Management of Fixed Income Securities
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Module No # 03
Lecture No # 11
Level of Interest Rate Determination – II

Welcome back. So, in the previous class, we started the discussion on the level of interest determination particularly how the market interest rate is determined. So, in that part, we have discussed about the three theories which generally tries to explain interest rate. One is your classical theory second one is your loanable fund theory. We have discussed about the classical theory and also we started the discussion on the loanable fund theory, and in the loanable fund theory, what we have discussed that the demand and supply side of the bonds particularly the supply of the bonds and demand for the bonds that will decide that how much interest rate will be prevailed in the market and accordingly, the yield of the particular bond can be determined.

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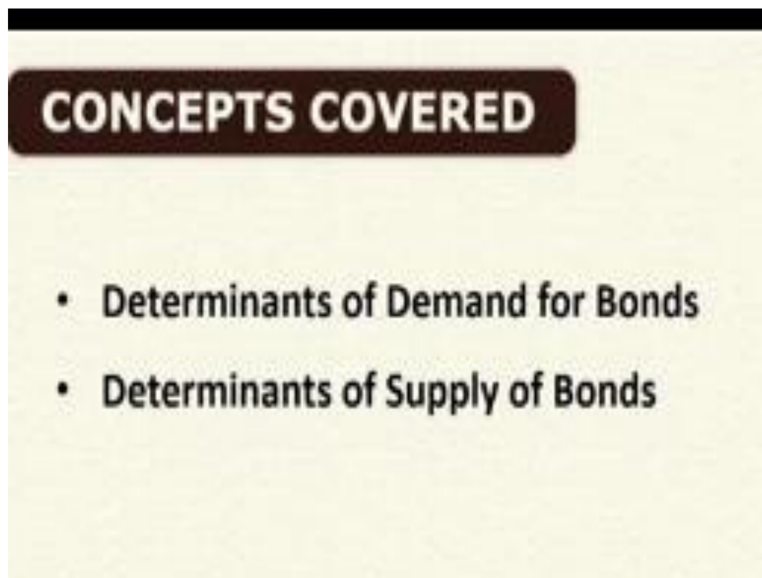

So, in today's discussion, we will be discussing about that what are those factors which are affecting the demand for bonds and what are those factors which are affecting the supply of the bonds and in what context the demand curve and the supply curve of the bonds are going to shift.

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KEYWORDS

- Wealth
- Business cycle
- Inflation
- Investment opportunity
- Liquidity

So, in that particular context, if you see there are certain keywords you will come to know one is your wealth or the income what generally we always consider. Which general the major factor which is which basically affects the demand and supply of the bonds? Then the business cyclic conditions, inflation, investment opportunity, liquidity all those factors which are quite important from the shifting of the demand and supply of the bonds in the bond market.

So, you will have a kind of comprehensive idea about all those factors and how these particular factors are going to play the role in terms of the determination of interest rate in terms of the supplying supply side of the bonds and the demand for the bonds.

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Factors that Shift Demand Curve for Bonds

- Income or wealth
- Expected returns on bonds relative to alternative assets
- Risk of bonds relative to alternative assets
- Liquidity of bonds relative to alternative assets

So, let us see that what are those factors basically affect we can say that the demand for the bonds. You see that in the previous class, we have discussed that there is a supply curve there is a demand curve and there are 2 types of movements can happen in that case. One is the movement across this particular curve or on that particular curve and another one is total shifting of this particular supply and demand curve these are the 2 different things.

So, whenever your price will be changed, so, the change in the price is not going to shift the demand and supply of the bond or the curve what basically we derive for the supply side and demand side that is not going to be changed. But, apart from the factors like price, the other factors how what are those other factors we generally affect the supply of the demand for bonds?

If those factors will change then what will happen? Automatically, the demand for the supply of the curve is going to be changed. The demand curve and the supply curve are going to be changed. So, if you see, there are major 4 factors we can consider although, there are other factors also but there are major broad 4 factors which can affect the demand curve for the bonds or which can shift the demand curve for the bonds.

