Management of Fixed Income Securities
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Module No # 03
Lecture No # 15
The Term Structure of Interest Rates – III

Welcome back. So, in the previous class, we discussed about the market segmentation theory and how the market segmentation theory is trying to explain the shape of the yield curve or it is a part of the term structure interest rate theories and in that part, we have discussed about the how the economic expansion or economic recession is going to affect or going to shift the yield curve and as well as we also try to explain certain other factors which also play the role in terms of the shifting of the yield curve. Or there are certain other factors which also are responsible for shifting of the yield curve.

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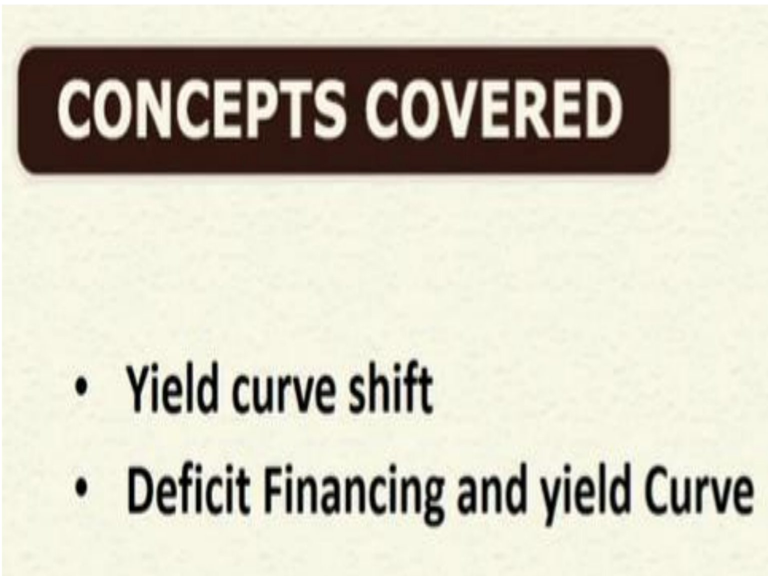

So, in today's discussion, we will be covering of or will continue with the same discussion. I try to bring the other factors into the consideration that how the other factors also is affecting the yield curve or how the other factors basically play the role in terms of the shifting of the yield curve. So, in that case, one of the most important factors is deficit financing of the government.

Whenever there is a deficit, government tries to overcome that particular deficit using certain kind of instruments in the market and whenever they try to use those instruments, how those particular activities is going to change shape of the yield curve.

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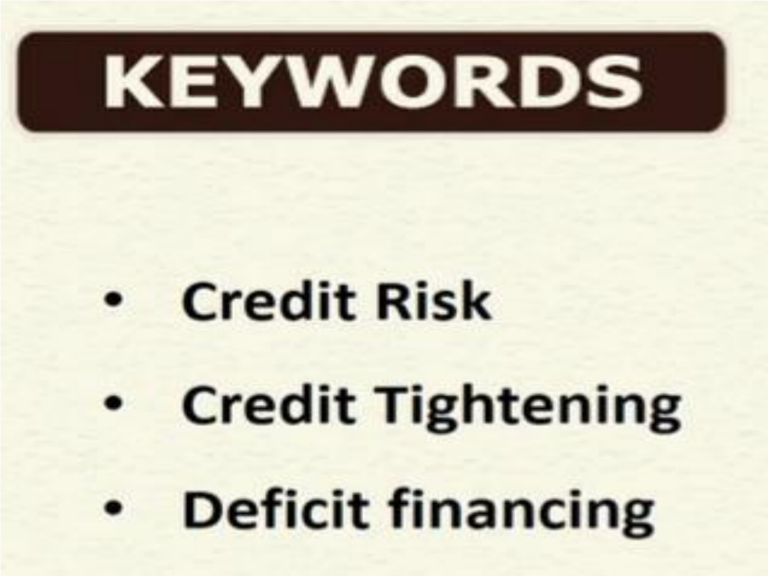

So, you will come across certain other things into the consideration like other keywords what you will come across like credit risk, credit tightening, deficit financing all kinds of terms basically will be using in today's session. So, let us see that how the credit risks or the credit tightening are going to affect the yield curve or how the yield curve is going to be shifted due to the credit risk and the credit tightening.

