Engineering Economic Analysis

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Lecture 2

Some Economic Concepts, Value and Utility, Interest and Interest rate, Time Value of Money

Welcome to the introduction of economic concepts in engineering economic analysis. In this class, we will study about some of the economic terms and we will see what they mean in engineering economic analysis. First of all let us discuss about the value and utility.

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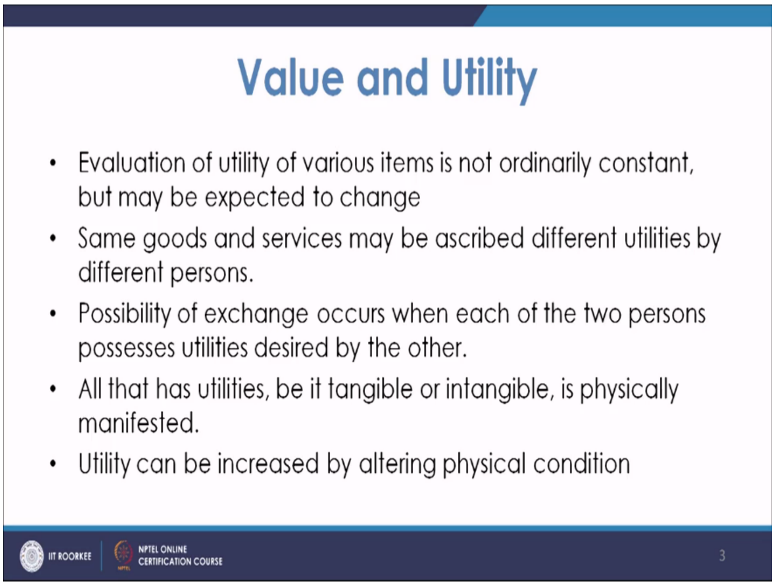

Value is a measure of the words that are person scribes to a good or a service. The value of an object is inherent not in the object but in the regard that a person has for it.

Now on the other side utility is measure of the power of a good or service to satisfy human wants. Basically value and utility they arerelated to each other. The utility that an object has for a person is a satisfaction he or she derives from it.

So value you can say it is an appraisal of utility in terms of medium of exchange. So if you have more utility for a substance you try to give more money for it, you try to pay more money for it and that is why it is said that you have this in terms of medium of exchange such as money.

Now evaluation of utility of various items is not ordinarily constant, but it may be expected to change. Basically the utility of an item will be changing. The utility of a cloth which is to be used in the winter season, its utility will be less in the summer season. So basically with time, utility of any object changes.

Further, same goods and services can be having different utility by different person. The same goods which I am giving more utility another person may not give that much utility or importance so that is why utility is changing a person to person. Now what happens that this basically leads to exchange of goods.

So it is said further that possibility of exchange occurs when each of the two persons possesses utility desired by the other. So it means the two persons are there who have to exchange. Now they see what utility they have, one person has to leave the object and the other person has to accept the object. And in that case, the exchange may occur.

All that has utilities, be it tangible or intangible, is physically manifested. It means that whatever be the item, if it has utility, it is basically seen. Just like any item, automobile or you say house, if it is having utility you can clearly see that it is useful for someone. Somebody can pay some amount to buy it for satisfying his wants or emotional needs.

Now it may be either tangible or intangible means it may be item such as music like an intangible quantity because for music also you pay something, it is pleasant to ears.

Utility can be increased by altering physical condition. Now what happens, if something has certain utility it can be increased by changing its physical condition? You can work on it and and you can increase its utility so its utility will be more in future.

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Now we will discuss about two types of goods which are used in economic analysis. Basically we encounter with two types of goods - consumer goods and producer goods. Consumer goods are the one which directly satisfy your wants, you are the direct part of this product. You directly involved yourself. So two classes of goods are recognized that is consumer and producer goods.

Consumer goods are the goods and services that satisfies you directly. Whereas the producer goods are the goods and services that satisfy human wants indirectly as part of the production or construction process. So basically if you use the fridge, it gives you direct satisfaction. If you when you use the cold items, you get direct satisfaction. But the parts which are used to make a fridge, they are producer goods.

