal money or how much money people would like to hold in liquid form depends on many factors, such as

- **Income:** Higher the income of individuals, higher the expenditure; richer people hold more money to finance their expenditure.

PT - MDT

- **General level of prices:** 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.

Int Rate ↑ - opp. Cost ↑ - Demand for Money ↓

- **Rate of interest:** 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
- **The degree of financial innovation:** Innovations such as internet banking, application based transfers and automated teller machines reduce the need for holding liquid money.

THEORIES OF DEMAND FOR MONEY

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.

P

- 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.

M

1 Chocolate - ₹10 ↓ Purchasing Power
- ₹20 ↓ Value of Money

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

Money Supply — $MV = PT$ — Money Demanded

Where, M = the total amount of money in circulation (on an average) in an economy
V = velocity of money in circulation, number of times money changes hands
P = average price level (P= MV/T)
T = the total number of transactions.
(Later economists replaced T by the real output Y).
Qty of G&S

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 - Bank Deposits
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'.

Money Supply

Velocity

$MV = PT$

No. of transaction

Price

Money Demanded

$10 \times 100 = 1000$

Money in Circulation

₹100

Ques-

$M = 100$

$V = 8$

$T = 20$, Price?

$800 = P \times 20$

$\frac{800}{20} = P = 40$

→ $MV = PT$

↓

$\uparrow MV + M'V' = \uparrow \overset{\checkmark}{P}T$

Constant

Bank deposit

Constant full employment

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 - Represents Transaction Motive
1. Being a hedge against uncertainty - Money's role as a temporary store of wealth

Protection → Precautionary motive

- 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.

Store

- 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.

Income

👉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.

100 x 0.6 = 60

The Cambridge money demand function is stated as:

$$Md = k\,PY$$

Md = Real GDP (not including Inflation)

k = Avg. price level

PY = Nominal Income / GDP

Where

Md = is the demand for money balances,

Y = real national income/GDP — Incl. Inflation

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. — Transaction + Precautionary

■ The term 'k' in the above equation is called 'Cambridge k'

The Keynesian Theory of Demand for Money

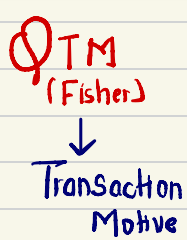
Keynes' theory of demand for money is known as 'Liquidity Preference Theory'. 'Liquidity preference', a term that was coined by John Maynard Keynes in his masterpiece 'The General Theory of Employment, Interest and Money' (1936), denotes people's desire to hold money rather than securities or long-term interest-bearing investments.

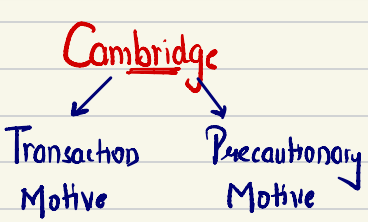
According to Keynes, people hold money (M) in cash for three motives:

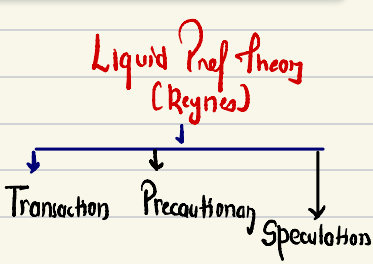
(i) Transactions motive,

(ii) Precautionary motive, and

(iii) Speculative motive.







(I) 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. 31/3/24 Salary 1 lac Exp. 7/4, 10/4
- 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.

Individual

Cash bal for transaction

- 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.

Y↑ · Md↑

The transactions demand for money is a direct proportional and positive function of the level of income and is stated as follows:

$$Lr = kY$$

100

0.3 · 30

Where
Lr, 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.

	Y	K	Lr
P Q	100	0.4	40
J Q	200	0.3	60
T Q	400	0.5	200
T Q	1000	0.6	600
	Y: 1700		900

Lr → Individual demand

Transaction

Aggregate demand of demand

(II) 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 as income elastic and by itself not very sensitive to rate of interest.

g↑ · Md↑

(III) 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:

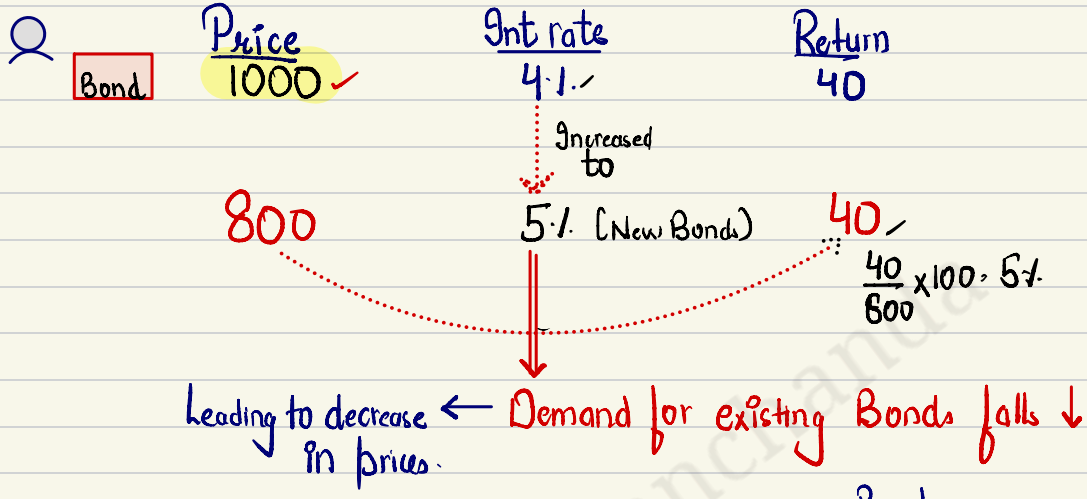
(i) the interest payment

(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.

1. Inverse relation b/w Int rate & Market rate of Bond



2. Wealth holders [r_n - Current rate of Interest (Bond), r_c = Critical / normal rate of Interest]

	Current Situation	Expectation	Action
(i)	$r_n > r_c$	Fall in Int. Rate of Bonds ↓ Increase in Bond prices	Convert cash balance into Bonds ↓ Zero speculative Demand for Money.
(ii)	$r_n < r_c$	Rise in Int rate of Bond ↓ Fall in Bond prices	Hold liquid Cash rather than Bonds

Eg

	Price	Int rate	Return
Expectation	1000	4%	40
	800	5%	40

Capital loss = (200)
+ 40 (Int foregone)
(160)

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.

r_n r_c $r_n > r_c$

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.

↳ Bond price ↑ $r_n < r_c$

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

Bond price ↓ Bonds

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

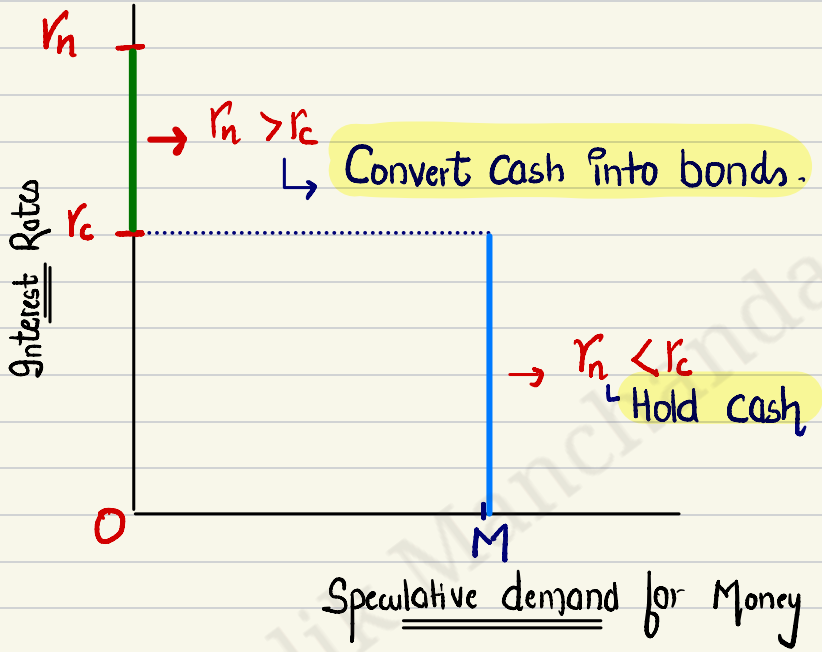
zero

(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.

