Management of Fixed Income Securities
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Module No # 03
Lecture No # 12
Level of Interest Rate Determination – III

Welcome back. So, in the previous class, we discussed about the different factor which are affecting the demand for and supply of the bonds. Accordingly, your equilibrium interest rate in the market gets changed.

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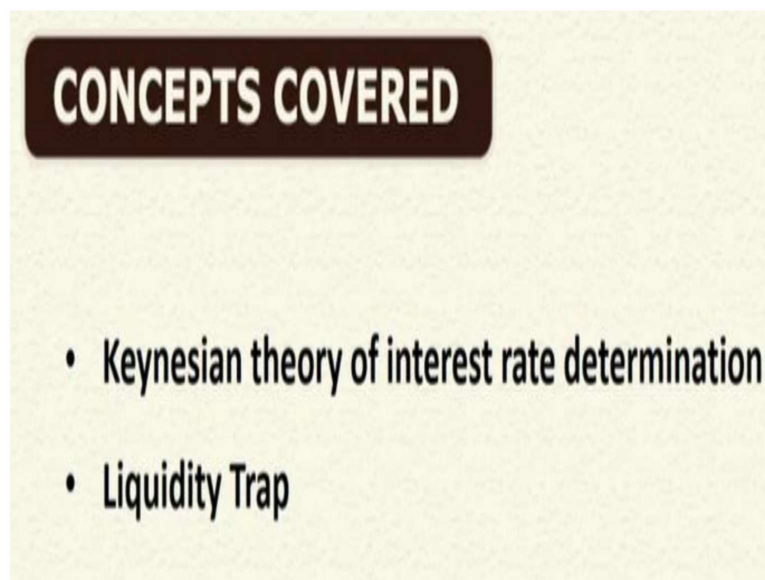

So, in today's discussion, we will be discussing about the another theory which is also is used for determination of the interest rate in the market that is called the Keynesian theory and also the concept of liquidity trap that you might have the idea but again I will just discuss this things again that what exactly the liquidity trap is? And how; it is basically relevant in terms of the interest rate determination

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KEYWORDS

- Transactions demand for money
- Precautionary demand for money
- Speculative demand for money
- Supply of money

and after this discussion, we will come through basically the different concepts like transactions demand for money, precautionary demand for money, speculative demand for money, supply of money. These are the keywords what basically will be using for this particular discussion.

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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.

Let me tell you what basically the Keynesian theory talks about regarding the interest rate. You just recall that whenever we discussed about the classical theory the classical theory tells the interest rate is a complete real phenomena. The real factor in the economy is going to determine the level form of interest rate. The level of interest rate is determined by the real factors. So, in that case, we have basically taken the variables like total savings and the total investments and this savings is basically is the supply side and investment is the demand side. Whenever there is a equality between the saving and investment, our equilibrium interest rate

in the market is determined. OK? But whenever we talk about the Keynesian theory, Keynes theory basically talks about or totally, he is not in favour of the concept that interest rate is a real phenomenon or interest rate is determined using the real factors.

That is why according to Keynes, interest rate is purely a monetary phenomenon. OK? So, the Keynesian economics mostly talks about the short-run dynamics. According to the Keynes or according to the Keynesian theory, interest rate in the short run is determined by the all those monetary factors which are available. Mostly, it is the interaction between the supply of the money and the demand for money in the economic system.

But Keynes Keynesian theory mostly concentrated on the demand for money. Why? Because according to Keynes, the supply of money is exogenously determined which is driven by or which is determined by the regulatory authority the monetary authority. So, that is why the interest rate is completely depends on the actions of the monetary authority and the attitude of the economic units or the stakeholders or the market participants likes individuals, corporate sector and other bodies who are interested to hold the money or demand the money for some specific reasons. The demand basically comes from different economic entities and supply basically comes from the monetary authority. So, that is why the demand for money and supply of money that is going to determine the interest rate. The real factors are not significant in terms of the determination of interest rate in the market. That is the basically the basic essence of the Keynesian theory.

