Management of fixed Income Securities
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Module No # 02
Lecture No # 10
Level of Interest Rate Determination-I

Welcome back. So in the previous class, we discussed about the calculation of the spot rate which is generally used to calculate the equilibrium price of the bond. Then accordingly, we can understand that whether the arbitrage opportunity can be created or not. So what do we have seen here? The interest rate is the major factor which is very much important for the bond analysis or the price of the bond or for yield calculation of the bond.

So in that particular context, we have to understand, what is the behaviour of that particular interest rate? So whenever we talk about the interest rate behaviour, there are 2 things basically comes to our mind. One is your structure of your interest rate and another one is the level of the interest rate. We will discuss the structure of the interest rate little bit later because that basically decides that on the basics of the characteristics of the bond, the rate of interest or the yield or the return changes.

But whenever, we talk about the structure of the interest that is basically the overall market interest rate. How the overall level interest rate level can be determined by the market rate? So we will go from a macro to micro perspective from the micro point of view first of all we have to understand that what exactly the level of interest rate is? Then we can move towards this structure point.

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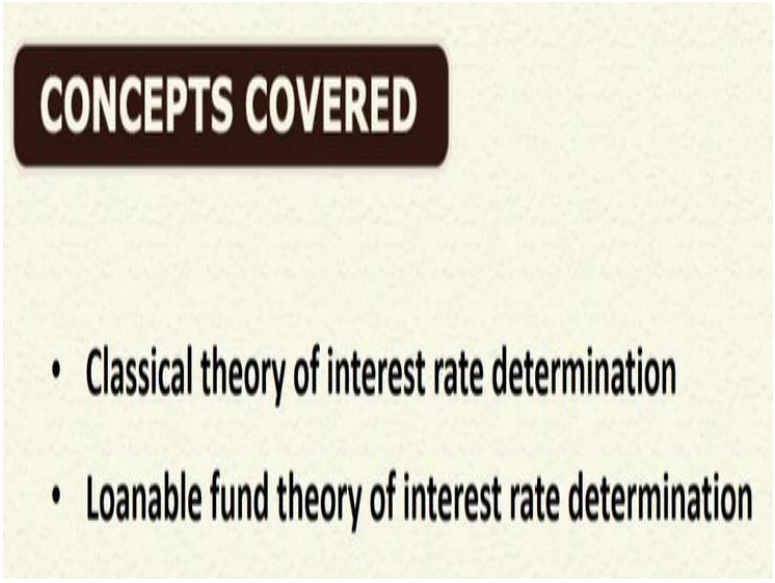

So here, in this case if you see that today's discussion will be based upon the two things: there are basically 3 different theories. But, today's discussion will basically cover up the two different theories and then will move towards the other kind of aspects that. One is your classical theory of interest determination and another one is your loanable bond theory.

So these are the two theories what we will be discussing today and then we will move towards the other type of theories which are prevailed in the market.

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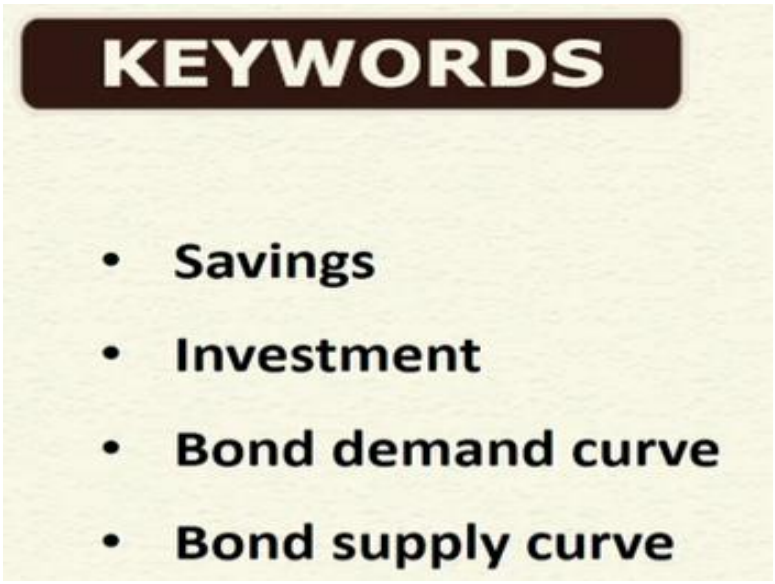