One is your income or the wealth and another one is the expected return on the bonds related to the other alternative assets like stocks and other kind of financial assets which are traded in the market. Then, we have the riskiness of the bond how much risk is involved with respect to the bond with in comparison to the other assets which are traded. Then, the last but not the least we have the liquidity so liquidity of the bonds related to the other alternative assets.

So, these are the major factors which may have the impact which generally affect the demand for the bonds and that factors are responsible for shifting the demand curve for the bonds. So, one by one if you see that how these factors are basically going to affect?

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Factors that Shift Demand Curve for Bonds Cont…

- In a business cycle expansion with growing income / wealth, the demand for bonds rises and the demand curve for bonds shifts to the right.
- In a recession, when income and wealth are falling, the demand for bonds falls, and the demand curve shifts to the left.
- Higher expected interest rates in the future lower the expected return for long-term bonds, decrease the demand, and shift the demand curve to the left
- Lower expected interest rates in the future increase the demand for long-term bonds and shift the demand curve to the right

So, let us because the income or the wealth and the business cycle these are also linked. So; all of you know that although there are different 4 phases of the business cycle all of you might have the idea about that. We have an expansionary phase and or we can if you start it like this we have a kind of phase which from the beginning, if you start it, there is a kind of boom phase or the we can say that the recovery phase.

Then, it will reach the top or the peak then it will start declining then finally, it will reach the top. So, then again the same cycle will go on for the next period. But, broadly if you see that, we have categorized this business cyclic condition in 2 phases; one is your expansionary phase and another one is your contractionary phase or the recessionary phase. So, these are in general terms we define always whenever we talk about the categorization of the business cyclic conditions.

So, whenever there is a expansionary phase, so obviously there are enough opportunity in the market and the income level or the wealth level of the different stakeholders in the market generally go up and if the income level will go up. So, there is a possibility that the demand for bonds may rise because people have enough money to invest and on the basis of their objective, they may be inclined to invest more in the bond market.

So, in that case, we can assume that the demand for the bonds may rise so if the demand for want will raise then, the demand curve for the bonds basically shift to the right one. So but if you look at the recessionary phase so in that case we are expecting that lot of investment opportunities not

there. And because of this the wealth or income level of the individuals and as well as other market participants may go down.

So, in that case, the because there is not enough money available for the investment then the demand for bonds may fall. So, if it will fall, then the demand curve will shift to left. So, in that case, what basically we have seen that the higher the income higher the wealth, the demand curve will shift rightward and lower the wealth or lower the income, the demand curve will shift to left one.

So, then another one is that the expected return there is another factor if your expected return will be higher in the future you are expecting that your return will be more in the future. Then what will happen that? That will also have the impact on the demand curve for the bonds. So, higher expected interest rate in the future basically lower the expected return for the long term bonds because the price of the particular bond is going to be affected.

So, all of you know that that is there is a relationship between the interest rate and the price of the bond and accordingly the demand for bonds also gets affected. So, higher expected interest rate in the future will lower the expected return for the long term bonds so, therefore, there is a decrease in the demand and in that case, the demand curve will shift to leftward but the lower expected interest rate in the future will increase the demand for the long term bond and that will shift the demand curve to the right one.

So, that is just a reverse relationship what we can expect in this particular context. So, here income and the expected interest rate or the income or the return what we are going to expect from the different long term bonds these are the 2 major factors what just now we have discussed which can have the impact on the shifting of the demand for the bonds or demand curve of the bonds.

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Factors that Shift Demand Curve for Bonds Cont...

- Changes in expected returns on other assets can also shift the demand curve for bonds.
- An increase in the expected rate of inflation lowers the expected return for bonds, causing their demand to decline and the demand curve to shift to the left
- An increase in the riskiness of bonds causes the demand for bonds to fall and the demand curve to shift to the left
- An increase in the riskiness of alternative assets causes the demand for bonds to rise and the demand curve to shift to the right

Then the other factor if you see that we have the change in the expected return on the other assets. Already I told you the other assets means let we are talking about the stocks we have we can also take the other financial assets like derivatives and other instruments which are also traded in the market. So, changes in the expected return on other assets also can shift the demand curve for the bonds.