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Assumptions

- There are two main categories of assets that people use to store their wealth: money and bonds
- Total wealth in the economy must equal the total quantity of bonds plus money in the economy, which equals the quantity of bonds supplied (B^S) plus the quantity of money supplied (M^S).
- The quantity of bonds (B^D) and money (M^D) that people want to hold and thus demand must also equal the total amount of wealth
- The quantity of bonds and money supplied must equal the quantity of bonds and money demanded

So, in that context, what is the assumptions what basically Keynes has taken? That you just see that what is the assumption that Keynes has taken? One basic assumption Keynes has taken that only there are 2 main categories of assets are available in the market. One is money another one is the bond and the total wealth of the economy must be equal to the total quantity of the bonds plus the money in the economy because only there are 2 assets are available money and bond.

So, if your only 2 types of assets are available then total wealth in the economy must equal the total quantity of the bonds plus the money in the economy which basically equals the quantity of the bond supplied plus the quantity of the money supplied. Right? Total bond means it is basically the quantity of the bond supplied plus the quantity of the money supplied then the quantity of the bonds and money that people want to hold. That means it is basically demand side. That must also equal the total amount of the wealth. So, that means the quantity of the bonds and money supplied must be equal the total quantity of the bonds and money demanded. Whichever if there is an equilibrium, then there are 2 assets then the total money supplied and total bond supplied if you take a summation of that, that is equal to your total demand for money and as well as the total demand for the bonds.

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Assumptions

- $B^S + M^S = B^D + M^D$
- $B^S - B^D = M^D - M^S$
- if the market for money is in equilibrium ($M^S = M^D$), then $B^S = B^D$, meaning that the bond market is also in equilibrium.

So, if you look at that identity, what basically it says that B^S represents your bonds supplied and M^S represents your money supplied is equal to your bond demanded that is $B^D + M^D$. M^D represents the money demanded, B^D represents basically the bond demanded.

- $B^S + M^S = B^D + M^D$

- $B^S - B^D = M^D - M^S$

Supply is equal to demand. If there is a equilibrium, then only interest rate can be determined.

So, let I have taken this B^D into the left hand side then what will happen that $B^S – B^D$ is equal to your $M^D – M^S$.
For example, if the market for money is in the equilibrium, let MS = M^D.
Then, $M^D – M^S = 0$
If $M^D – M^S = 0$ then what will happen?
Then $B^S – B^D$ also is equal to 0.
So, if your $B^S – B^D = 0$, that means $B^S = B^D$.
It means that the bond market is also in the equilibrium. If $M^S = M^D$, then B^S also should be equal to B^D.

One restrictive assumption here the other alternative assets which are nowadays we are observing in a market Keynes basically has not considered those assets. If there are 2 assets only one is money and other one is bond so in that case what will happen? That always you will observe that there is equilibrium in the money market.

If the money is in the equilibrium, then the bond market also will be in the equilibrium. So, the demand for money equal to the supply of money then demand for bond is equal to the supply of bonds. That is the argument what Keynes has given and already what I told you that the money supplied is determined by the monetary authority. It is exogenously there is a debate but according to Keynes, the supply of money is determined by the monetary authority.

So, we are much more concerned about the demand for money. So, we have to look at what are those factors which drive the demand for money in the market.

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Demand for Money

- The demand to hold money is called the "liquidity preference".
- There are three motives or reasons behind the demand for liquidity or liquidity preference of individuals, firms, and institutions: (a) transactions motive, (b) precautionary motive, and (c) speculative motive.

So, then in that context, Keynes has given lot of importance to the demand for money and the demand to hold the money is generally called the liquidity preference the other name of the Keynesian theory is also called the liquidity preference theory. The demand to hold money is called the liquidity preference. And why we need money? Why we hold the money? What are the reasons for holding the money?

We hold the money for what reasons? First reason is the transactions day to day transactions and as well as we also keep some money for our precautionary reasons for some unforeseen reasons and as well as we also need money for speculative reasons because we want to enhance our wealth by making the investments. So, money is demanded for 3 reasons: for transactions, for precaution and for the speculation. That is the 3 motives what Keynes has highlighted whenever he talked about the concept of the demand for money.

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Transactions Demand for Money

- Amount of money which consumers need for transactions purpose mostly for buying and selling of goods and services
- Factors affecting transactions demand for money:
  - Income, spending habits, time interval after which income is received, banking developments, Industrial structure

So, then let us discuss what is do mean by transactions demand for money? What do you mean by transaction for money? Transactions demand for money basically what? Here the consumer basically needs for transactions purpose mostly for buying and selling of the goods and services and what are those major factors which affect your transactions demand for money? Obviously income if your income is more then you will consume more spending habits and alternative mode of the opportunities through which the spending can be made.