So after this you will be understood about the concept of savings, concept of investments, concept of the bond demand curve and bond supply curve. So these are the things basically you will come to know after the discussion of today's topic. So you know already, I told you, there are broadly three theories we always use to understand this level of interest rate how the

overall market interest is determined. In that particular context, we generally always look at these three different theories: one is your classical theory, second one is the loanable font theory and third one is the Keynesian theory.

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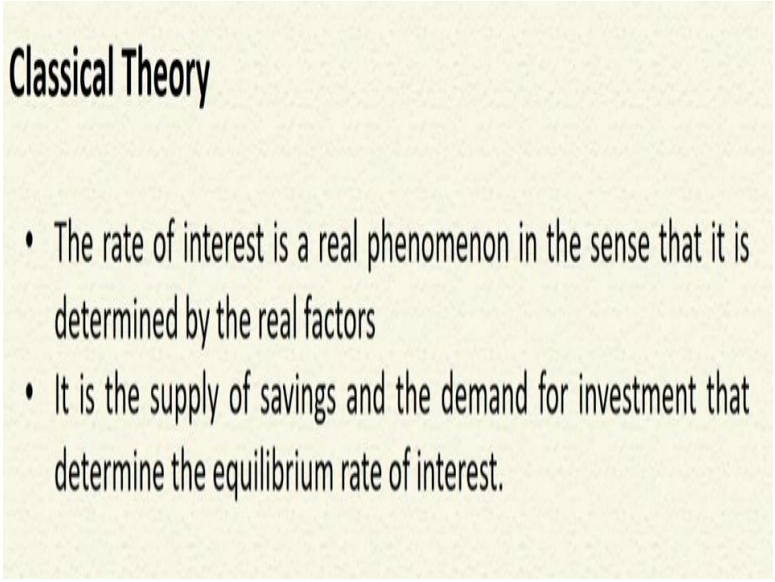

So let us see that what this classical theory talks about? According to classical theory, the interest rate is real phenomena. What does it mean? That means it is determined by the real factors. Real factors in the sense we talk about savings, we talk about the investments, all kind of macro economy concepts you might have already aware about. Those things basically determine the interest rates and interest rate is determined with the equilibrium of the market.

Then when the market is in the equilibrium? The market is in the equilibrium basically whenever the supply is equal to demand. Then, what is the supply here and what is the demand here? Here, it is the supply of the savings and the demand for the investments whatever money is saved that money will be invested in the market. So that means the interest rate will be determined in that phase whenever there is a savings is equal to investment.

So it is the supply of the savings and demand for investment that will determine the equilibrium rate of interest in the market.

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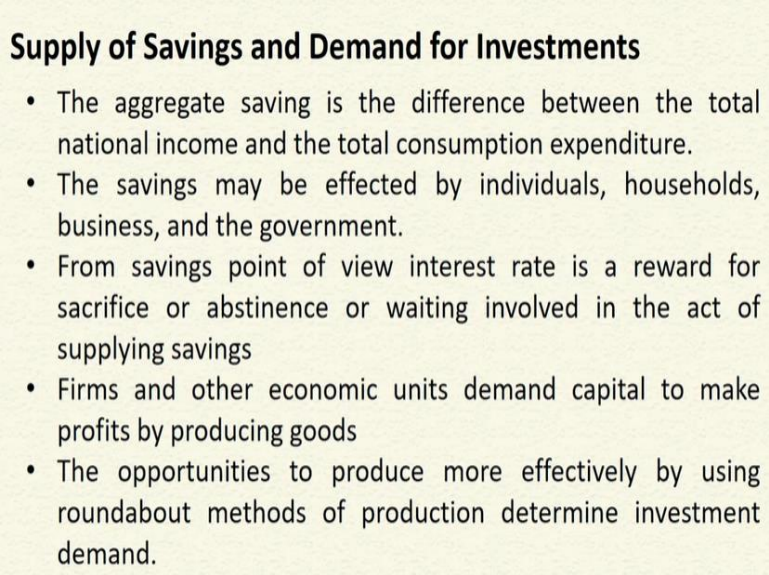