So, in this case, that if you are expecting that your return from the other assets will be more, then what will happen? People will be interested more to invest in those assets. Then obviously the demand for the bonds will go down but if you are expecting that the return from the bonds expected return from the bonds will be higher then automatically people will be inclined to invest in the bonds more.

So, that is why there is a relationship we can establish between the exchange in the expected return on the other assets and the demand curve for the bonds. Then we have the inflation which is a major factor which can affect almost all the financial assets return. So, if you are expecting or somebody is expecting that there is a increase in the expected rate of inflation, then what will happen? That will basically decline or lower the expected return from the bonds.

So, whenever the expected return from the bonds will go down, then that will cause the demand to decline. So, in that case, the demand curve will shift to the left if it will decline, then it will shift to the left if the demand is increasing then it will shift to the right. So, extracted inflation is

another factor which is affecting the demand curve or which is responsible for shifting the demand curve for the bonds.

Then we have the riskiness of the bonds. So, how much risk is involved? Any investment whenever we are making in the market, that is basically is always prone to some amount of risk there is a market rate there are credit risk there are different type of risk already we have discussed. So, if your riskiness of the bond is higher, than obviously the demand for bonds will fall then again automatically the demand curve will shift to the left.

But if you assume that the riskiness of the alternate alternative assets which; are available in the market which are traded in the market. So, if you compare it with the riskiness of the bonds, so then also you can decide that whether the demand for bonds willing will increase or it will decline. So, if you assume that there is a increase in the riskiness of the alternative assets then what will happen? That in comparison to the riskiness of the bonds, if the riskiness of the order or other alternative assets are more then in that case, people will be more inclined to invest in the bond market. So, that is why the demand for bonds will rise and in that case, the demand curve will shift to the right.OK? So, what we have discussed? We have discussed there is a wealth effect or the income effect. So, there is a effect which is coming from the expected return what we are getting from the bonds in comparison to the other assets.

We have discussed about the expected inflation or the impact of expected inflation on the demand for the bonds. Then we have also discussed about the riskiness of the bond in comparison to the other assets which are available in the market for the investment. So, these are the some of the factors which are responsible for shifting.

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Factors that Shift Demand Curve for Bonds Cont...

- Increased liquidity of bonds results in an increased demand for bonds, and the demand curve shifts to the right
- Similarly, increased liquidity of alternative assets lowers the demand for bonds and shifts the demand curve to the left.

Then the other factor already what i told you that is basically what we call the liquidity. So, what do you mean by liquidity? Liquidity means how fast this particular asset can be converted into cash. So, that means there should be enough market or the marketability of the particular assets should be higher. So, if there is a requirement that particular asset can be easily marketed or easily can be sold or it can be bought so by that the liquidity of the particular asset will be more.

So, if you fill that or if you find that there is increased liquidity of the bonds, then obviously the demand for bonds will increase. So, the liquidity of the bonds will increase the demand for the bonds. So, definitely in that time, the demand curve will shift to the right. Similarly, if you if you see that the increase liquidity of the alternative assets in comparison to the liquidity of the bonds. If you find that the there is a high liquidity of other assets which are available in the market, then that will lower the demand for the bonds and shift the demand curve to the left.

So, the liquidity is another factor which is also responsible for shifting the demand curve for the bonds. So, overall, what basically we can say? Income then we have inflation we have expected return we have the riskiness of the bond then we have the liquidity. These are the major factor factors which are responsible for shifting the demand curve for the bonds. Then accordingly, if the demand curve will change then that will have the impact on the equilibrium price then with respect to that your interest rate also is going to be changed.

So, that we have discussed that how the price and interest rate are linked so if your interest rate is increasing, their price is declining. If the price is higher, then the interest rate will decline. So, there is an inverse relationship always we will get between the interest rate and the prices.

