Financial Institutions and Markets
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Lecture – 12
Theories of Interest Rate Determination – II

So, in the previous class we discussed about the; Theories of Interest Rate Determination; we started the discussion. There we have seen there are three different theories: one is classical theory, second one is neo classical theory and the third one is the Keynesian theory which is popularly called as the liquidity preference theory.

So, today we will be discussing about that liquidity preference theory which is very popular in that sense, because it has some kind of popularity in terms of phase uses and the practical applications.

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Keynesian Theory

- According to Keynes, interest rate is a purely monetary phenomenon. This means that the rate of interest, at least in the short-run, is determined by the monetary factors, i.e., it depends on the actions of the monetary authorities (the Central Bank and the Government), and on the attitude of economic units towards holding money as an alternative to holding bonds.
- In other words, interest rate is determined by the interaction between the supply of money and demand for it in the economic system.

So, what exactly this Keynesian theory or liquidity preference theory is? So, if you remember that whenever we are talking about the classical theory; we are discussing that the interest rate is reals phenomena or the interest rate is determined by the real factors in the economy.

But here according to Keynes if you observe this is another extreme theory which tells that interest rate is totally a purely a monetary phenomena. That means, the monetary

factors which basically always responsible for determination of interest rate in the system. This means that the rate of interest at least in the short run is determined by the monetary factors; that means, it depends upon the actions of monetary authorities that is Central Bank or the Government and the attitude of economic units towards holding money as an alternative to holding the bonds.

If you go back if you remember the Keynesian theory believes in the concept of short run; you might have heard about the famous line what Keynes used to say Keynes in the short run we are all dead. So, in this context the theory of determination given by the Keynes also in that particular line that which tells that that interest rate is determined by all monetary factors.

And here the monetary factors means if you remember according to Keynes the interest rate is determined by the demand for money and the supply of money, there is no role of other external or the real sector variables for the determination of the interest rate. So, it is very clear in that sense the particular factors which are responsible for demand for money and the factors which are responsible for supply of money; those are responsible to determine the interest rate in the aggregate sense. But here the question is that whenever we talk about the demand for money; then what do you mean by that? That is why Keynes said there are two agencies one is your Central Bank or the Government and another one is economic units or the public which are basically existing in that particular system.

So, here if you see one particular agency is responsible for the supply side and another agency is responsible for the demand side. So, according to Keynes the supply basically comes from the monetary authorities; that is the central bank or the government and the demand is coming from the other economic units which are existing in the system. So, in that particular period of time we have only two alternative assets; one is your money in the liquid form or the cash and another one is the bond.

So, what Keynes was trying to say that how much money people are trying to hold with them that is basically defined as the demand for money. So, instead of the holding money in terms of the bond; the people may be interested to hold the money in terms of the cash or in terms of any kind of liquid form. So, therefore, this line the last line of the first

paragraph if you see; due to the attitude of economic units towards holding money as an alternative to holding the bonds.

So, whether the economic units want to hold the money in terms of the bond or they want to hold in terms of the cash. So, that is the basically the question which is always raised in the mind of the people who are the participants in the financial system that how the money is demanded, for what reason the money is demanded because the interest rate is determined with the interaction of intersection of the supply of money and the demand of money demand for money. And according to Keynes this particular interest rate concept is purely a monetary phenomenon.