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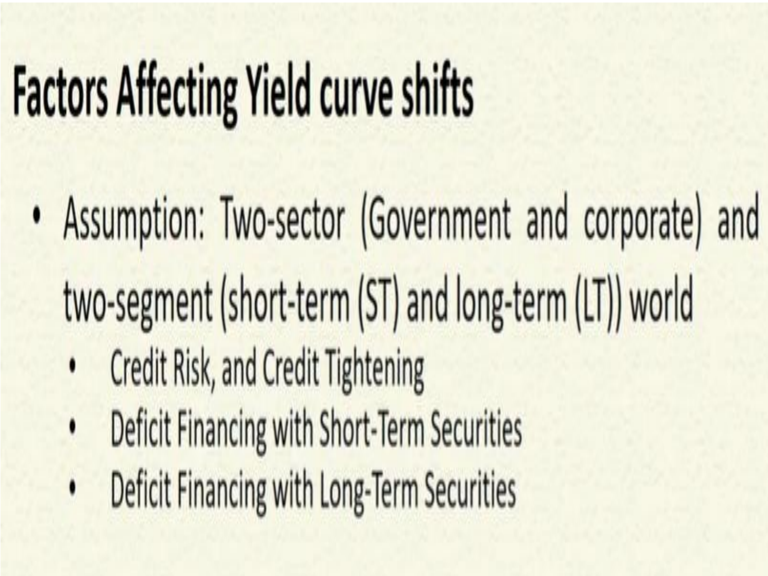

So, if to analyse that particular thing in continuation with our previous discussion, we have taken a 2 sector economy let there are 2 sectors which are operating in the particular system one is government other one is corporate and there are 2 segments one is short term segment and the long term segment. One thing you keep in the mind that we are discussing about the independence of demand and supply forces across this particular segments that means the demand and supply forces of the short term segment determine the interest rate in that segment and the demand and supply forces of the long term segment will determine the long term interest rate. So, these are the 2 things basically you have to keep in the mind. So,, in that context, we will covering of 3 things here within this particular framework in a 2 sector economy government and corporate and there are 2 segments one is short term segment another one long term segment. For the simplicity, we have basically considered we have assumed in this particular way one factor is the credit risk and the credit tightening.

Second is that how the government can finance the deficit using the short term securities and how this is going to affect the shifting of the yield curve and as well as the deficit financing with the long term securities. So, these are the 3 factors what we are going to discuss today within this 2 sector framework. So, all of you know that or in the beginning of this particular subject, we discussed about the concept of the credit risk.

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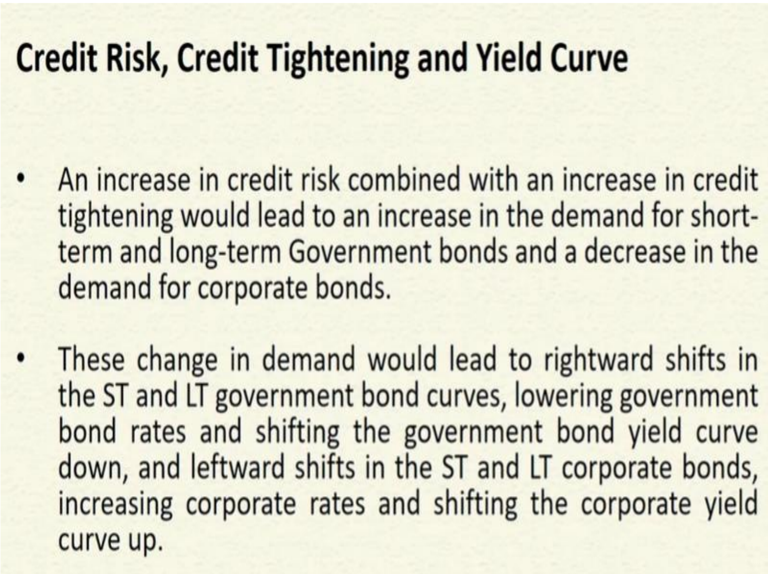