So basically producer goods are means to the end. And consumer goods you are directly using to satisfy your wants.

Utility of consumer goods is primarily determined subjectively, while the utility of producer goods is considered usually objectively. It means that if you have certain consumer goods, if you want to have the feeling of suppose music, that is subjectively decided. Now for getting that music suppose you need to press 10,000 of bits or 10,000 of keys, now these are the producer goods.

So basically that is objectively decided only when these 10,000 keys will be pressed you will hear that particular music which will satisfy your ear, you will be satisfied. So that is why it iswritten that utility of consumer goods is primarily the determined subjectively, while for the producer goods it is objectively. You have to objectively define what you want then only you will get the consumer goods.

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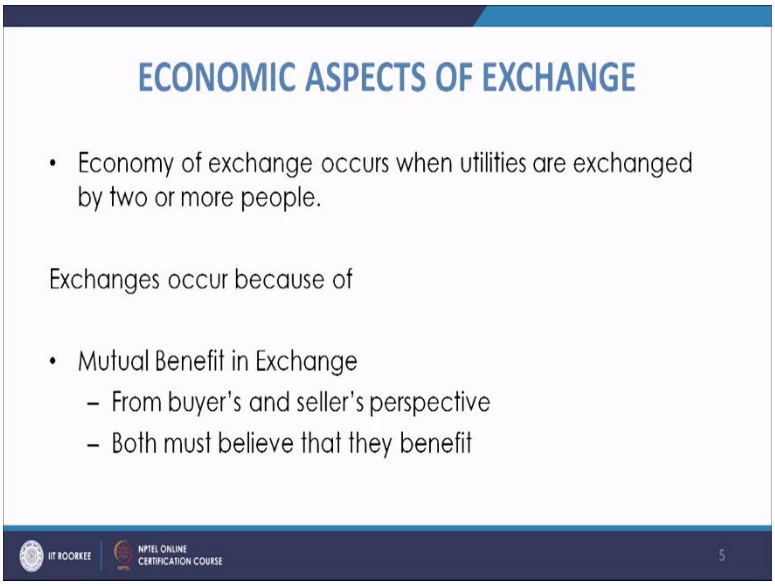

So now we will see how this exchange occurs. What we see that economy of exchange occurs when utilities are exchanged by two or more people. We have already seen that when two persons in business feel that they have utilities, both by exchanging, then only exchange occurs.

Now exchange occurs because of mutual benefit in exchange. What does it mean? This means that both the persons should feel that they are benefiting by this exchange. Also, the buyer and seller, the two parties which are there in the exchange process, their perspective is different.

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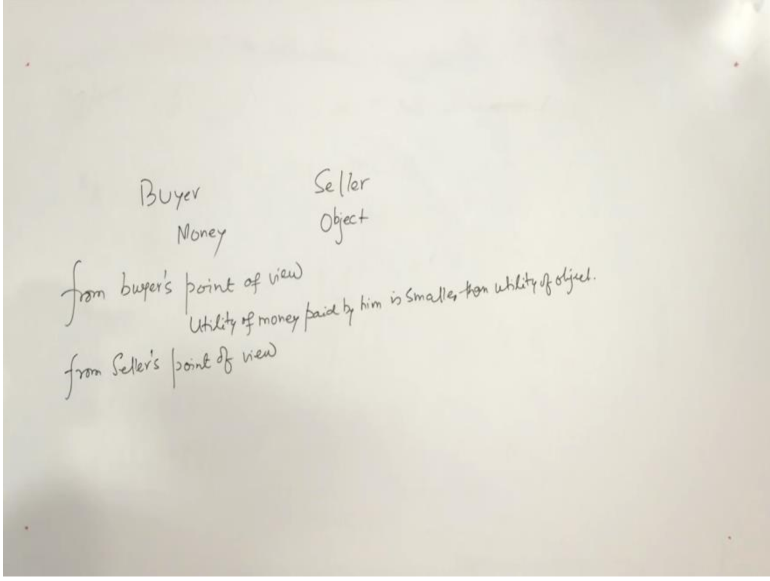