So here what basically overall we are talking about what do you mean by this aggregate savings? If you go by normal economic identity, you know y is equal to we consider c + s. You total income is equal to consumption plus savings then how you get the savings, it is y – c, y = income and c = consumption.

According to classical economic theory, Y = C+S

Where, Y = Income

C= consumption

S= savings

So whatever money is not consumed that is saved, that is the logic basically we adopt. The classical approach basically tells whatever money is not basically used for consumption that will be saved. So that is why, the aggregate savings is the difference between the total national income and the total consumption expenditure. And Savings may be affected by whom? Who basically go for savings? It is the individual's households, business sector or corporate sector, government any entity in the economy can go for the savings.

So why somebody will save if somebody have some surplus money? Why they will go for the savings? Because, they are expecting some reward from this and they are not basically utilizing that money now. They are keeping that money with somebody with the bank or with other financial institutions expecting that some kind of reward they will get. So that is why according to classical theory, interest rate is a reward for sacrifice or waiting involved in act of supplying savings.

That means whenever I am not utilizing that money now, I am foregoing my consumption. Why I am foregoing my consumption? Because, I want some returns. Because that money will be kept somewhere and I will get some return out of this. So that is why bank gives you interest because you are not utilizing that particular money and that is why some reward is given to you.

And who basically and where the bank gets the money to give you the interest because there are some other entities mostly the corporate sector if you look at, they need money for their investment or to produce. In the production process, they take the money from the banks and bank basically takes the money from the savings whatever we are making and that money is utilized in the market or utilize in the production process. And against that because they have taken the loan from the bank they will pay certain thing to that bank and from that, bank will pay some interest to us. So, money or the particular kind of savings whatever we are making that savings are basically demanded by the investor or the investment. So therefore, why they invest? Because, they want to produce; once they produce they will sell and they will get the price, also they will get some profit. And from the profit, they can generate some surplus again which can be saved. So in that process, the business sector also can save something there is a corporate saving. So the supply basically is from saving side and demand basically comes from the investment side. So wherever the savings is equal to investment there the equilibrium interest rate basically is created.

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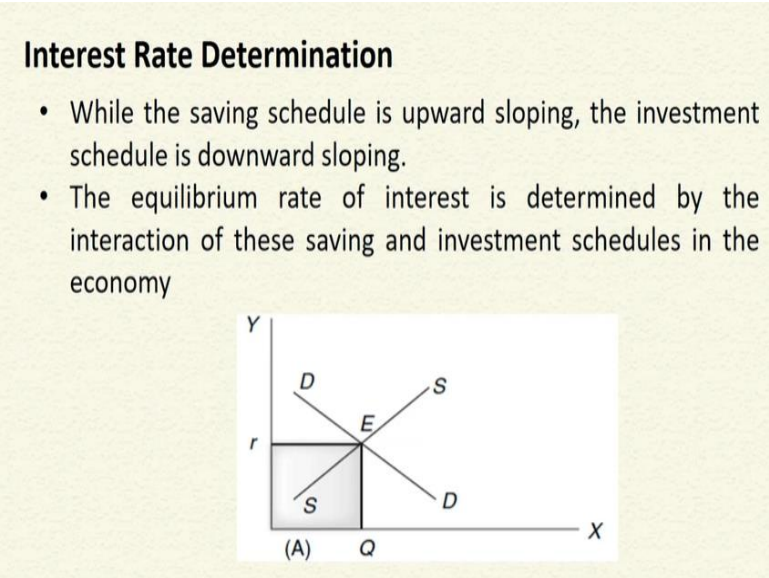

