Managements of Fixed Income Securities
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Module No # 04
Lecture No# 16
The Term Structure of Interest Rates - IV

Welcome back! in the previous discussion, we have discussed about if there is government deficit then the deficit financing can be done through either selling the certain government securities or selling the long-term government securities and whenever the government basically sells the short-term securities or the long-term securities accordingly the slope of the yield curve gets changed.

So, in case of the selling the short term securities the yield curve become negatively sloped and in the context of selling the long term securities yield curve becomes positively sloped that is what basically we have discussed in the previous class.

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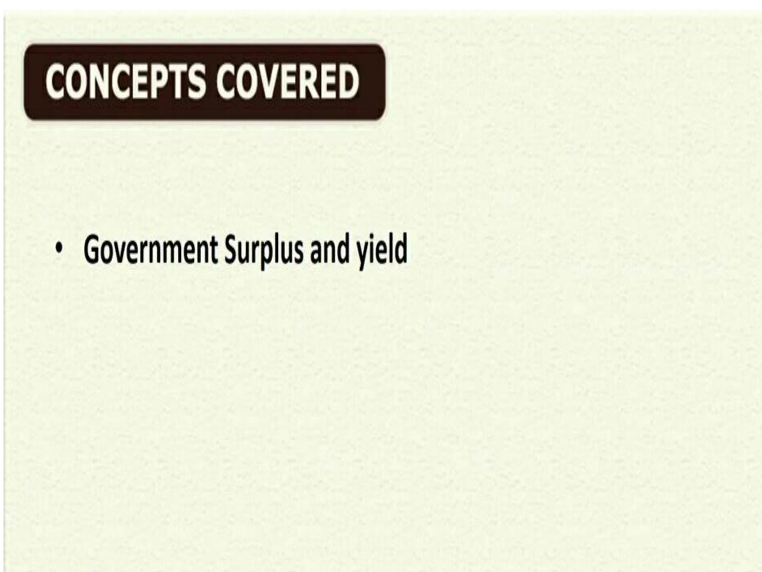

And in today's discussion, let us discuss that if there is a surplus. then how the government's activities going to affect the yield and how the slope of the yield curve basically is going to be changed that is basically our discussion. In the previous class, we discussed about the concept of the deficit and today we will be discussing about the surplus.

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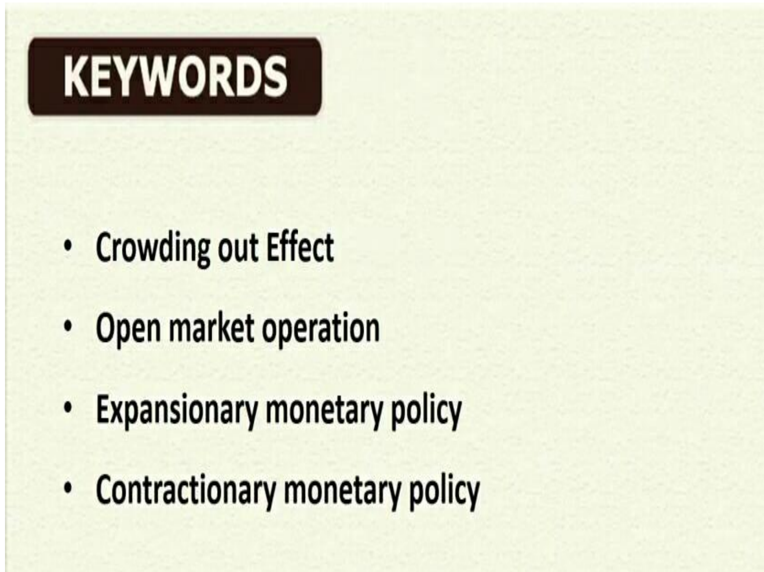

Let us see that, what are those keywords will come across in this particular discussion. Already,we have discussed this crowding out effect the same thing will again come also here, the concept of open market operation, the expansionary monetary policy, and contractionary monetary policy. All those kinds of terms basically will be covering up in today's session.

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And again, we will continue with our discussion with the assumptions that there is a 2 sector economy, government and corporate and there are 2 segments one is short-term other one is the long term. Only thing is here, we are bringing 3 things here, one is if there is a surplus then obviously government can try to utilize their surplus by purchasing the long term securities Or they can also use the short-term securities which are in the context of the monetary policy.