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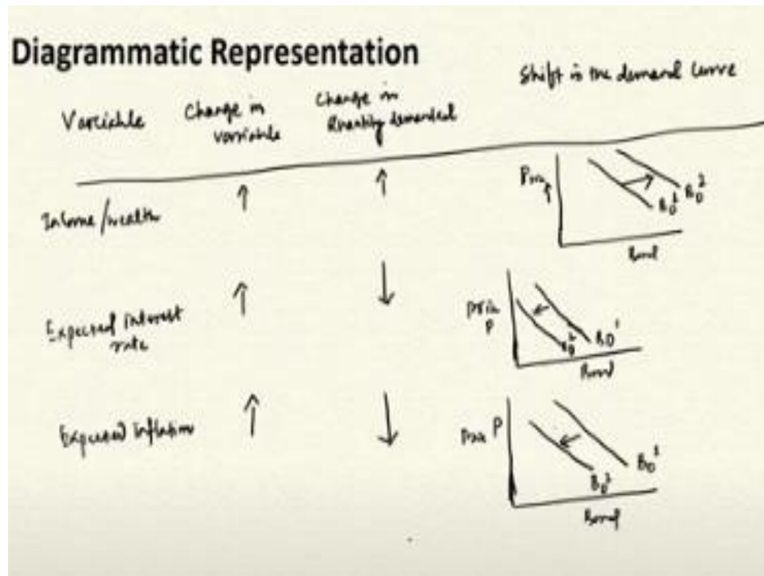

So, let us summarize it that in the diagrammatic form that how this thing basically works in that particular context. So, already what I told you that one factor is basically your income or the wealth. So, let us take a certain variable let I will make a table like this let this is variable then we have the change in the variable. OK? Then we have change in quantity demanded then we have shift in the demand curve. OK?

So, let the first variable whatever we have just now discussed let us take income or the wealth. Let the wealth has increased then what we have seen? The change in the quantity demanded of the bond will also will increase. So, then if you show it in the diagrammatic form, then how basically how the demand what is the shape of the demand curve? The shape of the demand curve is downward sloping. OK?

So, this is your bond which is demanded and this is your basically price “p”. So, in that case, if your price is increasing, then accordingly, your demand for the bond is going to be changed. So, here so let this is your B D 1 which was the demand curve before now what has happened? Let the income level has gone up. So, in that case, the demand curve will shift it out rightward. So, this will be B D 2 that means there is a shift like this. OK?

So, then we have another factor we have discussed that is your expected interest rate. OK? So, let if it has gone up, then bond demand will basically go down then in that case, what will happen? That the same curve if you draw, then if this is your b d 1, then this will shift it shift to left ward. That will be your b d 2. So, this is your bond this is your price. So, like that you have expected inflation. OK?

So, in this case also, if it will go up, then the change in quantity demanded will go down. So, the same type of curve you will find. OK? This is your b d 1. Then this will shift the leftward. Then you will find this b d 2 so there is a leftward moment so that is your bond that is your p price. Right? So, like that you can draw this demand curve that how this particular movement can take place.

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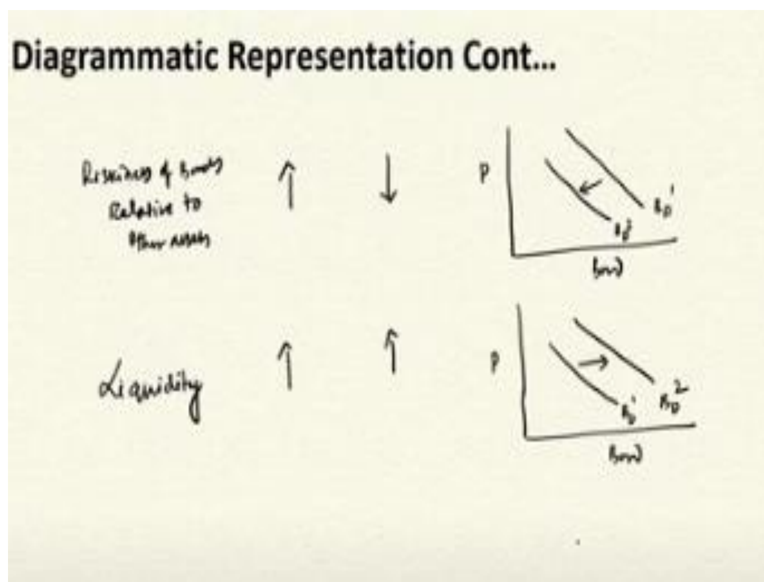