What exactly the credit risk is all about? The credit risk means basically the probability of default that means if the issuer for some reason is not able to pay the interest or the principal as per the agreement or as per the indentured provision of the bond, then we can say that that particular issuer is exposed to the credit risk. So, generally if you see that if there is a probability of credit risk which is going to increase in the future, then what will happen that will have the impact on the demand and supply of the bonds?

Obviously this particular thing may prevail in the market whenever there is economic recession so, whenever there is a recession; the investment opportunity in the market is relatively less. So, because of the less investment opportunity maybe investors are less inclined to invest in the financial sector or financial market and then what will happen that will have the impact on the yield or interest rate of that particular security.

So, if you assume that there is a credit risk which is involved in the market and because of the economic recession there is a kind of tendency towards the increasing the credit tightening. Then what will happen? That will lead to the increase in the demand for the short term and long term bonds why? Because all of you know that whenever there is a credit tightening or there is some kind of uncertainty or uncertain condition prevails in the market, the credit exposure of the corporate bonds increases but because government is the guarantor or government is in the backup of the government securities then what will happen? That the people have more faith or investors have more faith on investing in the government securities both in the short term and as well as in the long term. So, what will happen? The demand for both short term and long term government bonds are going to increase.

But the demand for the corporate bonds will decline again keep in mind we have assumed a 2 sector economy government and the corporate. So, because of high credit risk and credit tightening the demand for government bonds have increased and the demand for the corporate bonds are declined. So, that thing will happen then what is going to happen in that particular case.

So, whenever the demand for the government bonds (both short term and long term) will increase that will basically lead to the rightward shift in the short term and long term government bond curve. That already we have discussed whenever the demand for the bonds will increase, that there will be a rightward shift of the demand curve. So, the rightward shift in the short term and long term government bond curve and if there will be a rightward shift if the demand of the government bonds will increase then what will happen? It will basically lower or it will try to reduce the government bond rates. The yield of the government bond will decline. So, then what will happen? It will reduce or it will shift the government bond curve down and a leftward shift basically will be observed in the short term and long term corporate bonds.

That will also further reduce the corporate yield. So, in that case, any kind of situation in terms of the credit risk or the credit tightening will have the impact on the yield of the government bond and as well as the corporate bond.

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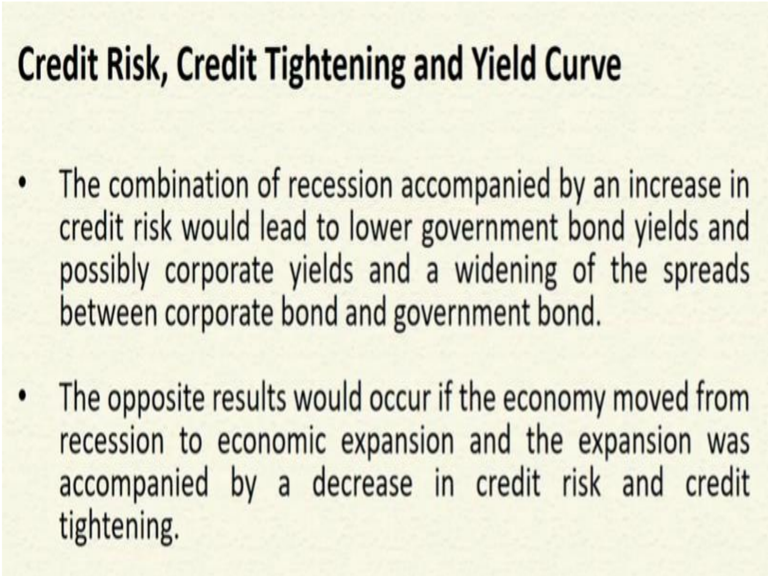