Because, in our term we always assume that the instrument which is used to control the money supply and economy are mostly done through the use of the short term securities. So, depending upon the availability of the money supply or whether the government wants to increase the money supply or they want to decrease the money supply, accordingly they use that particular instrument one is your contractionary another one is the expansionary.

So, one of the instruments basically is the open market operation. So, that's why there are three things the last one the contractionary open market operation,with a sale of short-term treasury bills that is completely similar with the deficit financing part which we have discussed in the previous session. But these 2 are basically different or how the yield curve shape or the slope of the yield curve is going to be changed because of this kind of actions that the government is trying to make.

That is basically is different from the analysis whatever we have done in terms of the deficit financing part. So, we have 2 sectors 2 segments. each sector has these 2 segments, one is short term other one is long term and we have 2 sectors, one is government other one is corporate.

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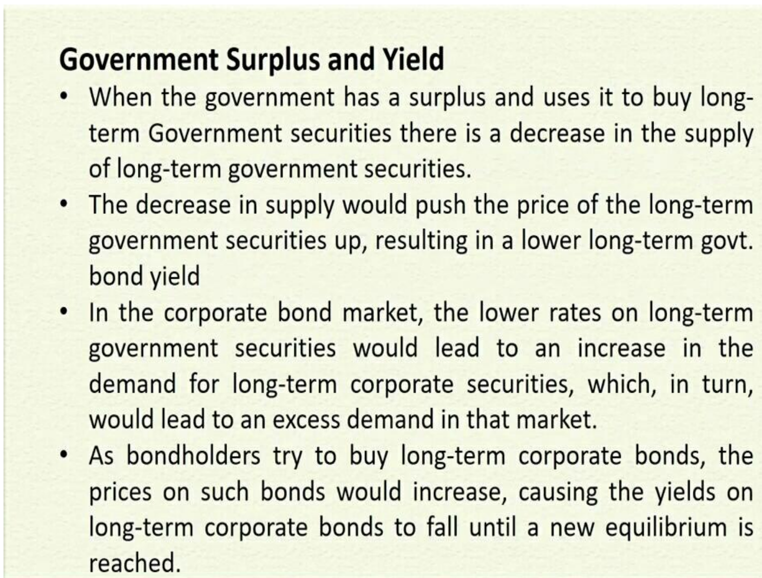

Let us see, there is a surplus if government has certain surplus money or government has any kind of surplus resources then how they can use it? They can always use it to buy the long term government securities. So, if they will go and buy more long term government securities then what will happen? Obviously, there is a decrease in the supply of the long term government securities because now the government is demanding.

So, there is a decrease in the supply as the government is going to reduce the more number of the long term bonds or supply of more number of long term bonds. The supply of the long term securities will go down. So, whenever the supply will go down what will happen? Now the supply is less than the demand even if it is initial demand if the supply is reducing then, obviously demand will be more than supply. So, then what will happen?

It will basically push the prices of the long term government securities and the long term securities prices will be up. So, whenever the prices of the long term securities will be up, then obviously what will happen? The long-term government bond yield will go down. There will be reduction in the yield of the long government bonds because now the supply is less demand is more.

Now let us see what is going to happen in the corporate bond market. Recall the substitution effect. So, whenever the long-term government securities yield will go down or it is lower then what will happen? It will lead to an increase in the demand for the long term corporate securities because the yield in the government securities market is low. So, now maybe investors are more inclined to go and invest in the corporate securities.

So, that is why there is a possibility that there is a increase in the demand for the long term corporate securities. Then what will happen,if they will be more interested to invest in the corporate long term corporate securities? Then, there will be excess demand in that market. The demand of the long term corporate securities will increase. So, then what will happen?

That will basically lead to whenever many bond holder or bond investor try to buy the long term corporate bonds then,what will happen in the end? The prices of such bonds will increase because the demand is now more than the supply. Demand is there but the corporate sector may not supply that much. So, in that case what will happen? The prices of such bonds are going to increase. if the prices of such bonds will increase then, obviously what will happen? The yield on the long-term corporate bonds will fall in the end until a new equilibrium is reached

So, initiation was started by buying the long-term government bonds through the substitution effect. it has the implication on the return or the yield of the corporate bonds. So, in both the segments now the yield has come down.