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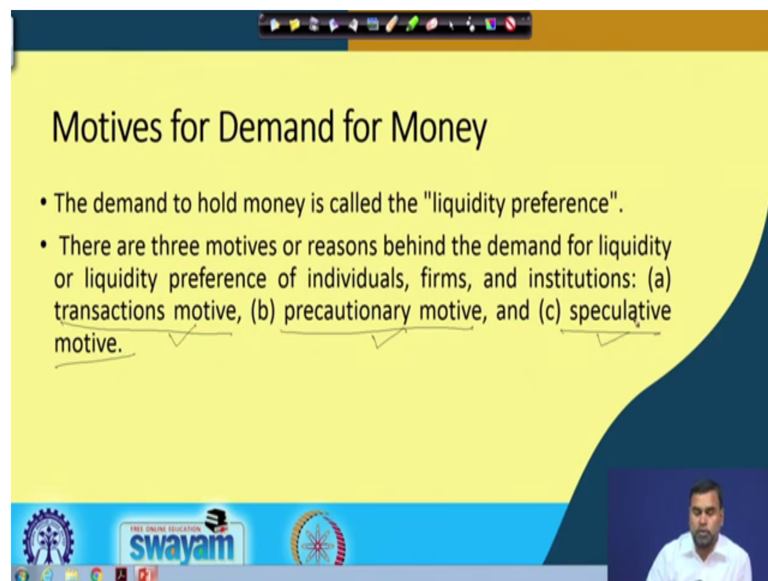

Let us see that why the money is demanded or what are the different motivations, why people demand for money? You know that those kind of motivations or different kind of factors which are responsible for demand for money was not discussed before extensively before this particular theory came into the existence.

So, Keynes is the first person who was trying to explore that why the money is demanded? What Keynes basically was trying to say there are; that means, according to Keynes why it is called the liquidity preference theory? Because the demand for money or demand to hold the money is nothing but the liquidity preference; so, whether people are interested to hold the money with them or not or they or interested to invest the money in the market.

So, in this context what Keynes was trying to say there are different motives, there are different reasons that always forces the; household and other business units to hold the money with them. Then what are those motives or what are those kind of reasons for which the demand for money? The reasons are basically three reasons or three motives Keynes has identified; one is your transaction motive the first motive Keynes has identified that is your transaction motive.

Then you have the precautionary motive, then you have the speculative motive because speculative motive is there because of the investment in the market. So; that means, what it tells that money is demanded for three reasons; people want to transact that is why there is a transaction motive, people want to keep some money with them for some kind of unforeseen situations as a contingency plan, people also demand for money for the speculations or to take care of the speculative advantages which ever are there in the market. So, therefore, money is demanded for three reasons one is transaction, precaution and the speculation.

Let us see that how this transactions demand or precautionary demand or speculative demand is basically playing the role for determination of the interest rate in the system.

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Then if you see that here one thing one by one if you discuss that let we can start with the transactions demand for money. The transactions demand for money which is basically what? The amount of money that consumer need for transaction purpose mostly

for buying and selling of goods and services. In the day to day life, we need money because we want to buy something and also we want to sell something. So, the transaction motive is the prime motive for the individuals or household sector because they want money for their day to day life.

They try to buy the commodities, they try to sell the commodities and because of that they have some kind of motives to demand for money or they try to hold the money with them. So, here there are various factors which are responsible for the transactions demand for money. One is obviously, the major factor is income; if you have more income, you will spend more, your transactions will be more, you have always inclined to buy certain products and; obviously, the higher income group people go to the market more because they want to spend more money and that is why the transactions demand increases.

And; obviously, spending habits there are some people they love to spend the money and there are some people they do not want to transact more money even if they earn money. But still if the income level is higher; then obviously, the spending habit also changes. So, income is the primary factor; which affect the transactions demand for money and second one is the spending habits of the individuals a spending habit is there then; obviously, people go to the market. And if they have more confidence on the market they always participate in the market mechanism for buying and selling of the commodities; so spending habit is another one. So, therefore, if you see that another one is that time interval; what do you mean by this time interval? The time interval after which each income is received you see that at what time basically this particular money you want.

For example, you are paying some kind of service charges whether the services charges is paid weekly or monthly or it can be yearly. So, if it is monthly then; obviously, you need more cash with you or may need more money with you. If you are paying yearly then; obviously, you need less money now because in the yearly basis your payment has to be made. So, on at which interval your money is paid or your income basically is going to be utilized.

So, therefore we have this is also another reason that more the interval, more the frequency; obviously, the demand for money increases and lesser the frequency the demand for money declines. But in terms of the income if you are filling that key within

one month; every one month you are going to earn, then also that is also affecting your transactions demand for money.