And if you see that, the saving schedule is upward sloping and investment schedule is downward sloping. Why this saving schedule is upward sloping? Because if the interest rate will be more then savings will be more; if bank will give more interest then you will be inclined to save more. So in that process, the supply is basically directly proportional to the interest rate. But if you look at the demand side: if the interest rate will be more then what will happen! then the demand will go down. Because, loan will be expensive; the corporate sector may not go for higher demand. That is why the investment schedule is downward sloping. The saving schedule is upward sloping and investment schedule is downward sloping and wherever the interaction between the savings and investment that means saving is equal to investment. There the equilibrium interest rate is determined in which particular interest rate makes this supplies side or supplies the savings is equal to demand for investments. That is basically equilibrium interest rate which can be prevailed in the market. So that is basically the basic essence of the classical theory. So if the savings is equal to investment the particular interest rate wherever the savings is equal to interest rate that is the equilibrium interest rate which can be prevailed in the market at a particular point of time.

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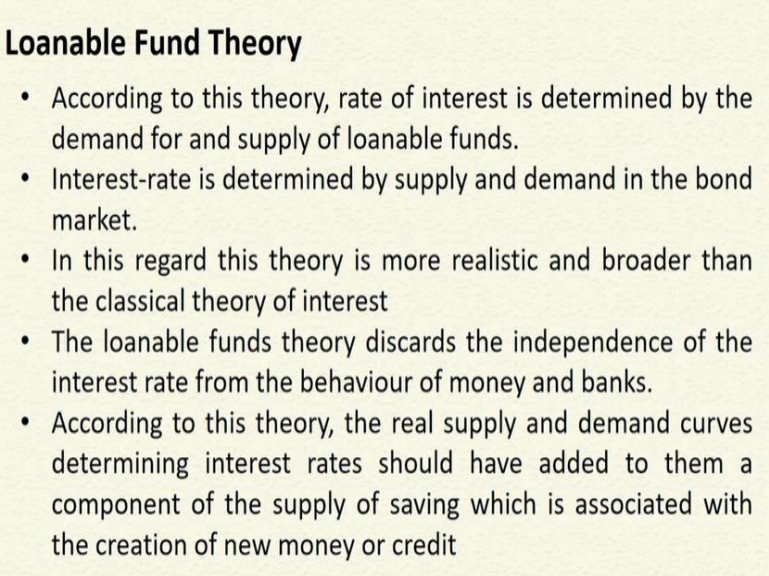

But the question here is that, all the money which are saved cannot be invested? Out of them, some money can be loanable and some money is not loanable or cannot be loanable. And that is why according to loanable fund theory; they said that it is not the total savings and investment which determine the interest rate. It is the interest rate is generally determined by the demand and supply of the loanable funds.

So mostly, it is basically related to this supply and demand in the bond market. So the interest rate is largely determined by this supply and demand in the bond market. In this regard, this theory basically is more realistic or may be more practical than the classical theory of interest. And also the loanable fund theory discards the independence of the interest rate from the behaviour of the money and banks.

They said there is some dependence. So according to this, the real supply and demand curves which basically determine the interest rates should have added to them the component of the supply of the savings which is associated with the creation of the new money or the credit in the system. We will explain this- what basically here we mean.