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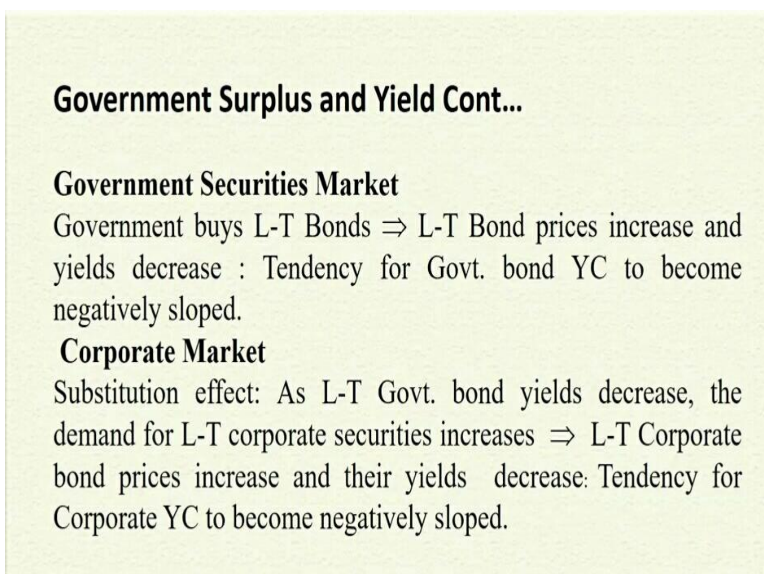

So then, if you summarize it then what basically we have observed here? The government buys the long-term bonds and that basically will happen in the government securities market. So, whenever government is buying the long-term bonds, then the long-term bond prices will increase because the supply is less than the demand. Because of the high demand, the long-term bond prices will increase and whenever the long-term bond prices will increase, the yield will decline.

And obviously your government bond yield curve to become negatively sloped because the short term bond market is not going to be affected; they are independent. Through the substitution effect what we have seen? when the long-term government bond yields decrease, there will be huge demand for the long-term corporate securities. That will lead to the increase of the long term government bond prices and declining their yields.

So, in that case again there is a tendency of the corporate yield curve to become negatively sloped. You recall! whenever we were selling, the long-term bonds yield curve was positively sloped. in the previous class we discussed that. we have discussed, whenever the government is selling more long term bonds the yield curve becomes positively sloped. But now, whenever government is buying more long term bonds yield curve becomes negatively sloped because the price will increase and the yield will decline.

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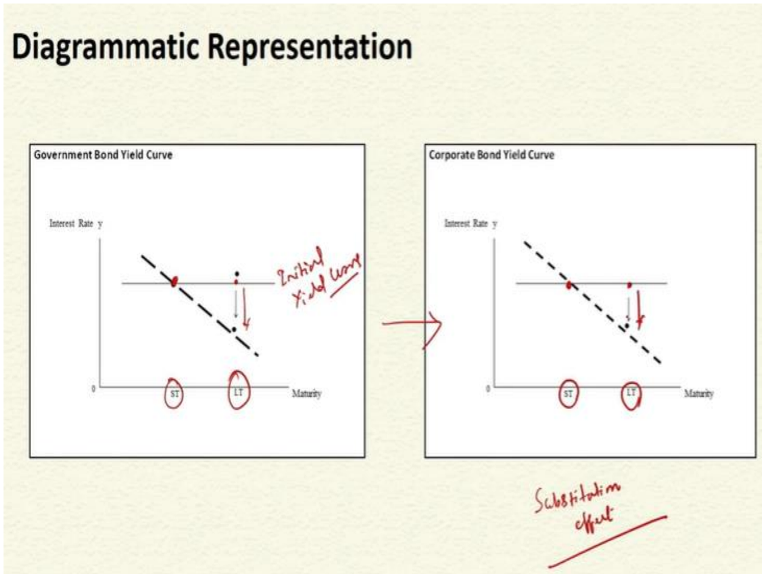

So then, how that yield curve shape will look like ? because you know this is the initial yield curve, which was flat. This is the assumption whatever we have taken. So, this is your Short-term bond and this is your long-term bond. so this was the initial interest rate which was there, little bit it has moved. So, this is the initial interest rate. Then what has happened? Because of this demand-supply adjustment which has happened in the long term market, what we have seen?