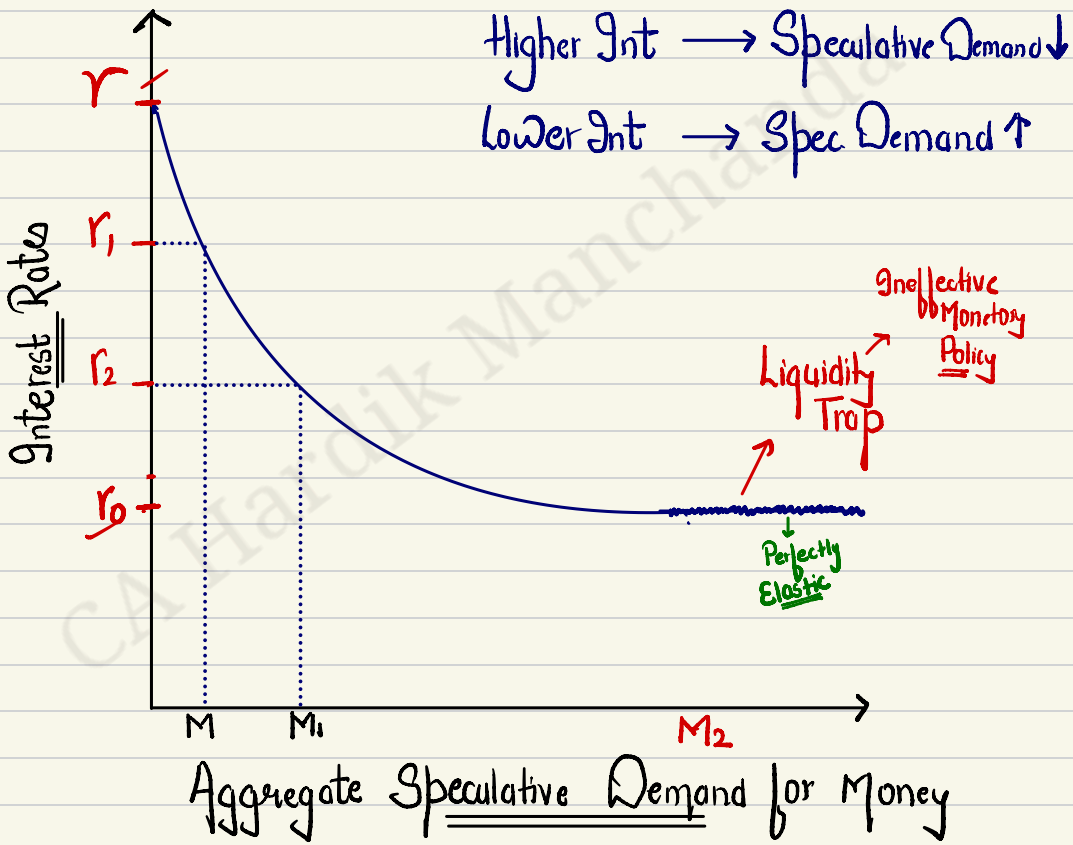
Summing up $r_n > r_c \rightarrow$ Buy Bonds | $r_n < r_c$ – Hold Cash

- current rate of interest > critical rate of interest, a typical wealth-holder would hold in his asset portfolio only government bonds, and
- current rate of interest < 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:



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:



The concept of Liquidity Trap

Money Supply ↑ → Investment ↑ → Income ↑

- 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. 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.

- There is a liquidity trap at short term zero percent interest rate (Lowest). 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.

- 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.

POST-KEYNESIAN DEVELOPMENTS IN THE THEORY OF DEMAND FOR MONEY

Inventory Approach to Transaction Balances

Baumol (1952) and Tobin (1956) developed a 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. Bonds

- 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. opportunity
- 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 return (interest) but are risky and may also involve capital loss if people invest in them. No Interest

■ 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.

■ Baumol has proved that the average amount of cash withdrawal which minimises cost is given by –

$$C = \sqrt{2bY/r}$$

brokerage, int rate, Income

This means that the average amount of cash withdrawal which minimises cost is the square root of the two times broker's fee(b) multiplied by the size of an individual's income (Y)and divided by the interest rate (i). This is also called Square Root Rule.

$$C = \frac{\sqrt{2 \times b \times Y}}{r}$$

↳ Inverse relation b/w Int rate & Demand for Money.

- Direct relation b/w Brokerage fees & Transaction Demand of Money

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.

⬆️ brokerage fees means ⬇️ number of bond market transactions and ⬆️ transaction demand for money and lowers the average bond holding over the period.

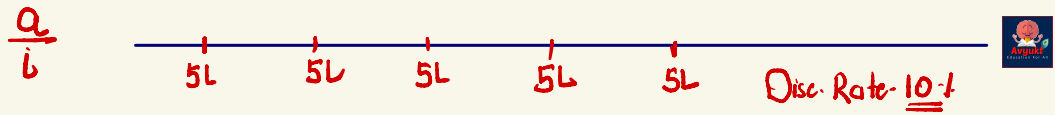
- This result follows because an increase in the brokerage fee makes it more costly to switch funds temporarily into bond holdings.
- An individual combines his asset portfolio of cash and bond in such proportions that his overall cost of holding the assets is minimised.

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. - Long term expected 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:

Permanent Income / Disc. Rate = a/i

- 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, 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.

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.

avoid

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.