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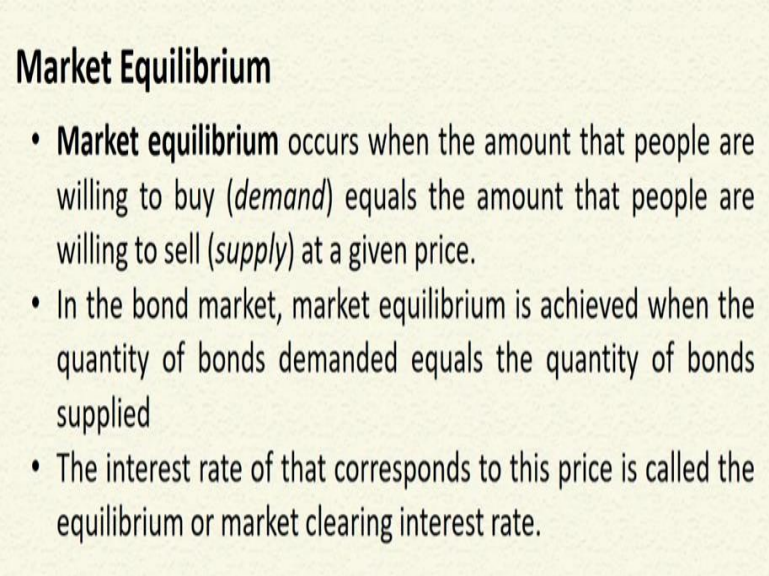

So in this context, they are talking about the demand and supply in the bond market. So what is the demand and supply curve in the bond markets? Let graphically if you want to show, this, the demand curve or the bond demand curve what it shows? It shows the relationship between the quantity demanded and the price when all economic variables are held constants. Other factors which are affecting the price of the bond that basically remains constant. In that particular point of time, what is the price and demand for the bond relationship that is basically called the bond demand curve? And usually already you know that the bond demand curve has the usual downward sloping. What is indicates? That the lower price of the prices of the bond everything else being equal the quantity demanded is higher. Many people will be ready to invest in that particular bond if the price is low. Expecting that they will get more return in the future.

And what is bond supply curve? It basically shows the relationship between the quantity supplied and the price when all other economic variables are held constant. And it is usually upward sloping, what does it means: If the price increases then the quantity supplied also will increase. Right! Because price and supply side are directly related; the price is more everybody wants to supply that and if the price is higher the demand will be less that is the usual economic principle already all of us know. So if the price is higher that means the interest rate is lower in case of the bonds. If the price is higher the interest rate is low if the price is low then interest rate is high. So, both basically move in the opposite directions. So in this case, what basically we have seen that the demand and supply of the bond market will decide that which; is the equilibrium interest rate.

So let us see that how basically this thing works that is called the market equilibrium that means when the market equilibrium occurs. The market equilibrium will occur when the amount that people are willing to buy which is basically the demand side equals the amount that people are willing to sell that is basically the supply side at a given price. At a given price, the amount that what the people are willing to buy or the amount that what people are willing to sell?

So that basically gives you the market equilibrium. So, in the bond market, when does the market equilibrium occur? The market equilibrium occurs when the quantity of the bonds demanded equals the quantity of the bond supplied. And the interest rate of that corresponds to that particular price is called the equilibrium or the market clearing interest rate. The interest rate of that corresponds to that particular price is called the equilibrium or the market clearing interest rate. What basically it means?

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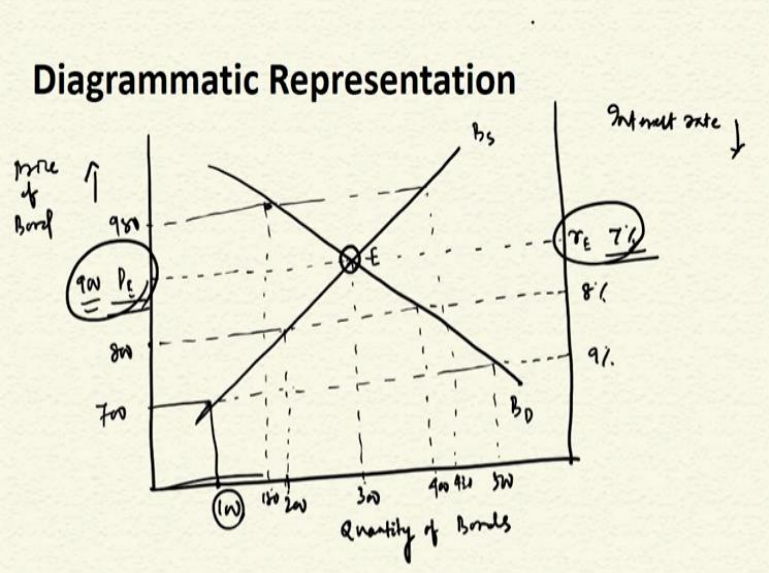