The short-term interest rate was there wherever it was there, but the long term interest rate has come down. So now what has happened ? the shape of the yield curve gets changed. Now this is a negatively sloped yield curve what is really basically we have observed and this is basically will link to this. Because, here there is a substitution effect, which will work. Because of the substitution effect, whatever thing has happened in the long-term government securities market, the same thing will prevail in the corporate securities market.

So, here again the same thing. Here you have the short term, you have the long term, you have the short term interest rate and here you have the long term interest rate. So, there is a downward moment. This is what basically we have seen whenever there is a surplus and government wants to utilize that particular surplus by buying the more long-term securities.

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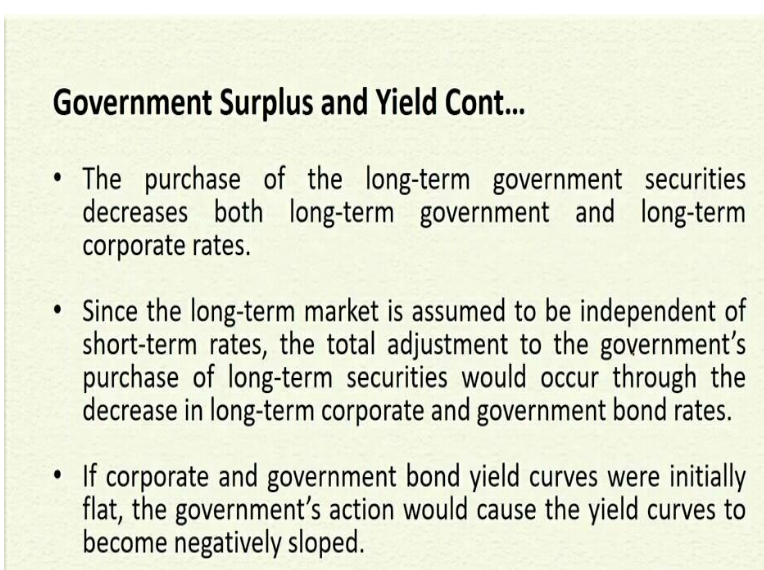

So, what we have seen here? the purchase of the long-term government securities decreases both the long term government and the long term corporate rates. It will decrease both the government and the long term government and long term the corporate rates and the short term rates are not going to be affected because they are independent as per the assumptions of the market segmentation theory and the total adjustment to the government's forces of the long-term securities will occur through the decrease in the long term corporate and the long term compound trades.

The same thing what we are repeating again and again because, that is the assumption we have taken from the beginning. So, if the corporate and the government bond yield curves were initially flat then the governments this kind of action will cause the yield curves to become negatively sloped. just now what basically we have discussed.

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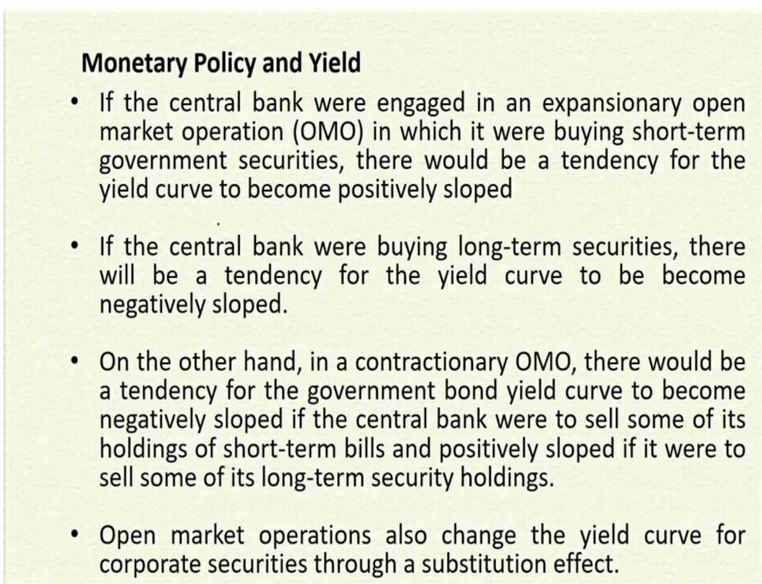

So then, let us see what is going to happen in terms of the monetary policy? All of you are very much through about the monetary policy what is the monetary policy? Monetary policy means the basic objective of the monetary policies to control the money supply. why the government wants to control the money supply? because they want to control the inflation and also the increase the output. So, the objective of the monetary policy is multi-dimensional. but in today's context, if you look at the Indian context also we are largely relying upon the infliction targeting.