In today's contest, if you see because of the online transactions and all people are basically spending more. If their income is more, it takes fraction of second to buy the commodities and people some people are inclined to buy many things even if they have the things. So, spending habits is important factor for consumption. Then the time interval after which the income is received how frequently you are receiving your income.

In short period of time you receive some whether your income you are receiving periodically in terms of months or in terms of week or in terms of day that will also have the impact on your transactions. Banking developments why banking developments were talking about? Sometimes, if the banks are highly developed or the financial sector is developed, people have the alternative kind of use of the money so, sometimes, the consumption may go down they may go for the savings if there is an availability and the industrial stock remains how the industrial development or corporate sector is developed. So, you can take all those factors which are affecting consumption. Income is the major factor, spending is another factor. So, these are basically the transactions demand for money factors why people basically or what factors basically drive the transactions demand for money.

And Keynes has highlighted certain factors but you can add also more number of factors into this which are responsible for the consumption behaviour of individuals. Right!

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Precautionary Demand for Money

- 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

Then second thing is precautionary demand for money and why the precautionary demand for money is required? Precautionary demand whatever money we are keeping in bank that may not be all money for precautionary reasons that may be for the speculative reasons also to some extent. But the precautionary reason means we are talking about the particular kind of unforeseen contingencies.

We don’t know what will happen in the future so, because of that some kind of money has to be kept with us to fulfil that requirement that is basically called the precautionary motives. Then what are those factors which may affect the precautionary demand for money? First of all, the nature of business what kind of business you are doing. If it is highly risky business let a corporate sector which is doing a business which is highly we can say that highly volatile in nature.

The nature of the product what they are producing they are highly seasonal or there may be prone to high fluctuations because of some kind of factors any small changes in the economy is going to affect the business largely. So, they will keep more money for precautionary reason. Access to the money market you see which is the immediate market the financial entities always rely upon to fulfil the short term requirement mostly the money markets.

But there are many countries where access to money market is only restricted to some entities you don’t have that much access or the sufficient amount of resources you may not get from that particular market whenever we need it. There is a restrictive market the market participates in the money markets are quire limited. So, because of the limited access maybe they are always inclined to have certain kind of what we can say that money what they need to fulfil their precautionary motives.

Degree of conservatism:-How conservative you are in terms of your business in terms of taking the risk in the market. So, if you are highly conservative that means your riskiness or exposure towards the risk is relatively less, then in that case, you may not need more money for the precautionary motives. But sometimes, if you are not conservative, you are very much aggressive in terms of investments and other kind of activities in the market. So, in that particular point of time, some money has to be kept to fulfil or to overcome the risk if there is any kind of risk you may face in the market that can be overcome by the money which is available for the precautionary reason. Then degree of liquidity of the assets: - how liquid the asset is whatever you are holding. So, if your assets are not that much liquid, they are not that way marketable in this particular market or at any point of time, you are not able to get back your cash by liquidating that asset then also you need some money to be kept with you to fulfil that particular immediate requirement.

Then obviously the income is another factor which always have the impact on transaction motive and as well as the impact on the precautionary motive. More the income you have then obviously some amount of money always you will be interested to keep for fulfilling the precautionary demand for the individuals or the market participants. So, these are the factors which are affecting the precautionary demand for money.

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Speculative Demand for Money

- 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

Then the other factor basically talks about that is the speculative demand for money. So, what is the speculative demand for money? Here basically the money which is people kept for making speculation in the financial market particularly you are talking about the investments and there is inverse because already in the beginning, we have taken only one asset is available in the financial market for investment that is bond because Keynes has taken that the only 2 types of assets are available one is your bond another one is money and there is a inverse relationship between the interest rate and the speculative demand for money and the Keynesian theory is largely concentrated on the transactions and speculative demand. The explanations on precautionary demand for money although Keynes has highlighted that because Keynes has not discussed much about this. So, the relationship between interest rate and speculative demand for money if you see that is generally called the liquidity preference curve. OK?