Then we have the other factors also that we have riskiness of the bonds relative to other assets relative to other assets. Let riskiness of the bond has gone up then the quantity demanded will go down then what will happen that the demand curve will shift leftward. So, this is your b d 1 this is your b d 2 so this is your bond this is your p then we have the liquidity. So, the liquidity of the bond is more, demand will be more and the curve will shift rightward. So, it will be a rightward movement. So, this is your bond this is your p this is your b d 1 this is your bond demand 2.

So, like that the, if any of the factors will change, then accordingly, the movement of this particular different type of bonds will happen. So, depending upon the change in the quantity demanded, your demand curve will shift if it will increase, the quantity demanded will increase. Then automatically it will have a rightward shift. So, if the demand quantity demanded of the bond will decline, then it will have a leftward shift. OK? So, that is the way basically the demand for the bond which is going to be changed or the bond demand curve will shit.

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Factors that Shift Supply Curve for Bonds

- Expected profitability of investment opportunities
- Expected inflation
- Government activities

Then what are those factors which shift the supply curve of the bonds? There are many factors but we have highlighted some of the major factors here. One is your expected profitability of investment opportunity and we have expected inflation and the government activities means government policies. You see who supplies the bonds it is the corporate sector mostly or the bigger entities who basically supplies the bonds. Investor can be anybody investor can be another financial institutions or it can be an individual. But individual never supplies the bond supply side of the bond generally comes from the business sector or the government. So, in that case, the profitability or the investment opportunity in the market that is a major concern for them whether they want to go for supplying the bonds or not.

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Factors that Shift Supply Curve for Bonds

- In a business cycle expansion, the supply of bonds increases, and the supply curve shifts to the right.
- In a recession, when there are far fewer expected profitable investment opportunities, the supply of bonds falls, and the supply curve shifts to the left.
- An increase in expected inflation causes the supply of bonds to increase and the supply curve to shift to the right
- Higher government deficits increase the supply of bonds and shift the supply curve to the right
- Government surpluses, decrease the supply of bonds and shift the supply curve to the left.

So, what it exactly means? If you see let you take the same thing like business cycle. If there is a business cycle expansion, then what will happen? The supply of the bonds will increase why? Why it will increase? Because, this business sector will have the enough opportunity to invest their money and by that process the profitability can be enhanced. So, to increase the profitability and to utilize the investment opportunities which are available in the market, they need more financing.

So, because of this they want to issue more bonds. So, in the business cyclic expansion, the supply of the bonds may increase and in that case, the supply curve will shift towards the right. But in recession when there is fewer expected profitable investment opportunity, the supply of the bond will fall then automatic the supply curve shifts to the left. That is just reverse the argument or logic is same.

So, in that particular regard, we have also seen the expected inflation has the impact on the demand for the bonds then the expected inflation also has the impact on the supply of the bonds. So, an increase in the expected inflation causes the supply of the bonds to increase and the supply curve to the shift to the right it is just reverse whatever just now we have discussed in the context of the demand for the bonds. Right?

And higher government deficits higher government deficits increase the supply of the bonds and shift the supply curve to the right any government policies always have the impact because that

will have the impact on the price of the bonds. So, if the price is more, then supply will be more. OK? So, in that case, what will happen? That whenever we look at the different type of policies what the government has it will have the implications on the prices of the bonds that will automatically have the impact on the demand and supply of the bonds and here also the supply side is more affected by that. So, higher government deficit increase the supply of the bonds that is why the there is a shift from towards the right. But if there is a surplus, then why the government will issue the bonds? They do not need finance they do not need money. So, you might have linked it to the for example open market operations which is instrument of the monetary policy.