But the overall objective of the monetary policy based upon the increase in the output and as well as the controlling the inflation. So, there are many instruments what we use, the instruments are like Repo rate reverse Repo rate. All of you might have heard, these are the part of the marginal liquidity adjustment mechanism. Even there is another rate called the marginal standing facility.

Nowadays, central bank is also using the other type of instruments instead of using the reverse Repo rate other thing. They are using another instrument that is called the deposit standing facility. all kinds of instruments and what is the basic aim of this thing? That if the Repo rate will change the Repo rate will increase then, what will happen? then it will have the impact on the intermediary rate like call money rate.

If the call money rate gets affected, then it will have the impact on the lending rates of the commercial bank .. If the lending rates of the commercial banks gets; affected then it will have the impact on the demand for loans and other things. Then accordingly, the total money supply of the economy gets affected and another instrument one of the instruments what basically, we can say that is called the open market operation.

In the open market operation, you see the liquidity adjustment mechanism is completely a short-term phenomenon. The repo market which is used by the monetary authority that is the overnight operations mostly under this liquidity adjustment facility. But whenever we are using another instrument of the monetary policy let that is open market operations the open market operation can be a certain concept can be a long-term concept.

So, either government can use the short-term government securities buying or selling or they can use the long-term government securities also to control the money supply. Either they can reduce the money supply or they can increase the money supply by utilizing these rates. So, if the central bank is engaged in let you assume, that expansionary means they want to increase the money supply. So, increasing the money supply means if you using the liquidity adjustment facility mechanism.

Then, obviously they have to reduce the different rates like Repo rate and other rates or even another instrument they can also use CRR. They have to reduce those rates and accordingly the demand for loans and other will increase because of the lower interest rates. And if they are going for a contractionary part that means they have to increase those rates but if they are using the open market operation then here what they have to do?

If they are going for expansionary open market operation they have to buy the short term government securities. that means more money they have to inject to the system and how they can do this? they can do this only buying the short term government securities. So, whenever they will buy more short-term government securities, then you will find that the slope of the yield curve will change and there will be a tendency of the yield curve to become positively sloped.

So, if the central bank is buying the long term securities as a part of the open market operation then the yield curve may be tends to become negatively sloped. But if you go by the contractionary open market operation, where they are going to sell this short term and long term securities then the reverse thing will happen. So, in the contractionary open market operation there would be a tendency for the government bond yield curve to become negatively sloped.

If the central bank is ready to sell some of its holding in the short term bills and it will be positively sloped. if it were to sell some of the long-term security holdings. And the open market operations what the monetary authority does or the behalf of the government the central bank does that will also change the yield curve for the corporate securities through a soft register effect. The same thing also will work here. you see all these things are quite similar quite linked. So, due to the substitution effect, the yield of the corporate securities also will get changed.

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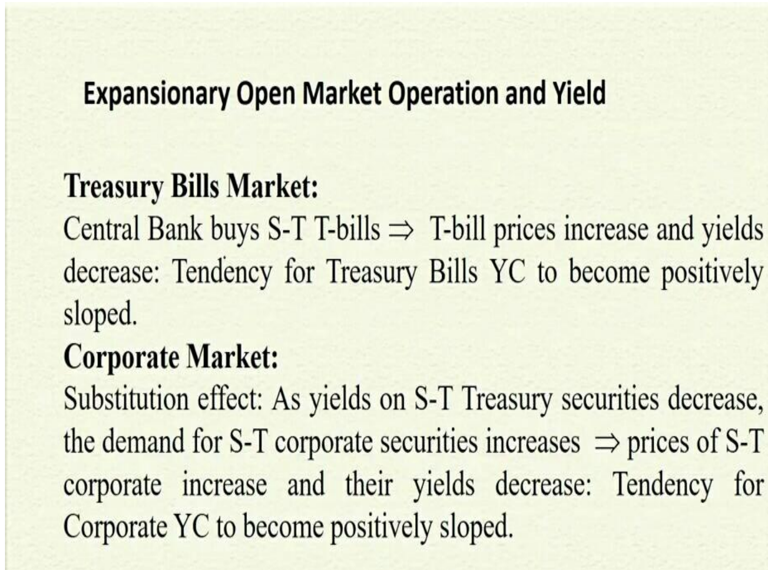

So let us see what will happen in the expansionary open market operation and how it will affect the yield curve? Already you know that, whenever you are going for the expansionary open market operation, the central bank will buy the short-term treasury bills. So, if they will buy the short-term treasury bills then what will happen? The table prices will increase and demand for treasury bills will increase. So, in that case the treasury bill prices will increase and yields basically will decline whenever the price is increasing the yield will be declining.