So, then what basically will happen in that case? Or what we have observed in this case? The combination of recession accompanied by an increase in the credit risk would lead to a lower government bond yield and also the corporate yield and it will widen this spread between the corporate bond and the government bond. OK? And if you can utilize that particular same theoretical consideration assuming a particular economy which is expanding or economies moving from recession to economic expansion, then what will happen?

It will reduce the credit risk and the credit tightening. Accordingly, the demand for the corporate bonds also will increase. So, the reverse result you can find the or the opposite result you can find whenever there is a expansionary economy or there is a economic expansion which is prevailing in the market. So, what basically we have observed here? And how this particular mechanism basically works here?

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Deficit Financing with Short-Term Securities and Yield

- If the Government were to finance a deficit by selling short-term Treasury bills, then there would be an increase in the supply of the short-term Treasury bills. The increase in supply would push the price of the short-term government securities down, providing a higher short-term Treasury bill yield.
- In the corporate bond market, the higher rates on short-term government securities would lead to a "crowding out effect," decreasing the demand for short-term corporate securities, which, in turn, would lead to an excess supply in that market as short-term corporate bondholders try to sell their corporate bonds in order to buy the higher yielding government securities.
- As bondholders try to sell their short-term corporate bonds, the prices on such bonds would decrease, causing the rates on short-term corporate bonds to rise until a new equilibrium is reached.

That credit tightening or the credit risk exposure has the impact on the shape of the yield curve. Or there is a yield curve shift can prevail because of this. Now, we can come back to our discussion on the deficit financing. You know the government needs certain money for the public expenditure and whenever there is a certain kind of deficit arises, government needs certain resources to fulfil that deficit or finance the deficit and what is the convenient way of financing the deficit? The most convenient way of financing the deficit is selling the government securities and if you talk about the government securities, the most used government securities let you take the example of India generally if you consider about the deficit financing, mostly we can use this short term treasury bills.

So, if the government wanted to finance the deficit by selling this short term treasury bills, then what will happen? It will increase the supply of the treasury bills. The short term treasury bills supply is going to increase because government is ready to finance the deficit by selling that. So, if the supply of the treasury bills will increase, then what will happen? The price of that particular security will go down because supply is more than the demand now the demand may not be that much in the market. So, if the demand is not much in the market but supply is more, then what will happen? That will have the impact on the price that logic already you know. So, the price of the short term government securities will go down. So, if the price of short term securities or short-term treasury bill will go down, then what will happen? It will increase the yield of the Treasury bill higher will be the interest rate on the Treasury bill. So, it will basically increase the treasury bill rate.

In the same time whenever this particular thing prevails in the short term government bond market, what will happen in the corporate bond market? So, in the same time, the higher rate on the short term government securities will lead to a crowding out effect. So, if there is a crowding out effect, what will happen? It will decrease the demand for the short term corporate securities and automatically it will decrease the demand for this short term corporate securities.

And finally what will happen? In turn that would lead to an excess supply in that particular market particularly the short term corporate bond market. Because the short term corporate bond holders try to sell their corporate bonds in order to buy the higher yielding government securities. That means government will crowd basically will go for crowding out the investments or the kind of bond investments which is happening in the corporate bond market.

Because there is a high interest rate which is prevails or high yield is prevailing in the government securities market. So, when the bond holders will try to sell their short term corporate bonds then the prices of such bonds will decrease and what will happen? It will cause the rates on the short term corporate bonds to rise until a new equilibrium is established.OK?

So, in that case, what basically we can find there will be new equilibrium which will establish whenever the deficit financing will be done using the short term government securities like the treasury bills.