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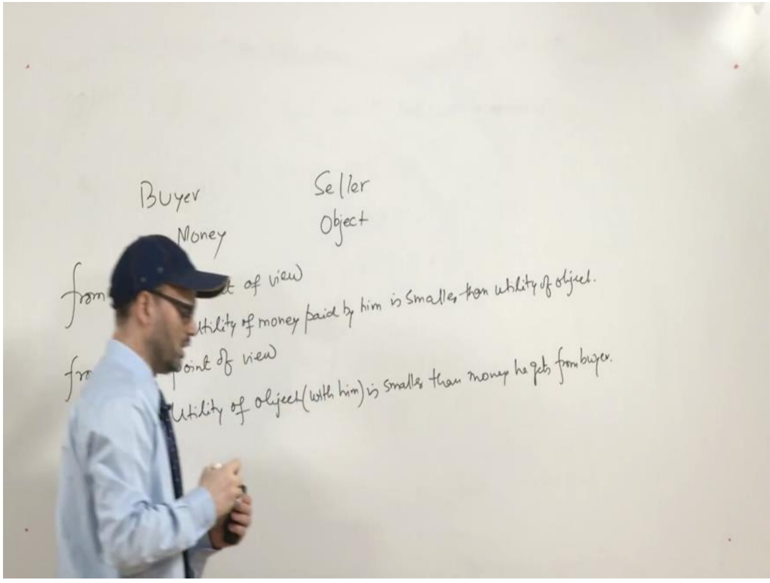

Now a buyer is there, suppose a buyer is there. He is giving money and the seller, who is giving you the object. Now, the buyer must feel that the utility of money. So from buyer's point of view,he should feel that the money which he is paying for the object, its utility is lesser than the object which he is getting. So from his point of view, utility of money paid by him is smaller than the utility of the object.

So only when this condition will be satisfied, the buyer will go for exchanging. Similarly, from the seller's point of view, now seller will think in his own way he will see that what is he getting by selling his object. Now he must feel that whatever he is getting, the money, its utility should be more than the utility of the object which he currently possesses. So for him, utility of object which is with him is smaller than money he gets from buyer.

So this is known as the perspective of buyers and sellers. Both must feel that they are benefiting and that is why it is said that it is there should be mutual benefit in the exchange. Unless both feel that both are benefited, this exchange process cannot occur.

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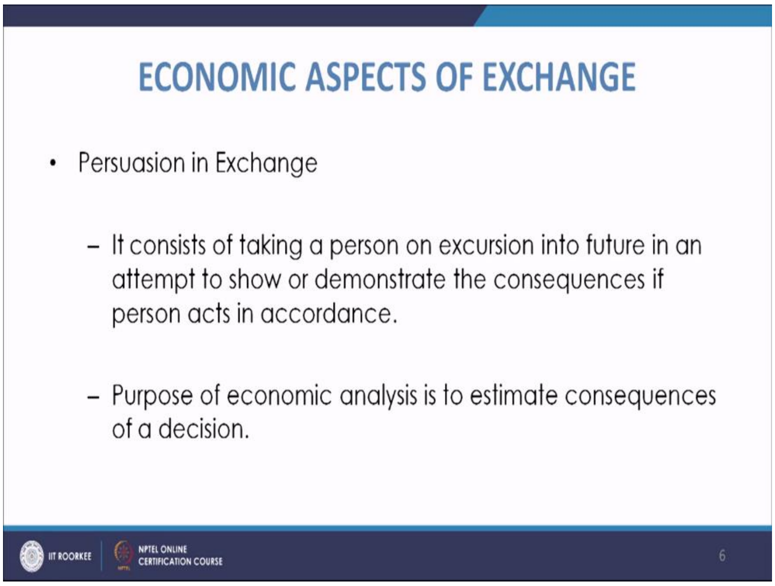

Now next is how to enhance, how to increase the possibility of exchange. So for that, there should be persuasion in exchange. Many a times you are not in a position to go for buying something so basically there should be a persuasion. Persuasion means a person is there who is persuading you who is showing you the dreams so that in future you can go for purchasing that item. It will serve your purpose, it will satisfy your wants.