So, then what will happen? your yield curve to become positively sloped whenever the central bank was selling the short-term treasury bills. In the deficit financing case we have seen yield curve was negatively sloped. Now come to the corporate bond market what is going to happen in that case ? again the same substitution effect will work here when the yield and the short-term treasury bills will decline. The demand for the short-term corporate securities will increase because investor may be more interested to invest in the corporate short-term securities

Then, when they will invest more on the short-term corporate securities, then the price of the certain corporate securities will increase because the demand is more. Then obviously yield will decline. Then obviously your yield curve will become positively sloped. So, either you can go for the selling or buying, the substitution effect always works and there is a linkage can be created between the government bond market and the corporate securities market.

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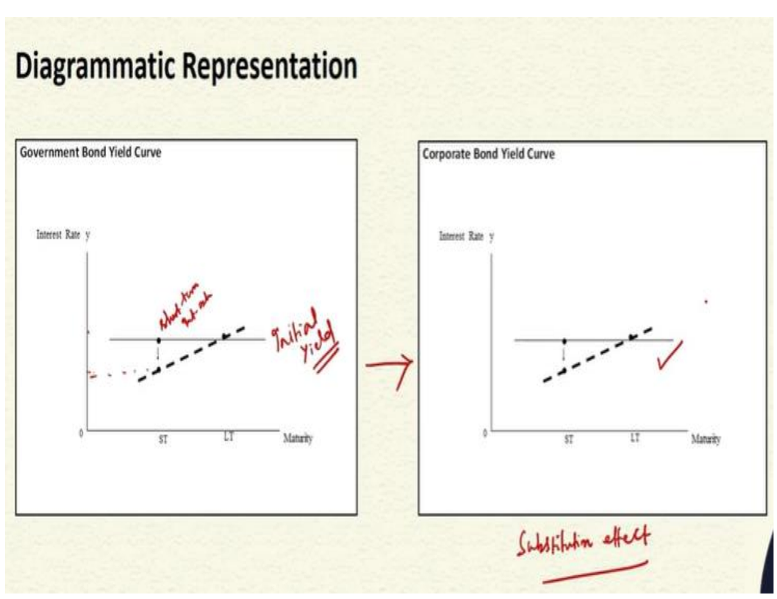

So, now you have seen. let us see through the diagrammatic way that, how this thing prevails. Again, this is the initial yield curve. So now what has happened? this mechanism or adjustment is happening in the short-term government securities market. the government is this expansionary part, the government is buying this short-term securities. So, because of this the demand is more. That is why the price has increased. So, if the price has increased the yield has come down. So, this was the initial short-term interest rate.

Now it has come down to this, because the long term market is completely independent that will remain there. So, then the curve basically will move the slope of the curve will get changed and again this will basically will have the link with the corporate bond yield curve. Here, again the your substitution effect will work. If the substitution effect will work, then obviously the same thing will prevail in the market and the adjustment basically will happen in the short-term corporate bond market by that the short term corporate yield will come down.

And this is the way the slope of the yield curve will get changed. So, this will happen in terms of the expansionary monetary policy.

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Expansionary Open Market Operation and Yield

- Since the long-term market is assumed to be independent of short-term rates, the total adjustment to the Central bank's purchase of short-term securities to the public would be in the short-term corporate and Treasury bills markets with no impact on the long-term markets.
- If both the Treasury and corporate yield curves were initially flat, then the expansionary OMO would result in new positively sloped yield curves.

So, the long-term market is not affected that already we have discussed. So, if the both the treasury and the corporate yield curve are initially flat, then the expansionary open market operation will result in new positively sloped yield curve.

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Contractionary Open Market Operation and Yield

Treasury Bills Market:
Central Bank sells S-T Treasury Bills ⇒ T-bill prices decrease and yields increase: Tendency for Treasury YC to become negatively sloped.

Corporate Market:
Substitution effect: As yields on S-T Treasury securities increase, the demand for S-T corporate securities decreases ⇒ prices of S-T corporate decrease and their yields increase: Tendency for Corporate YC to become negatively sloped.