Let me explain it in a diagrammatic way what basically here what I was trying to explain you. Let us draw a diagram, let I write this is your quantity of the bonds and here we will let the price of the bond here let us take the interest rate. So here what happen if I supply demand curve, we have drawn that is basically here let for example this is 100 this is 200 let this is 300. So here we have taken the price so what we have seen that?

The price is more than the demand will be less. And which is the demand curve? This is your demand curve which is downward sloping and this is your demand curve and this is your supply curve. So here what basically we are trying to say that this is your equilibrium point and this is basically price which we are getting that is your equilibrium price and this is your equilibrium interest rate.

So here let 100 so in this case this is the price. So in this price you are demand is if you are trying to see if let the price is let here I am writing 700. So here if you see those 100 quantities are supplied at the price of 700 but the demand is more maybe 500. But let the prices increase to 800 so here your supply has increased let that this has become 200. But if you look at the demand, the demand that has come down to 400 from 500 to 400 so this will go on and in that time the interest rate is basically we are taking in this side.

It is increasing but in the lower side so this is the price going in this side so let in that time, the interest rate was let 9%. So here the interest rate was let 80% so let it is 7%. It is increasing but in the lower what in this vertical axis if you go down it is increasing. So here the price is increasing in the upward side here the interest rate is increasing in the downward

side. Is it clear? It was 9% ss price was 700 it was 8% price was 800 at 7% maybe this price will be 900 like that.

So the interest rate is less, price is more if the interest rate is more the price is less. So that means here in this case your equilibrium interest rate is 7% and equilibrium price is 900. Further if you go up may be you will go up here let the price this will be late 180 let the prices become 950. So this is your demand part but now supply is very high let 430. So here the equilibrium interest rate is determined that is 7% is corresponds to this particular price 900. Is it clear?

So that is your equilibrium interest rate, that is your demand side and this is your this is basically your supply setting this is your demand setting which is downward sloping and this is upward sloping. Now for example if you little bit for your clarity now you have mixed of both price and interest rate.

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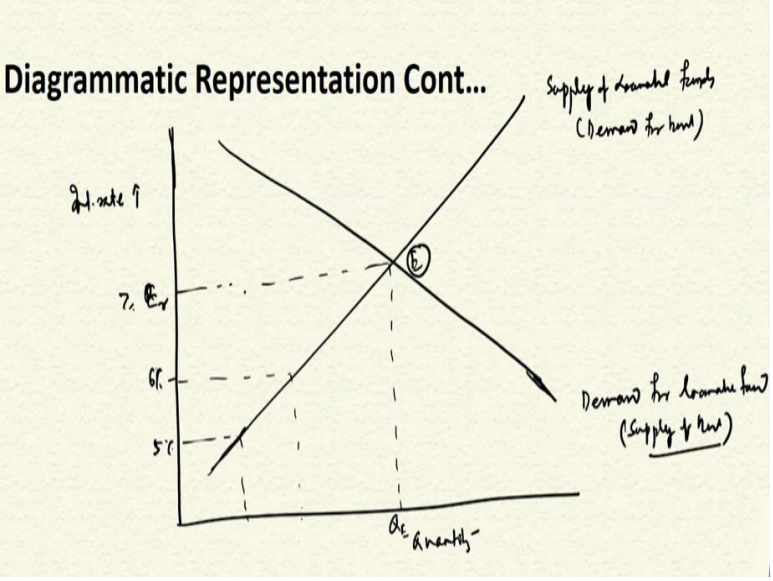