If your earning is frequent or maybe then the frequent interval you are going to earn more or your income is received, then also that is affecting the your spending habit and as well as also your transactions demand for money. Another reason for the transactions demand for money is banking developments. You see in today's context there are various alternatives the bank has, but if you go back previously those kind of alternatives who are not available.

For example, now we have the credit card, now we have the cheques, we have the drafts, we have different kind of alternatives through which the money can be paid or the transactions can be made. But in before that if for example, for everything you want to use cash then; obviously, your demand for money increases. But if you have different alternatives then; obviously, what will happen? You do not; you are not bother about basically holding the cash with you and you can carry any kind of alternative instrument which are available or the different instrument which are available or given by the banks for your transactions.

So, that is why people may not carry the cash with them; they may go with their credit card, they may go with their debit card for their transactions whenever they want to transact or they want to buy something they want to sell something. Then the another point we have that is called the industrial structure; what do we mean by this industrial structure? There are some places there is a vertical development or vertical integration of the industry.

So, for example, you are talking about the Tata Group, you talk about the Reliance Group; so in that context what happens that the transactions if this industry is growing vertically; then the transactions demand for money basically declines. Because they may not need cash they made; they may only simply transact the money within themselves. So, that is a reason basically some people highlight that the vertical or horizontal development or integration of the particular system may also affect the; transactions demand for money in that particular economy.

So, overall what basically we have seen? We have income, we have spending habits, we have time intervals after which the income is received, development in the banking

sector; mostly the different alternative instrument which are available for the mode of payments and all other things; then you have the industrial structure these are the major reasons which are affecting the transactions demand for money. But according to Keynes; the most significant factor which is basically affecting the sick demand for money or transactions demand for money that is basically income.

So, let if you see that we have denoted the transactions demand for money as MT and this transaction demand for money is a function of Y; Y is it is basically the income. And if you write that; that means, that if your M T is equal to your transaction demand for money is directly proportional to Y. So, in this context we can write that MT is equal to KY.

So, this K is basically a kind of a constant which is basically giving gives you the slope. So, the slope of the transactions demand for money it can be basically nothing, but the dMT by dY which is basically greater than 0. So, the transactions demand for money curve what here I have shown that is basically your here that is basically always greater than 0; that means, it is a positively sloped curve. So here if you see if your total income is 200; then if you see this one, if you expend extend this particular line let this is 50, then your K will be 50 by 200; that is 1 by 4; if it is 400, then you can say that is 100; then the again also your K is equal to 1 by 4.

So, here the slope basically is remaining constant. So, in this context what we are telling, that slope is positive. So, what we are trying to conclude here were trying to basically conclude that the transactions demand for money is a positively related to the income and the; the relationship between the transaction demand for money and the total income of the individual is always positive.

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Transactions Demand for Money Cont…

- Frequency of income receipt i.e. the length of time period which elapses between the receipt of money income and its disbursement
  - Shorter the pay period, smaller will be the amount of money required for the transaction purpose
- Banking developments
  - Alternative modes of payment declines MT
- Industrial structure
  - Vertical integration declines the MT

Then the other thing basically what we are talking about; so, here already I told you that all these factors the frequency of income received or the length of time period which elapses between the receipt of money income and disbursement. Shorter the pay period; shorter the pay periods smaller will be your smaller will be the amount of money required for the transaction purpose.

And already I have explained or I have discussed with you about the alternative modes of payment which declines the; transactions demand for money. So, although income is most important factors, these are also the responsible factor which can affect the demand for money because more amount or availability of different modes of payment that can decline the availability of the cash with the individuals. And vertical integration declines the transactions demand for money that already we have discussed.

Here then the about after discussing this; then we can move to the precautionary demand for money.

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Precautionary Demand for Money (MP)

- Money demanded to meet unforeseen contingencies
- Factors affecting precautionary demand for money are:
  - Nature of business
  - Access to money market
  - Degree of conservatism
  - Degree of liquidity of the assets
  - Income
- MP = f(Y)

So, what exactly the precautionary demand for money is? The precautionary demand for money is nothing, but the people wants to keep certain money with themselves to meet the unforeseen contingencies; there must be any kind of problem, there must be any kind of situation will arise which cannot be foresighted now; so, because of that also people keep some money with them.