That is why it consists of taking a person on excursion into future in an attempt to show or demonstrate the consequences if person acts in accordance. So that is why once he is persuaded. Earlier he felt that the object had not much of the utility.

But once he is shown the future consequences, the effects or the benefits what he will get in future or the pleasure what he will get in future, then he can be persuaded to go for the exchange process and he can take something by exchanging the money or other item.

So the purpose of economic analysis is to estimate consequences of a decision. So in economic analysis, we discuss that that if any decision is taken, if you try to exchange, what will be the consequences, are you going to be benefited or you are going to be not.

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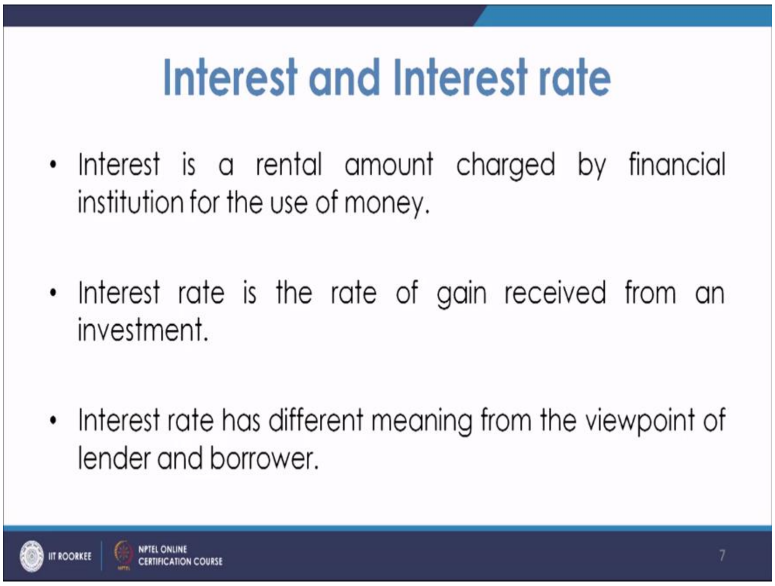

Now we will discuss about interest and interest rate. So as we know, interest is a rental amount charged by financial institution for the use of money. You know that money has earning power, it has purchasing power. So once you have money, it has earning power and interest is that rental amount which is charged by financial institution.

Because we have different desires, we want to fulfill our goals, so we need money and we try to take it from financial institution and for that we have to pay extra.

Interest rate is the rate of gain received from an investment. So similarly in a particular period, whatever is the interest, on that basis we calculate the interest rate. Now interest, when we talk about, we have two parties, one is the lender and another is borrower. One person is lending another one is borrowing. So interest rate is taken differently for both the parties.

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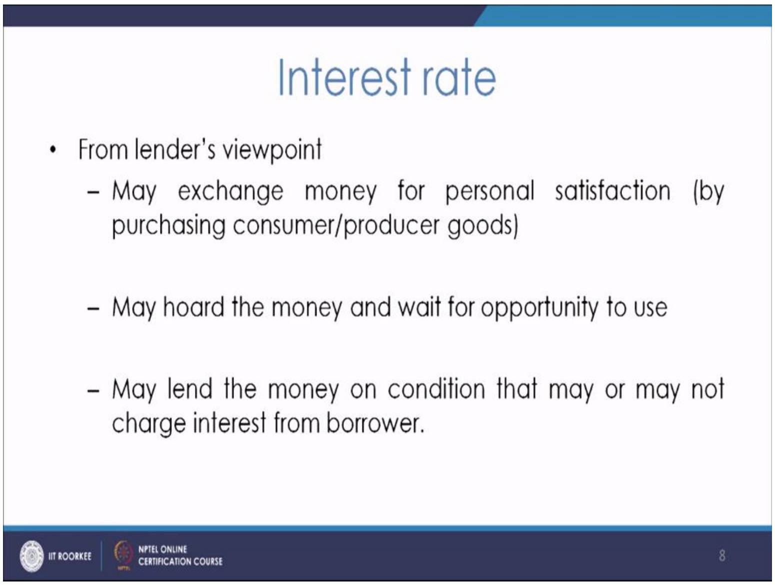

How it is taken differently for both the parties? So from lender's viewpoint, means the person who is lending the money, now what he feels and why he is going to charge the interest? So what may be the reason?