Contractionary open market operation. Already we have discussed that. but it is same with the deficit financing part. The central bank has to sell the short-term treasury bills. The treasury bill prices will decline because why? Because, that why the treasury bill prices will decline? because the bank is selling more treasury bills, the supply is more than the demand. So, that is why the price will decline and the yield will increase.

So, that is why the treasury yield curve to become negatively sloped. So, in the corporate bond market the substitution effect will work. So, because the yields on the short-term treasury securities have increased, the demand for the short-term corporate securities will decline. So, then the price of the short-term corporate security bonds will decrease and their yield will increase. This is the prices of short term we can write bond one decrease and the yields will increase. Then what will happen that the corporate will curve also to become negatively sloped ? the same thing will prevail in both the markets.

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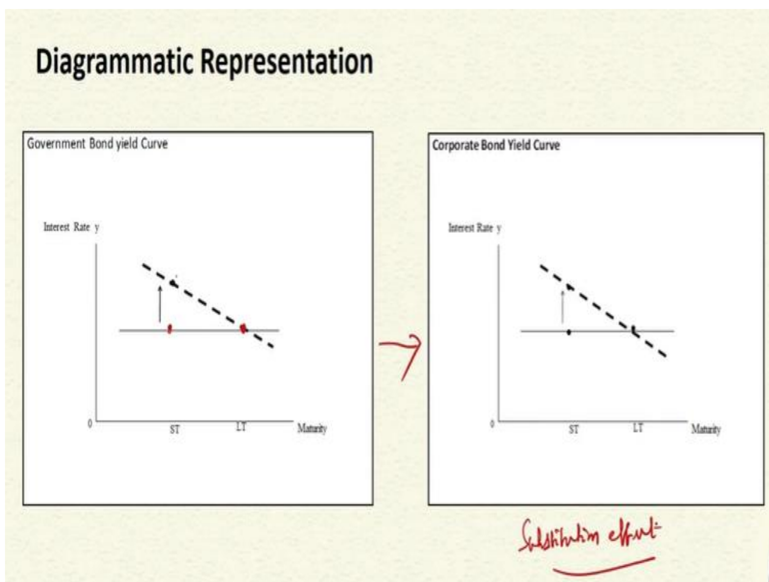

So, you can also show these things to the diagram. in the same diagram whatever we have used for the deficit financing part using the short-term securities. So here, you have seen that this was your initial yield curve, this is your initial short-term interest rate, this is the long-term interest rate. So, because of this adjustment, this short term interest rate has gone up. Long-term interest rate remains there because it is independent. Then the slope become basically this gets changed or the slope of the yield curve gets changed.

So, this thing will have the impact on this. so this happening, because of the again I am writing here, this is because of the substitution effect. In both the markets, you will find the same kind of adjustment mechanism will work.

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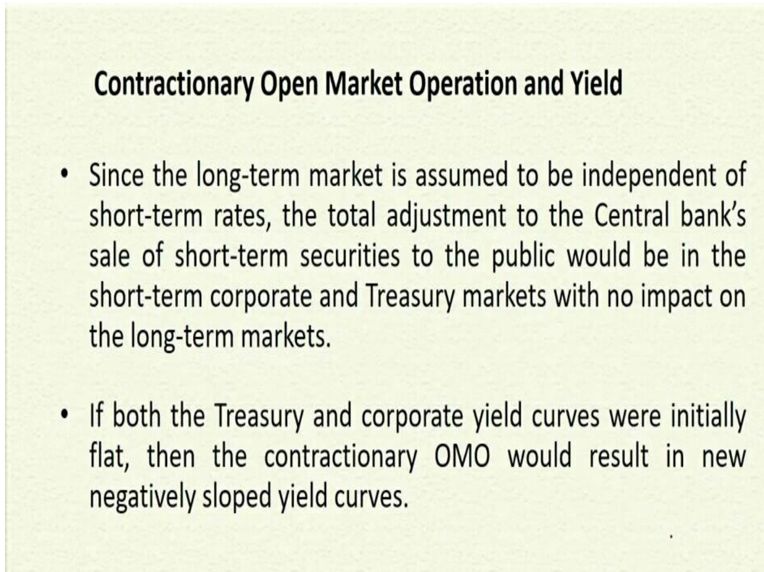

So, long term market is not going to be affected. So, because of that the initial rate will remain intact there. So, if both treasury and corporate yield costs were initially flat, then the contractionary open markets operations will result in a new negatively sloped yield curve. Negatively sloped curve will prevail in that particular market that actually you have to keep in the mind. So, we have discussed about the if there is a surplus by the government, then how the yield curve is going to be changed due to the government actions whenever they are utilizing that surplus?