In the loanable theory context if I draw it only in one part, 1 vertical axis, 1 horizontal axis. Let this is your quantity and this is your interest rate it is going up that means so this is your equilibrium quantity this is your equilibrium interest rate. So here the interest rate is basically increasing or decreasing let it was 5% then it becomes 6% then you become let 7% like that. Accordingly your demand supply so this is what, this is basically your supply of the loanable funds.

But this is basically talks about the demand for the bonds and this is your demand for loanable fund and this is basically your supply of the bonds. In bracket, we are writing to

make a synonymous with respect to the previous diagram. So loanable bond theory is linked to supply and demand for the bonds that is what basically we are trying to do. So that is equilibrium point at which the interest rate is basically determined.

So here what basically we are talking about that loanable fund theory talks between the equality between the supply side and the demand side of the bonds.

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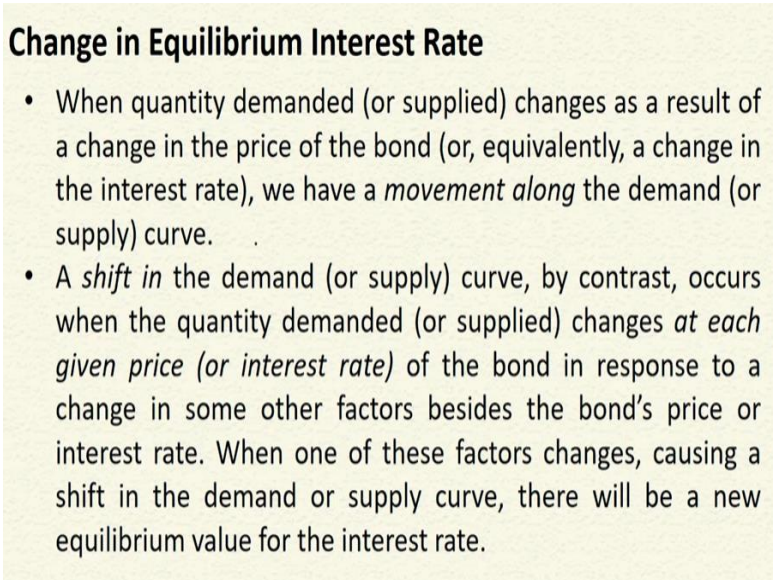

Then there is a possibility when the quantity demanded or supplied changes as a result of a change in price of a bond. Then we have a movement along this demand or the supply curve. Just now we have seen but the demand and supply curve can shift when the quantity demanded or supplied changes at each given price or interest rate of a bond in the response to change in some other factors which are affecting the demand and supply of the bonds.

When any of the factors will change, there is shift in the demand curve or there maybe shift in the supply curve and a new equilibrium value of the interest rate can be determined or can be decided. So that is why, moving along this demand curve or moving along the supply curve is different than shifting the demand curve and shifting the supply curve.