What basically government does? Government needs the kind of selling and buying the bonds to regulate the money supply. And sometimes also government if there is a deficit government wants to issue the bonds to finance the deficits. So, in that case, we have taken this example in the case of government deficit or the surplus. So, if already there is a surplus, then there is no need to supply the bonds. So, that will decline the supply of the bonds and automatically the supply curve will shift towards the left.

Then what basically we have seen here? We have seen that the again the business cyclic conditions because that has linked to the investment opportunity and the profitability of the companies. So, because of this there is a chance that the supply curve gets affected. We have seen that inflation which has also the impact on the supply side of the bonds. Then most important is the government policies or government activities.

So, if there is a deficit, then obviously to finance the deficit, they will issue more bonds but if there is a surplus then they do not want to finance this there is no requirement of the financing that particular thing. So, in that particular context, there is a shift towards the left or the supply of the bond will go down.

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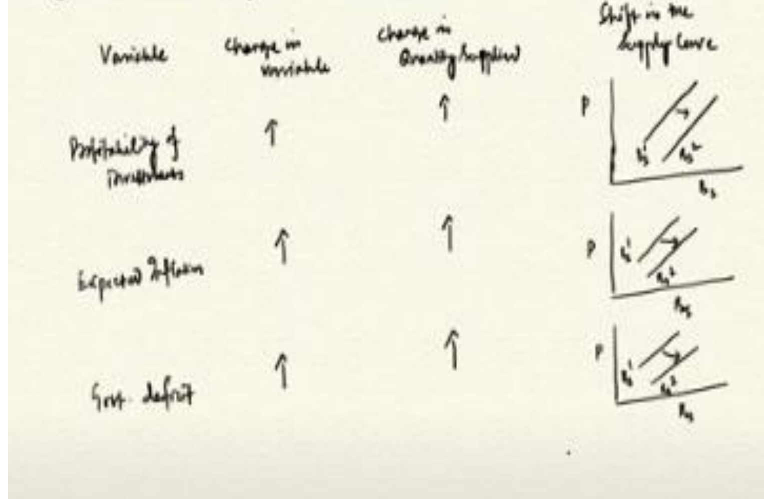

The same thing you can you can also draw whatever way we have drawn. You can make a table like that let we have the variable then your change in variable then we have change in quantity supplied. OK? Then your shift in the supply curve. So, now you tell me that first factor what we have taken- The profitability. OK? (Profitability of the investment) So, obviously if it will increase your supply also will increase.

So, what is the shape of the supply curve? The shape of the supply curve should be upward sloping. Right? So, this is your bond supply this is generally your pi price. So, if it is your let bs 1 then it will shift rightward then it will move here. So, this is your b s 2. Right? So, then we have we have discussed about the expected inflation. If this will increase, then automatically here also the supply will increase because it will have the impact on the price.

Then the same thing will happen here. Right? So, this is your b s 1 this is your b s 2 the move is like this. Right? Then we have we have taken the let you have taken government deficit. If it is more, then what will happen? In the case of government deficit, they need more financing because of that they will issue or they will supply more bonds. So, the same thing will happen. This is your, this is your b s 1 this is your b s 2 the move is like this.

But for example, you have taken government surplus. So, if this will increase, then obviously the change in the quantity supplied will decline then the supply curve will move to leftward. So, this is the way the supply curve will move apart from the price what are the other factors which are

affecting the demand and supply side of the bonds or demand for the bonds or supply of the bonds? If those factor will change, then there will be a shift but only prices you will move only on that particular curve.