Then there are various factors basically responsible for this because whole business unit and as well as the individuals both are always ready to keep certain money for the precautionary motives or they have certain motives to keep the money from the precautionary purpose. Then what are those? The first factor if you see the first factor is the what kind of business the company is doing? If the company is doing certain business which is relatively risky; they want to keep certain money with them always or they want to maintain some liquidity with them to overcome that kind of uncertainty which may prevail in the market.

And another factor if you see that access to money market; the money market in the sense what here we are trying to say the money market is a market which provide all those liquid instruments or liquid assets. So, the money market is highly liquid it provides all those liquid assets, but the question here is whether already from the beginning I can give you this example in Indian context; the money market is highly

restricted it is interbank market all the market participants are not eligible to access to the money market.

So, if the access to the money market is restricted then the business units always try to hold some liquidity, some cash with them to overcome certain kind of uncertainty or the risk what they may face in the future in their business process. So, access to the money market declines the precautionary demand for money, but if the access to the money market is restricted; then it increases the precautionary demand for money by the business units.

Degree of conservatism if for example, some kind of individual, some kind of in investors, some kind of market participants they are highly conservative because they do not want to take much risk while putting their money in the market; more so conservatism they try to maintain more liquidity with them or they try to maintain some kind of precaution with them because at any point of time they can need that particular cash with them. And they do not have that much trust in the market that the market is always prone to failure; if there is a failure in the market then how they can get rid of that or they can get out of that particular problem.

So, to bail out that particular issues or particular problem which may prevail in the market what they are going to do? They keep certain money for the precautionary reasons with them. So, that is why that also affects the precautionary demand for money in the system. Then whatever assets they have; what is the degree of liquidity they have. The company's also holds some asset with them, but how you know what do you mean by the liquidity?

Liquidity is basically nothing, but how fast the particular asset can be converted into cash the conversion to cash. So, whatever assets we have; if those assets is easily can be liquidated or the asset can be easily converted into cash, then we can say that we have more liquid assets; then whatever assets the particular company or particular individual are holding the what kind of liquidity or degree of liquidity the particular asset assets have.

If the degree of liquidity is more then what is going to happen? That; obviously, the precautionary demand for money will decline of the degree of liquidity is basically less then the precautionary demand for money will increase because at any time of

requirement they can sell that particular asset easily which can be easily converted into cash and they can repay their loans or fulfill their requirements whatever they want.

But here in this context, if the assets are not that most liquid whatever assets they are holding if it is not that liquid then they have to keep certain money with them; which is for the precautionary reason. Then; obviously, the another factor we have that is income the income is basically the sole factor because; obviously, if more than income they can keep more money for the precautionary reasons; even if after fulfillment of all those requirements whatever they have.

They may not take much risk, but even if they take risk if they have more income available with them, then that also can be used or some amount of money, they can keep it as precautionary motive. So, more the income the precautionary demand for money also may increase. So, what Keynes has said? Keynes said this precautionary demand for money is also a function of income.

So, these are this is the way this; the demand function by the Keynes is basically defined. So, then if you if you see that these are the after to these two motives.

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Speculative Demand for Money (MSP)

- Amount of money people hold for making speculations in the financial markets
- There is an inverse relationship between interest rates and the speculative demand for money
- Relationship between interest rate and speculative demand for money is called the Liquidity Preference Curve
- Interest elasticity of speculative demand for money increases as the interest rate declines
- The MSP= f(r), where r = interest rate

There is another motive is the speculative demand which is the greatest contribution of the Keynesian theory. So, what do you mean by this? It is basically amount of money people hold for making speculations in the financial market.

So, here you see that income is also a factor, but Keynes has given the importance that the speculative demand for money is mostly driven by the interest rate. The speculative demand for money is mostly driven by the interest rate and therefore, the; there is if interest rate declines, then the demand for money for speculation increases because the cost of the bond will be cheaper people can borrow more money and they can put the money in the financial market to maximize their return.