The first is, he may exchange money for personal satisfaction. Now the money he has and if he is not lending it for some purpose, he can use it for purchasing some consumer goods or some producer goods for his own satisfaction. He can go for purchasing a car, he can go for purchasing a house, he can go for purchasing certain theatre components. All that will give him a lot of satisfaction, a lot of pleasure.

So basically he is not going to take the pleasure of that and that is why he is lending so he must get some return from that. Another aspect is, he may hoard the money and gloat over it. He can feel happy by looking at the money when he sees it. So if the money is with him and he sees every day, he may feel the pleasure. Or he can also wait for the opportunity to use. If the money is with him, whenever an opportunity comes, he can use it.

So it is his money, he can be happy by looking at it or he can further use it in future time. Now he can lend the money on the condition that may or may not charge interest from the borrower. Means, if the money is with him, either he may charge interest from someone or he may not charge interest from someone.

He can give it to someone that can give him satisfaction. So this way a lender has a different perspective, he gives the money to a borrower assuming all these things.

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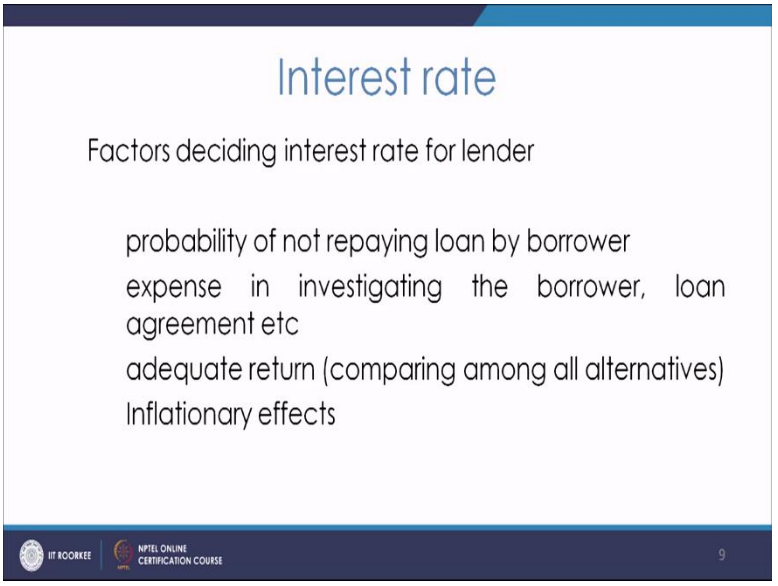

Now what are the factors which decide the interest rate for the lender? Now the factors are that there is certain probability, if suppose that the borrower is not repaying the loan, now he has to be sure that certain percent there is certain probability that if the borrower is not repaying the loan and he has certain fixed assets which he has kept with him, at least he can get some amount from there, so there will be that component.

Next component is, expense in investigating the borrower, loan agreement. While giving the loan to a borrower, he has to do a lot of formalities, he has to go and see the borrower, he has to make the papers, he has to do a lot of formalities. All these need cost, all these need cost is the money. So for that he has to pay from his own side.

And the final thing is, adequate return. Now the thing is he can lend this money to many options and from the different options, he can get some return. Now he has to see that he is getting equivalent level of return if he is giving to a borrower. Suppose so basically all these three factors, are taken into account. They will be suppose X person, Y person and Z person, these all together, they will on that basis basically interest rate is fixed.