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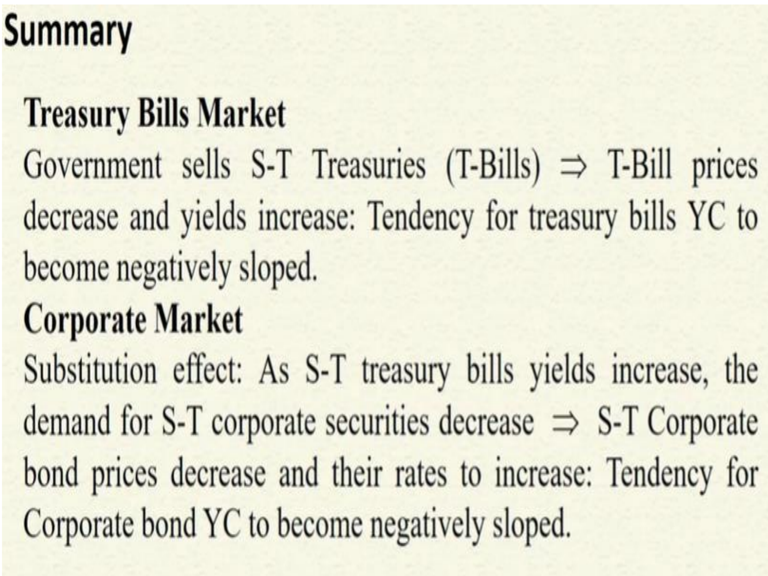

So, let us see what particular mechanism works here so what we have observed here? This sale of the short term government securities increases both short term government and the short term corporate yield rates. That is the thing what basically we have observed. So, now the short term interest rate has gone up. So, already we have assumed as per the market segmentation theory, the 2 markets are completely independent the short term market and the long term market both are independent.

So, if both are independent, then what will happen? The adjustment the total adjustment which is going to happen to the government sale of short term securities that will occur only through the increase in the corporate and treasury bill rates. The long term corporate bond market or the interest rate in the corporate bond market or interest rate in the long term government securities market are not going to be affected.

So, in general, what we can observe if you assume that initially the corporate and the Treasury bill yield curves were initially led flat. Then the government's action will cause the yield curve to become negatively sloped because the interest rate in two markets are going to increase.

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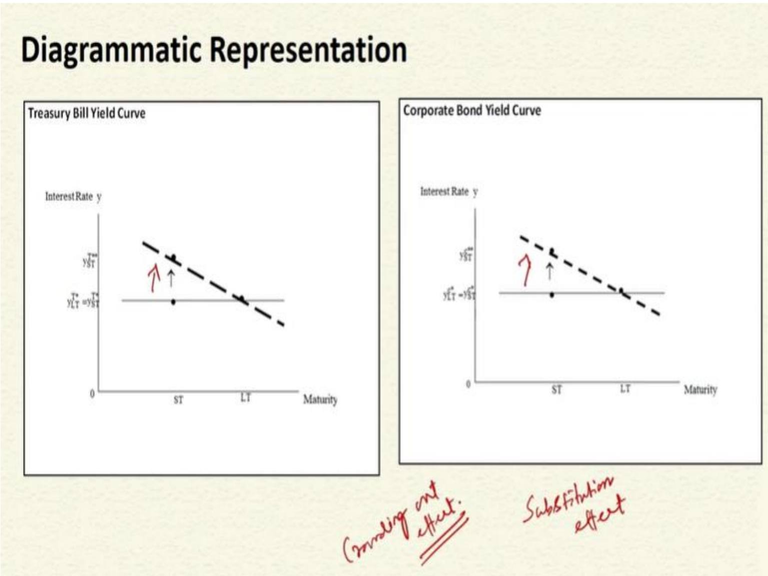

So, what is the summary you can get from here? Whatever thing just now we have discussed. The government basically sells the short term treasuries or T-bills what we can say then the T-bill prices will decline because the supply is more than the demand that is why the T-bill prices will decline. If the T-bill prices will decline, the yield will increase. So, if the yield will increase, then there will be tendency for the Treasury bill yield curve to become negatively sloped.