But if the interest rate is very high, then the cost of the bond will be very costlier then this investor may not be inclined to borrow the money in that particular high cost; that is why the demand for money declines for the speculative motives. So, therefore there is an inverse relationship between the speculative demand for money and the interest rate. Then coming back if you see that if you make a relationship between interest rate and the speculative demand for money this is basically called the liquidity preference curve.

So, the relationship between interest rate and the speculative demand for money is defined as the liquidity preference curve; that whether the people are interested to hold the money with them or they want to put the money into the market for speculative motives to get certain amount of return. So, that is why the relationship between them is defined as the liquidity preference curve; the interest elasticity of speculative demand for money increases as the interest rate declines.

The interest elasticity of speculative demand for money increases as the interest rate declines. Why? Because already I told you; if the interest rate declines then people will be more interested to go for investment in the bonds and other financial assets than putting the money in terms of the cash with them. So, therefore, in general what we can say? That the speculative demand for money which is basically here we have denoted as MSP is a function of r. So, here your r is equal to your interest rate; so if your interest rate and speculative demand for money is inversely related. So, this is what basically what Keynes was trying to highlight.

So, here after knowing this what do you mean by this speculative demand for money; let us see that how this speculative demand for money curve look like or the liquidity preference curve basically look like.

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So, therefore, if you see this one here this graph basically the shows that how these interest rate and the demand for money for the speculative purpose is basically moving or what kind of relationship can be established between them. The rate of interest at which the speculative demand for money becomes perfectly elastic is called the liquidity trap. So, this is basically your liquidity trap; then why would it is called the liquidity trap? This region is liquidity trap; why it is we call it liquidity trap?

Because further change in interest rate there is basically happens in a very low interest rate; further change in interest rate the withholders hold their entire wealth in the form of money; instead of holding the interest bearing bonds. So, you see that interest liquidity trap into the wealth holders, hold their entire wealth in on some money it this interest rate is quite low. So, instead of holding it in the bond market what they; they will see that because the interest rate is quite low the coupon is quite low.

So, instead of holding it and because the price of the bond is quite high; so they may not be interested. So, here what is basically we are trying to see? The speculative means because that time Keynes was everything explaining through bond market, if the interest rate will be up then what is happening? The price of the bond may go down; so that is why people will buy more bonds.

So, the speculative demand in this the investment in the bond market increases, but whenever this interest rate is very low, so people the price of the bond is very high. So, in

that context they will be more, there is no point of investing in the bond they may be prefer to hold their wealth in the form of money instead of holding the interest bearing bonds.

So, at the liquidity trap rate of interest money becomes perfect substitute for the bonds. Already I told you that if the interest rate is very low that the price of the bond goes up; the price of the bond goes up. So, if the price of the bond is very high, people may not be interested to invest in to invest in that. So, here in this case what is basically here we are talking about? We said that the demand for money the speculative demand for money is a function of interest rate.

So, here what we are trying? If interest rate declines, the speculative demand for money goes up because people will not be interested to invest in the bond market; they try to hold the money with them, but if the interest rate increases, then the speculative demand for money goes down. Because people will not be holding the cash people will be interested to invest in the bond market because the return from the market is relatively higher and the price of the bond is low that is why people will be interested to buy more bonds in that particular point of time.

But in the liquidity trap region money becomes a perfect substitute for the bonds that is what basically what the liquidity trap basically talks about. So, the speculated if you; if you summarize that what this speculative demand basically talks about. The speculative demand basically says that the in the high interest rate scenario; the speculative demand for money goes down.

And in the low interest rate scenario, the speculative demand for money goes up. The reason is basically the bond market is not lucrative and people prefer to hold the cash instead of holding the bonds. So, that basically is also affecting the interest rate in that particular point of time. So, here this is what basically the liquidity trap is all about; then we can we can move into the concept which is basically we talk about.