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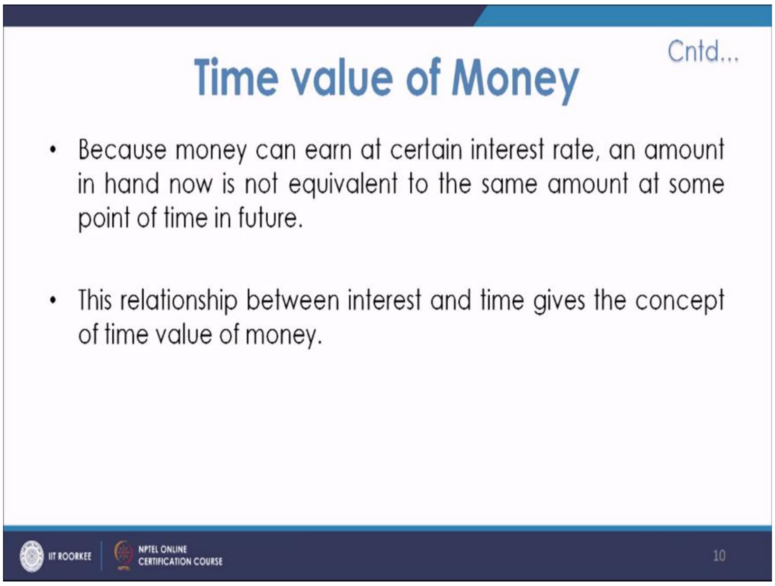

Now we will talk about time value of money. As we know that money can earn, money has earning power. Now money can earn at certain interest rate, an amount in hand now is not equivalent to the same amount at some point in future. So as we see that the money which we have now, its value will be different at some point in future. That is known as time value of money means with time the value of money changes.

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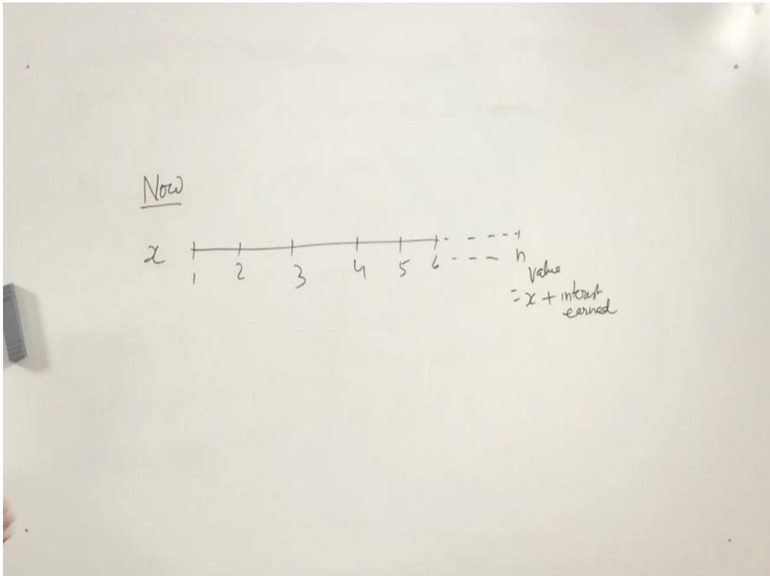

This relationship between interest and time gives the concept of time value of money. So we can see that if you have some amount of money now, this amount, so now if you have any amount X and you go in future, 1 year, 2 year, 3 year, 4, 5, 6 to n years. After n years, this value X will be X plus, this value will be X +interest earned on it.

Means the money which you have now, its value is going to change. The benefit or the pleasure which you get now, you are having certain money X, which you did not have, so you have borrowed it from someone. You got the pleasure because you could not have got this pleasure presently because you did not have the money. Now you have got this pleasure but for this you have to pay certain extra that is the interest earned.

That is why, with time, the value of the money is changing. That is known as time value of money.