And substitution effect which is going to play the role in the corporate bond market how? As the short term treasury bills yield increase, the demand for the short-term corporate securities decline. Then obviously if the demand in the short-term corporate securities will decline, then the short term corporate bond prices will decrease and obviously their interest or interest rate also is going to increase.

Then there will be a tendency for the corporate bond yield curve also to become negatively sloped. So, what we have observed through the substitution effect? Any kind of activities that is happening in the government securities market will have the implication on the corporate bond market. So, now, if you assume that there is a flat yield curve, the yield curve will become negatively sloped in this particular condition.

So, now we can see that this shape of this particular yield curve how basically it will move. So, let this is a Treasury bill yield curve and other one is the corporate bond yield curve and we have taken a assumption that there was a flat yield which was prevailed in this 2 markets initially. That means your y LT = y ST then what has happen? Because of the selling of the short-term treasury bills now what will happen that the price has gone down. If the price of the bond has gone down, then the interest rate has gone up.

So, this is the movement what basically you can observe in this case. So that is what basically what we can see that this is the movement basically is going to happen both in the treasury bill market and the corporate bond market and this thing will basically will happen because of the substitution effect because of the substitution effect and that is basically happen because of the crowding out effect.

Because when you find that the government bond market looks very attractive, people will move from basically corporate bond market to the government bond market. So, that is the way basically this yield curve shifting will happen or the slope of the yield curve is going to be changed. OK? So, then let us see that this thing we have discussed with respect to deficit financing through this short term securities and here our assumption is the long term securities market is not going to be affected. The reason is as per the market segmentation theory, both the markets are independent to each other. So, any kind of adjustment mechanisms which happens in the short term market that is not going to make any kind of change in the long term bond market. That basically we have discussed in this particular case.

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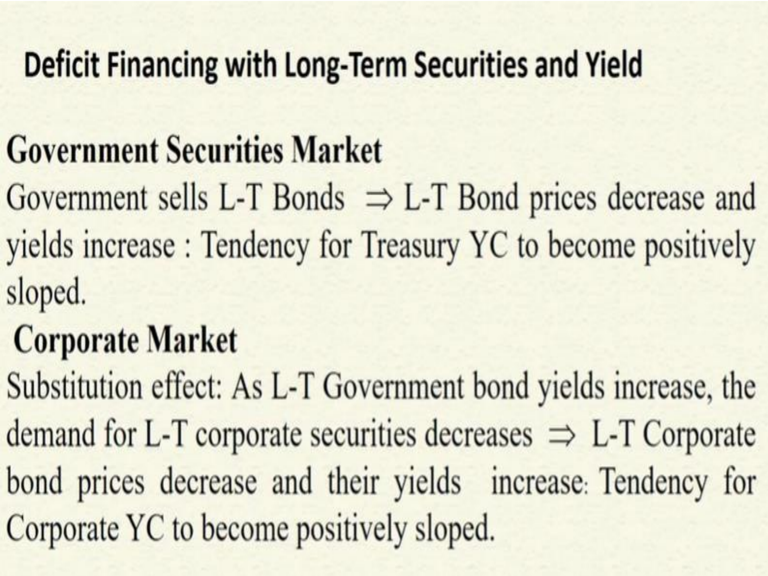

Let us see if you are going to finance their deficit in the long term securities you want to finance the deficit using the long term securities and how this is going to affect the yield curve? So, now to finance the deficit government has to sell the securities that are clear because they need the money because of that they will sell the bond and against that they will get the finance.

So, now the government basically sells the long term bonds. So, whenever government will sell the long term bonds, long term bond prices will decline and obviously the yield will increase. Just now, we have discussed that thing in the short term segment also. So, then what will happen? There will be a tendency for yield curve to become positively sloped. OK? So, in this case, what basically here we have seen the same thing prevail in the corporate bond market through the substitution effect through the substitution effect.