And whenever also they are operating or using the instruments like open market operation as a part of the monetary policy instrument. Then how the slope of the yield curve also gets changed both in the case of expansionary and as well as the contractionary?

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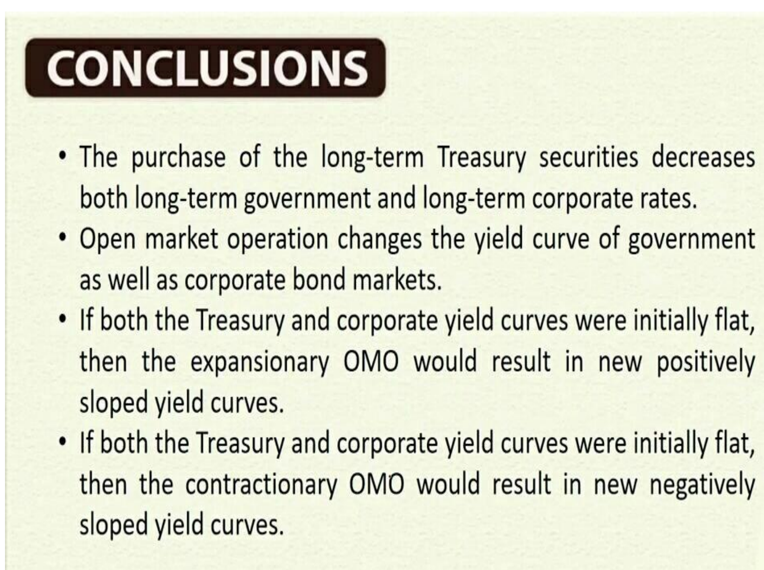

So, in the conclusion what basically we discussed here, the purchase of the long term treasury securities or the government securities decreases both long-term government and the long-term corporate rates. Open market operation changes the yield curve of the government as well as the corporate bond markets. And if both treasury and corporate yield curves are initially flat, then expansionary open market operation will result in a new positively slopped yield curve.

And in the case of the contractionary case,t hey will result a new negatively sloped yield curve. So, these are the different factors which basically will shift the yield curve and as well as the slope of the yield curve gets changed. One is your selling the certain securities or buying the certain securities or selling the long term securities or buying the long term securities. So, that is why any monetary policy instrument like open market operation has larger implications on the set of the yield curve. In the bond markets, both long term and short-term and as well as in the case of corporate and as well as the government.

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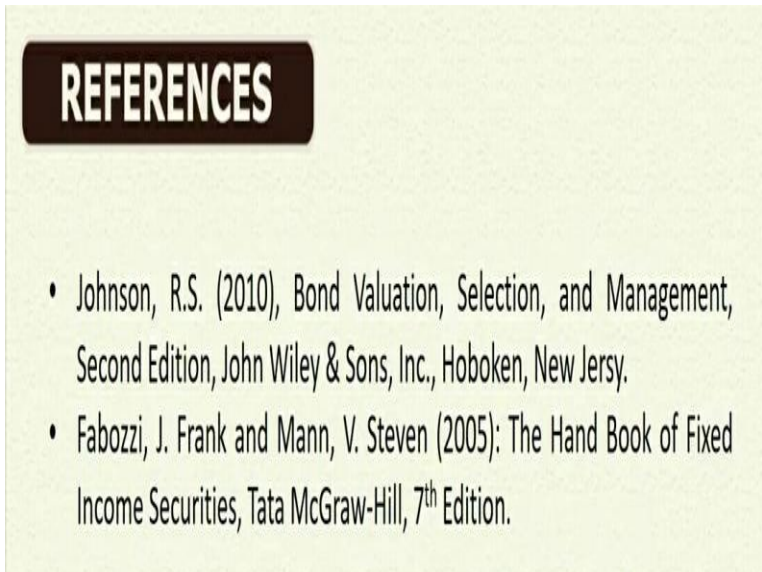

So, these are the references what you can go through for idea about this. thank you.