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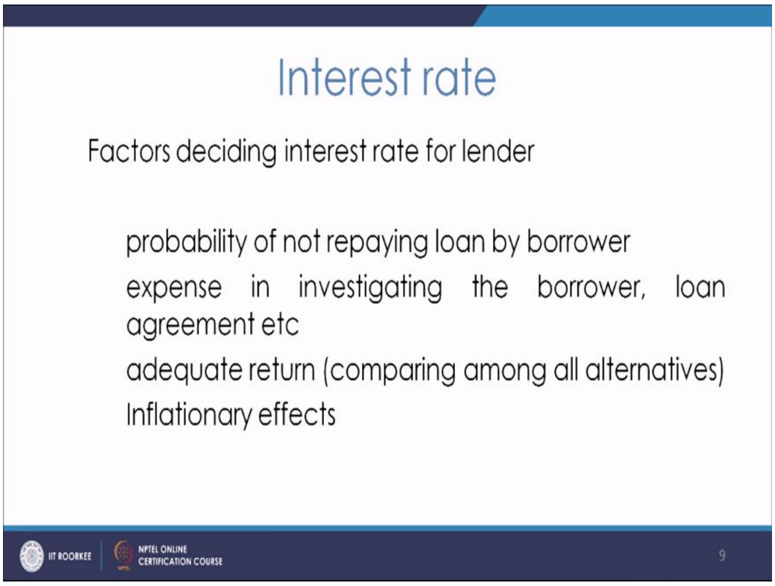

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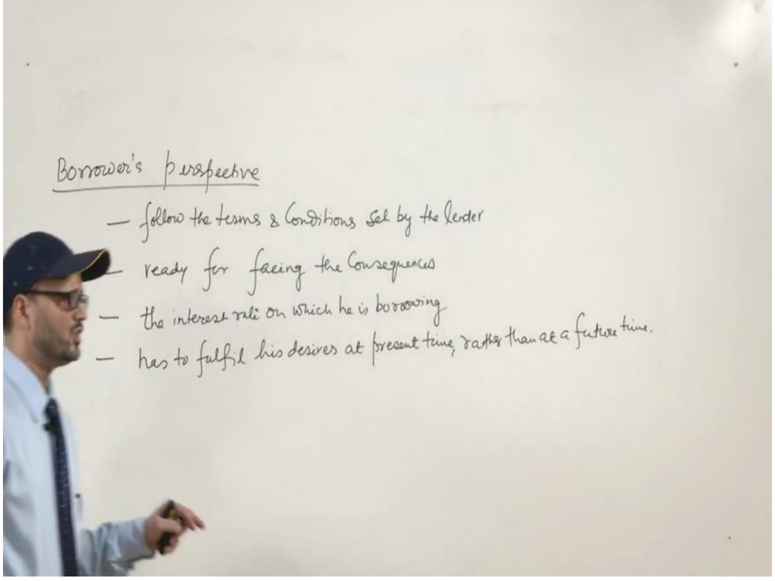

Now there is different perspective for the borrower, what way he is borrowing the loan. So from borrower’s perspective what will he looks at when he is borrowing a loan from any lender. So, he has to follow the terms and conditions set by the lender. A borrower has not much of the option left, he has to borrow the fund to satisfy his want. So the conditions which are set or the terms which are set by the lender, he has to follow it.

Also, he is aware that if he is not able to fulfill those conditions, he has to face the consequences. So he is also ready for consequences. Now next comes that at what interest rate he is getting. So basically he has to see the interest rate on which he is borrowing. So basically he will have many alternatives and he will see what are the interest rates on which he can get the amount.

Now the third and the last component is, he has to fulfill his desires at present time rather than at a future time. Basically this is important point because most of the time we borrow something because we want to feel the pleasure now. For that we do not have the resources so we borrow it so that we can have our desires fulfilled now and for that we are able to pay more at the future time.

So basically from the borrower’s perspective, this is how he looks at the interest rate and then he goes for taking any amount from a lender.