So, the interest elasticity of speculative demand for money increases when the interest rate declines. The interest elasticity of speculative demand for money increases or the interest rate declines why? If the interest rate will increase or decrease if interest rate will decrease, then the price of the bond will be high. OK? So, in that case, you will have a impact on the demand for bonds and as well as the demand for cash or the money whatever people are trying to hold.

So, that's why there is a kind of relationship you can establish between the change in the interest rate and as well as the demand for money in the market at that particular point of time. So, in this particular context, what basically Keynes has done.

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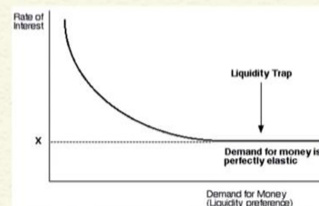
Liquidity Trap

- The rate of interest at which the speculative demand for money becomes perfectly elastic is called liquidity trap
- At the liquidity trap interest rate, the wealth holders hold their entire wealth in the form of money instead of holding the interest bearing bonds
- At the liquidity trap rate of interest, money becomes perfect substitute for bonds



Keynes has derived a concept called the liquidity trap. What this liquidity trap is? The interest rate at which the speculative demand for money becomes perfectly elastic that is called liquidity trap. So, if you are reaching in a particular interest rate level that means that is called the liquidity trap interest rate, then the wealth holders hold their entire wealth in terms of money instead of holding the interest bearing bonds.

So, at the liquidity trap rate of interest, money becomes perfect substitute for the bonds. You see that whenever we talk about this if interest rate is higher then what will happen? The price of the bond will be lower. In that case, people will be inclined to invest in the bond market because they will it will be cheaper for them to invest but gradually, if the interest rate will decline and reach in a certain stage, in that case, if you will observe, that the demand for money is perfectly elastic.

It will not basically affect this kind of we can say that whether they will go for investing in the bond market. That means it will just work like a substitute. The money basically it will be substituted by the bonds. So, there is a perfect substitution happens in that particular zone that is basically called the liquidity term. So, that concept all of you might have the idea but we just because this particular topic is linked to this that's why we are discussing this.

So, in that context, the relevance of the liquidity trap is quite relevant whenever we talk about the interest rate determination using the Keynesian theory. But now the question is that what is the question here?

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Changes in the Equilibrium Interest Rates

- Income Effect: A higher level of income causes the demand for money to increase and the demand curve to shift to the right
- Price Effect: rise in the price level causes the demand for money to increase and the demand curve to shift to the right
- An increase in the money supply engineered by the Central bank will shift the supply curve for money to the right
- When the money supply increases (everything else remaining equal), interest rates will decline

What factors basically change the equilibrium interest rate as per the Keynesian theory? So, Keynesian theory talks about the exogeneity of the money supply and only thing is we can play with the demand for money and there are certain motives for the demand for money. So, that's why, Keynes if you summarize Keynes theory, Keynes largely talks about the concept called the income effect. What is the income effect here?

The higher level of income causes the demand for money to increase and that's why the demand curve will shift to the right and another thing also price effect the rise in the price level causes the demand for money to increase and again the demand curve will shift to the right. Price level means we are talking about the price of the goods and services. Right? So, an increase in the money supply which is generally triggered by the central bank or monetary authority will shift the supply curve up for the money to the right.

If money supply will increase and that is in the hand of the regulatory bodies or the monetary authority or the central bank, then what will happen? That this will be a vertical axis this will be a vertical line which is basically touching your horizontal axis of that particular kind of curve. So, in that case, if there is a change in money supply, then that particular vertical line may shift. So, when money supply increases, everything else remains equal then interest rate will decline.

If money supply increases, everything else remains same the interest rate will decline that means if interest rate will decline the money supply will increase that also you can say. If you are using money supply as an exogenous variable then it will go in this way. If money supply increases then interest rate will decline. Right? But if you assume that the money supply is

not exogenous money supply is indigenous in that particular case maybe the reverse thing may happen and if the other way you can discuss it that the interest rate will decline then the money supply will increase not a reverse thing but other way around we can discuss that. Can start from the interest rate and go to the money supply. But in this case, we are coming from one supply to the interest rate. OK?