When the long term government bond yield will increase, the demand for the long term corporate securities will decline and the long term corporate bond prices will decrease and their yields will increase and then you will find that there is a tendency for the corporate yield curve to become positively sloped because you will find that if you understand that thing in a different way, the reverse thing will happen whatever thing has happened in the short term bond market.

In the short term bond market, the yield curve become negatively sloped but whenever you come to the selling the long term securities, you will find that the yield curve basically is positively sloped.

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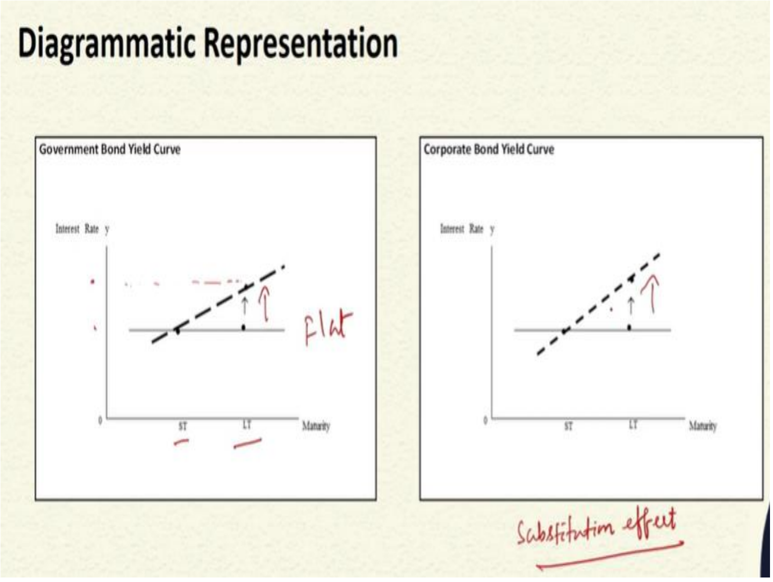

And how the shape of the yield curve will look like just now, we have seen these things from the short term investment point of view in short term securities point of view. Now let you look at the long term securities point of view. In the long term securities context, what we have seen if this is your let the maturity this is the short term one and this is a long term one and this is your initial yield curve which is basically a flat yield curve. So, whatever reasoning or understanding we have just discussed.

In that case, what we have seen that the long term yield has increased. Here also the long term because of the substitution effect. So, this thing will prevail because of the substitution effect. Now here also the long term yield has increased. So, whenever the long term yield has increased in this case, here also we have seen the long term yield has increase then what will happen? The long term bond interest rate which was here now it has increased to this level.

It has increased to this level. So, there is a upward movement in both the cases. So, because of any kind of activities with respect to the selling of the long term bonds in the government securities market that will have the impact on the interest rate prevails with respect to the corporate bond market and that is basically what we call it the substitution effect. So, in both the cases, what we have seen? Whenever you are selling the short term securities for the financing, we find that the yield curve is negatively sloped because the short term interest rate has gone up and whenever we are going for this same activities in the long term securities market or selling the long term securities in the government bond market, we can find that there is a positively sloped yield curve because the long term interest rate has increased. So, this is the thing basically which prevails in terms of the deficit financing through the selling of the short term securities and the long term securities. OK?

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So, what basically we have discussed here? The sale of the long term treasury securities increases both the long term government and long term corporate rates that just now we have seen and as usual because all kind of activities which is happening in the long term market that is not going to affect the activities in the short term market because both the markets are independent. OK?

So, the total adjustment to the government sale of long term securities will occur through the increase in the long term corporate and government bond rates. This short term government bond rate or the short term corporate bond rate are not going to be affected due to the activities in the long term market. That is why the short-term rate remains constant that is why the shape of the slope of the yield curve basically moves in this way.