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Total Demand for Money (TMD)

- TMD = MT + MP + MSP
- As MP is also a function of Y we can combine MT and MP
- Now TMD = f (Y) + f (r)

Now, the total demand we have three demand for money one is transaction demand, one is precautionary demand, one is speculative demand. So, here what Keynes was trying to say because that MP is also a function of Y, if you want to use it in a functional form what they said? They have added that both the demand for money, total demand for money is a function of Y and r the r is equal to your interest rate and Y is equal to your income.

And here, if you decompose into three we have the transactions demand we have the precautionary demand, then we have the speculative demand. So, both transaction demand and precautionary demand is a function of Y and the speculative demand is a function of; transaction demand and precautionary demand is a function of Y and speculative demand is a function of r.

Then the; finally the total demand for money is function of interest rate and the income. So, this is what basically this total demand for money, but another question here.

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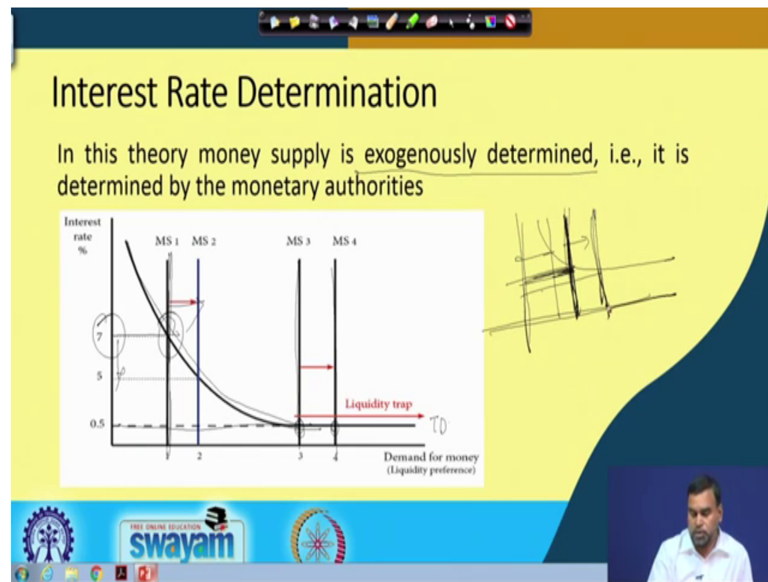

Then obviously, the equilibrium can be established when we say that. The we should know the supply side and according to Keynes the supply is excess money supply is a exogenously determined; exogenously determine means the monetary authority can decide how much the money supply should be.

So, it is very important point to remember the exogenously determine means it is totally depends upon the central bank or the monetary authority that how much money supply they can make and once it is you know the money supply is fixed. So, then you have the liquidity curve here; liquidity preference curve here and this is your money supply which is fixed in a particular period of time.

Then whatever, it is basically interacting with this demand curve because this is your total demand curve. Then here your equilibrium is established and here this is basically the interest rate. Then once they will increase the money supply then; obviously, the interest rate will go down. And further if you observe in the liquidity trap region wherever the money supply was; even if the money supply has increased, the interest rate is not going to be changed.

So, if the economy is in the liquidity trap or already the interest rate is quite low; in that particular point of time any change in the money supply does not have any impact on changing the interest rate. So, here in over all what we see? This is your liquidity preference curve and this is your money supply because money supply is fixed in a

particular point of time because this is determined by the monetary authority and if any point of time.

So, this is your interest rate which is decided and once the change in interest rate will be there; that can happen whenever there is a change in money supply; what change in money supply will decline the interest rate, if money supply will increase. If money supply will decline, then interest rate will increase; if money supply will increase, the interest rate will decline, money supply will decline; then the interest rate will go up.

So, this is what basically this is the way the interest rate is determined according to Keynesian framework. So, now we have discussed about the three theories; the classical theory, the loanable fund theory and Keynesian theory and all those theories were trying to explain then how the interest rate in the market is determined. And what are those factors which affect the demand side and supply side variables which can finally, determine this interest rate.

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Please go through these particular references for this particular session. In the next class, we will be discussing about the term structure theories of interest rate.

Thank you very much.