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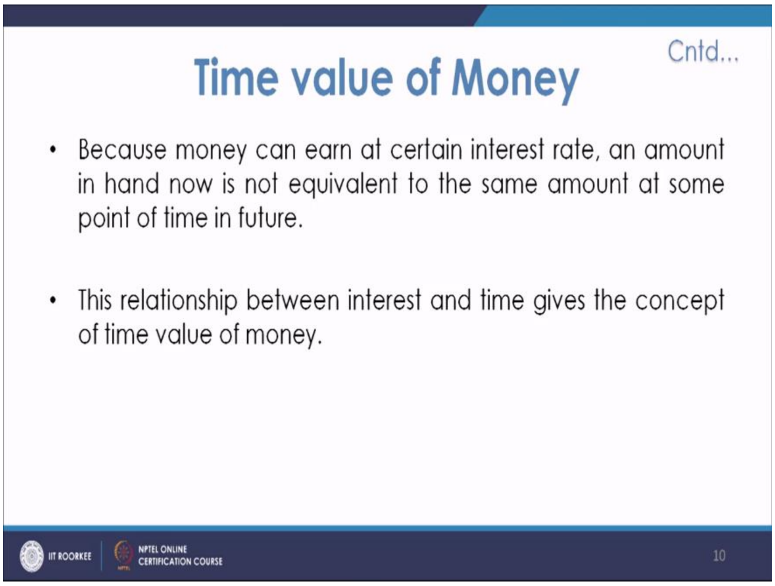

Now we will discuss about time value of money. What this time value of money? Time value of money means value of money with time. As we know that money is used for satisfying our wants, if we have money we can purchase something now and it will satisfy our wants. It has earning power, if we have money, it will earn us and it will give us something extra in course of time.

It means its value is not fixed. Whatever money we have now, it will earn something and it will give us something more in course of time. So basically it is written that because money can earn at certain interest rate, an amount in hand now is not equivalent to the same amount at some point of time in future. So this relationship between interest in time it gives the concept of time value of money.

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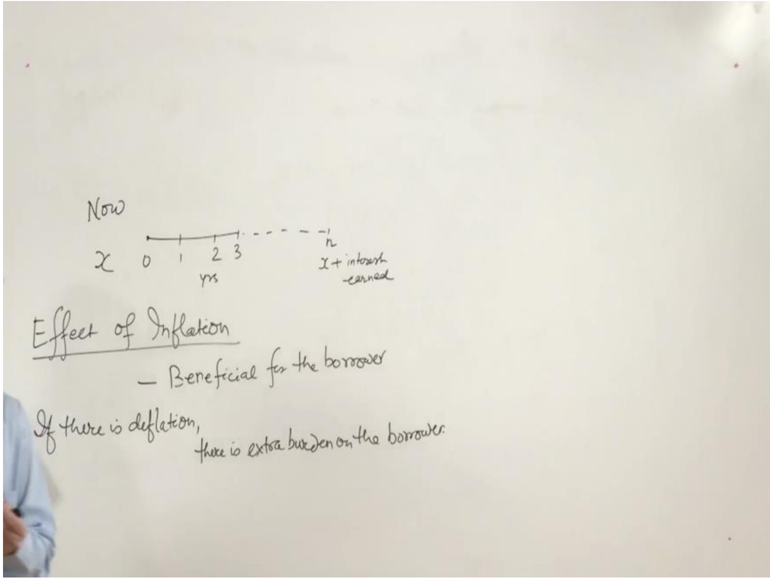

We can see by looking at this figure when we will try to elaborate how the time value of money changes. If we have some amount now, if we are now we have amount X and time is 0, as the time progresses 1 year, 2 years, 3 years, so after n years, the value of money, the amount which we had X, it will earn something and its value will be X + interest earned.

So this is known as the time value of money. The money which we have now it is not going to be fixed at some future point of time. Earning and purchasing power of money. We can purchase any item now and the purchasing power of money will not be same at some point in future. Now, there is effect of inflation and deflation. What happens to the interest rate when there is inflation and deflation?

When there is inflation it is beneficial for the borrower. So if there is inflation, it will be beneficial for the borrower because the value of money is anyway going to be decreased in that particular time. So basically he has to pay some amount of less. Conversely, if there is deflation, when there is deflation conversely there is extra burden on the borrower.

So while deciding the proper interest rate, you have to take into account the effect of inflation and deflation. And that’s why this time value of money is important.

We will talk about other things in the next lecture, thank you.