So, if you are given a corporate and government bond yield curve that is initially flat, the government's action basically causes the yield curves to become positively sloped. OK?

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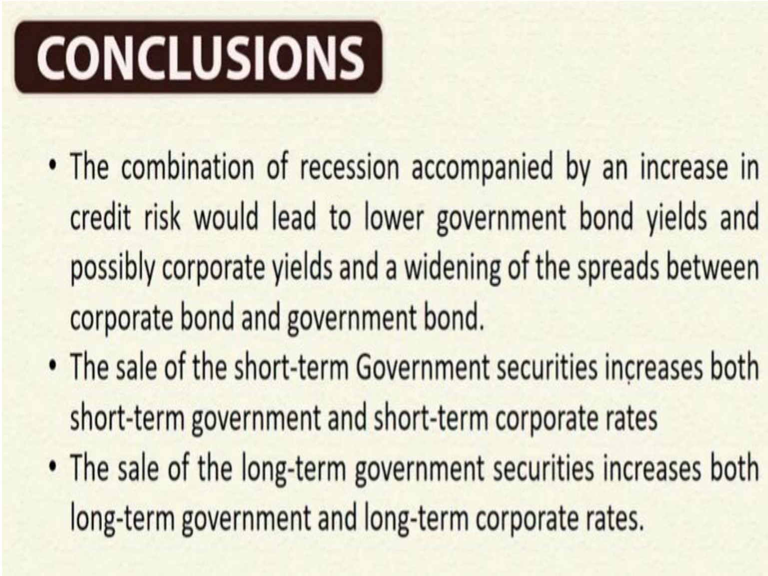

So, what we have discussed here? The combination of recession accompanied by an increase in the credit risk will lead to the lower government bond yield and possibly the corporate yield also and it will widen the spread between the corporate bond and the government bond. And the sale of the short term government securities increases both short term government and the short term corporate rates and the sale of the long term government securities increases both the long term government and the long term corporate rates.

And accordingly in the short term market, your yield curve will be negatively sloped and in the short-term market, it will be negatively sloped and in the long term market, it will be positively sloped. Again I repeat in the short term market, the yield curve will be negatively sloped and in the long term market,it will be positively sloped. So, this is what basically we have discussed that means the deficit financing has a significant role and whenever we are making the deficit financing by selling the short term or the long term securities, it will basically change the slope of the yield curves both in the government segment and as well as the corporate segment. OK?

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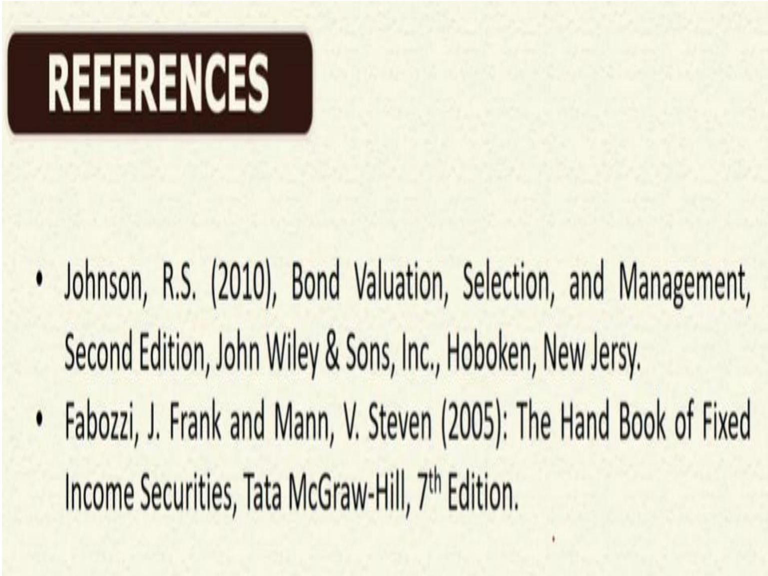

So, these are the reference what you can go through for the detailed analysis on this.

Thank you.