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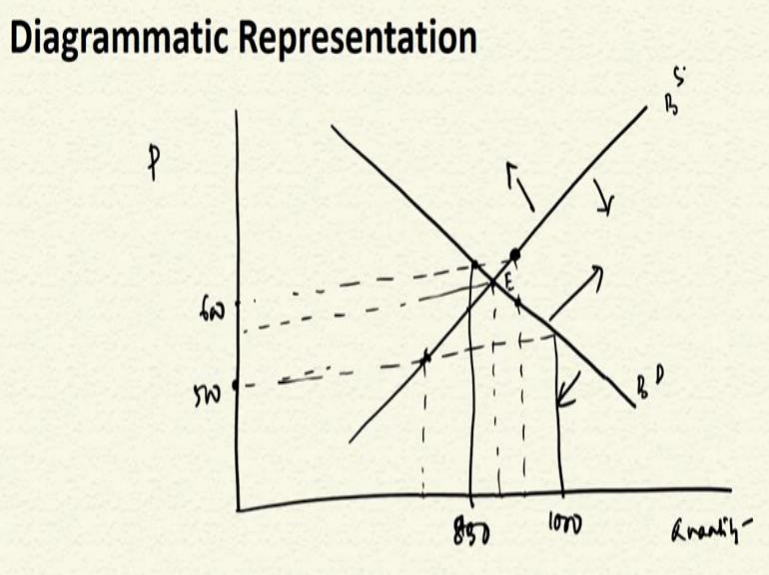

For example, if you see let me tell you that what basically I mean here? If I draw a demand curve, this is your demand curve. So if your price will change let this was the price of 500 and this is quantity let 1000 but when the price has become 600, the quantity has become let 850. This is your p, this is your demand this is your quantity and in that time your supply is also changing. So for example if we draw a supply curve like this so this is your equilibrium point before at this price at this quantity.

Now whenever the price will change the supply is also changing at this price this much was the supply but at this price the supply is this much. So what is happening? So we are moving either through this demand curve or through this particular supply curve. And this is happening because of the change in the price but we are not basically shifting the supply curve from this to this demand curve from this to this or supply curve from this to this or from this side we are not changing that.

We are only moving across the demand curve or we are moving across the supply curve and that thing happens whenever the price changes. But there are other factors which also affect the demand and supply of the bonds. So if those things will change then what will happen? That this will shift the demand curve and the supply curve .So that is what basically always we have to understand that when this or what factors basically change the or shift the demand curve of the bond or the supply curve of the bond. This is what basically we have to see.

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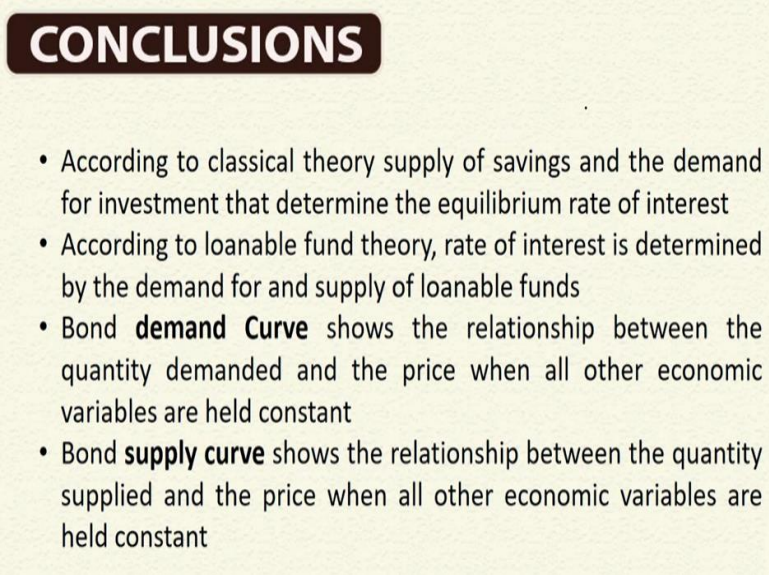

So what basically we have discussed? That, according to classical theory, supply of the savings and the demand for investment which will determine the interest rate but loanable fund theory basically tells that the interest rate determined by the demand and supply of the loanable funds. Both bond demand curve basically shows the relationship between the quantity demanded and the price when all other economic variables had constant.

And supply curve also show the relationship between quantity supplied and the price when all other economic variables held constant. So further we will be discussing about what factor basically shift is one supply curve and the demand curve by that a new equilibrium point can be established.

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These are the references what basically you have to go through for the comprehensive or the detailed discussion on this. Thank you.