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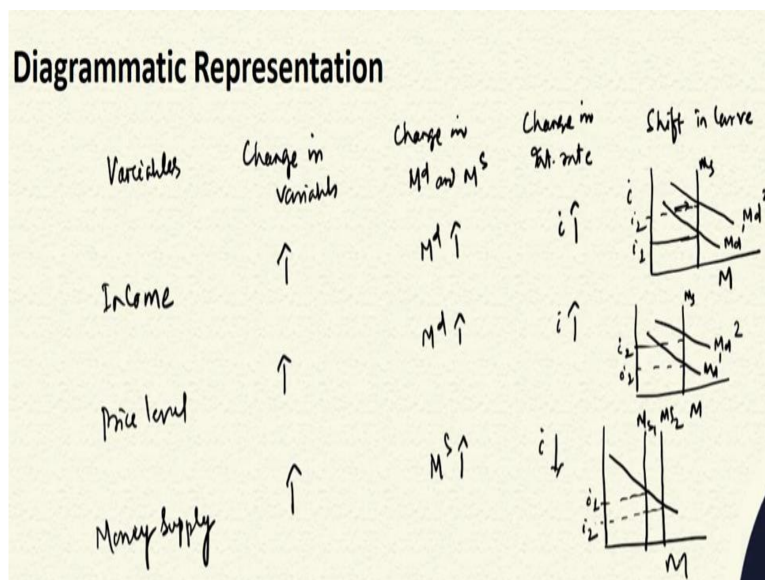

So, let us again look at this things from the diagrammatic point of view that already I have told you there are income effect and the price effect and we have the money supply there are 3 things. So, let the same way we have taken your variables then we have the change in the variable OK? Then we have change in money demand and money supply. OK? Then we have change in interest rate then we have the shift in the curve. So, first variable we have taken major variable that is income if it is increasing, then your demand for money will increase and your interest rate will increase then now if you see that how basically it will so, here your money supply is constant. It will not have an impact on the money supply. So, this is your money supply and money demand, this is your interest rate. So, now previously let the this was your demand curve 1 so, whenever income will change then what will happen that it will basically the demand for money will shift towards the right. Right?

So, previously this was the equilibrium interest rate this is let i1 so, this become now this is i2 the new equilibrium has been established the interest rate has been changed interest rate has gone up. So, then we have the price level. So, let it has gone off then obviously your demand for money will increase. Here also, if you find, the interest rate will increase because the same thing will happen supply is constant. OK?

This is your Md 1, this is your Md 2 so, obviously, this was your i1 this will become i2 so, the interest rate has changed. Let we have taken the money supply because it is in the control of the authority. So, if this will increase, then money supply will increase then in that case, what will happen? The interest rate will decline. If you observe here, let this was your money supply before now the money supply this was your demand, this is your Ms, and this was your equilibrium interest rate. Now due to increase in the money supply, it will shift like this.

This is Ms 1, this is Ms 2, Right? Demand is fixed. So, in that case, this was your i1 now the interest rate has declined to i2. So if you increase your money supply keeping your demand for money it remains same then what will happen? That I will it will basically decline the interest rate because we are assuming that the money supply is the total control of the monetary authority.

Whenever they want, they can change it. OK? So, this is the way basically the demand for money and supply of money curve can shift. Mostly, the income, price, money supply these are the major factors which are responsible for shifting the demand for money and the supply of money according to the Keynesian framework. OK?

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CONCLUSIONS

- As per Keynesian theory interest rate is determined by the interaction between the supply of money and demand for it in the economic system
- There are three motives behind the demand for money: (a) transactions motive, (b) precautionary motive, and (c) speculative motive
- At the liquidity trap rate of interest, money becomes perfect substitute for bonds
- Income, price of commodities and government policies are major determinants of interest rate

So, what basically we have discussed today? As per Keynesian theory, the interest rate is determined by the interaction between the supply of money and the demand for it in the economic system and there are 3 motives behind the demand for money. There is a

transactions motive, precautionary motive and speculative motive and money supply is in the total control of the monetary authority which is completely exogenous to the system.

Then at the liquidity trap rate of interest, money becomes a perfect substitute for the bonds and the income, price of commodities and the government policies are the major determinants of interest rate and already I have told you according to Keynes also, the interest rate determination is a completely a monetary phenomenon and it has a lot of significant in terms of the equality for the demand of money and the supply of the money. OK?

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So, these are the references what you can go through for the detail discussion on this.

Thank you.