So, this curve is not going to be shifted. So, that thing you have to keep in the mind. So, automatically if the supply will change and demand will be changed then the interest rate the equilibrium interest rate also is going to be changed. A new equilibrium interest will be determined in the market and this is a basically part of the loanable fund theory. In the beginning, we have started the discussion that the loanable fund theory is basically linked to the bond market equilibrium.

The supply of the bonds and the demand for the bonds and these are the factors which are going to affect the supply side and already we have discussed the factors which are responsible for the demand side.OK?

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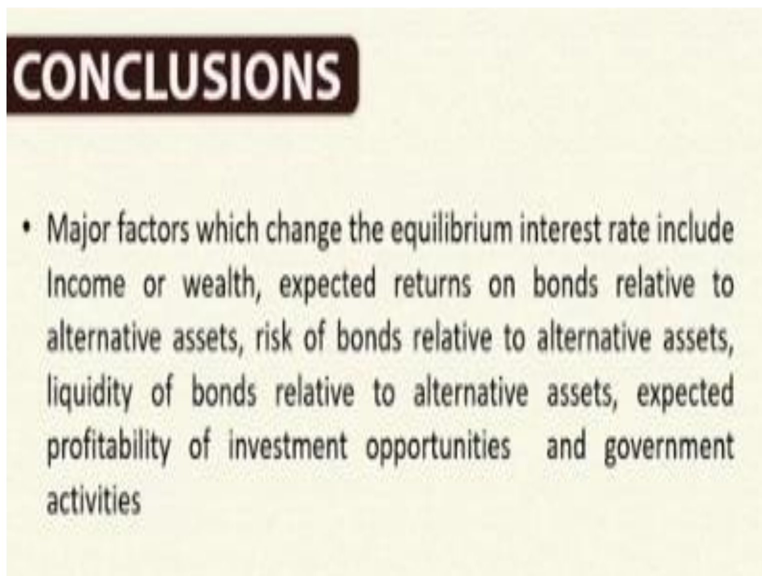

So, what basically we have discussed? We have basically discussed that the which are the major factors which basically change the equilibrium interest rate. That basically include your income or the wealth, expected return on the bonds relative to alternative assets. Risk of the bonds related to alternative assets, liquidity of the bonds related to alternative assets, expected profitability of investment opportunity and the government activities.

So, all these factors are responsible for change in the interest rate in the market. Why they are responsible for changing interest in the market? Because these; factors are responsible for the demand for and supply of the bonds in the corporate bond market.OK? So, this is basically the essence of the loanable fund theory.

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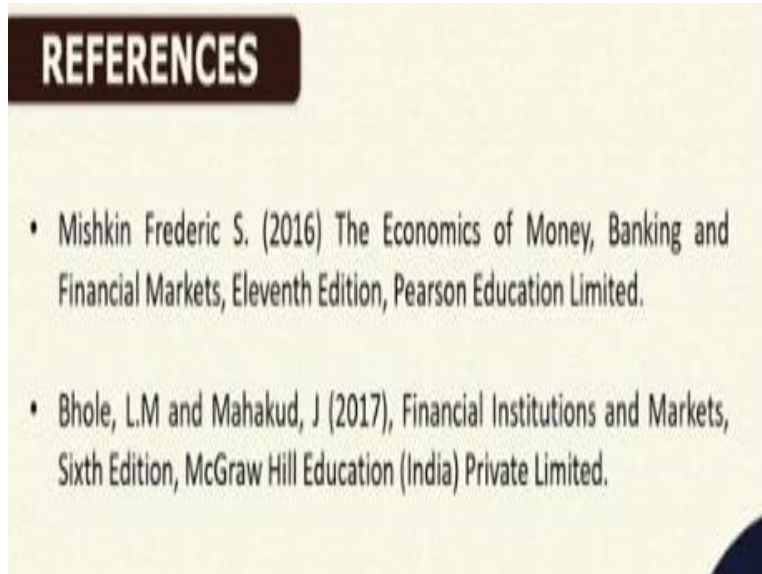

OK these are the references you can go through for the comprehensive idea about this particular topic or about particular issue OK?

Thank you.