International Business
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Lecture - 37
Financial Market, Importance and its Function, Financial Intermediaries, Money Market

Hi everyone, welcome to our lecture on International Business. Today we will be continuing from the last lecture where we had stopped. So, in the last lecture we had discussed about foreign exposure, foreign market exposure and we talked about the FERA and FEMA, right. So, what is FERA and how it got converted into FEMA and what were the difference between the two acts basically, right.

So, FERA was more stringent and it was like you know, a criminal offense and FEMA is slightly less you know stringent in comparison. And then we talked about the transaction exposure, translation exposure, which is basically an exposure which is explained on the only books of accounts.

So, today from there we will move into the Financial Markets, right. So, when I say the financial markets, I am sure you must be getting an idea that it is a huge market and there were there is a lot of transactions going on, right.

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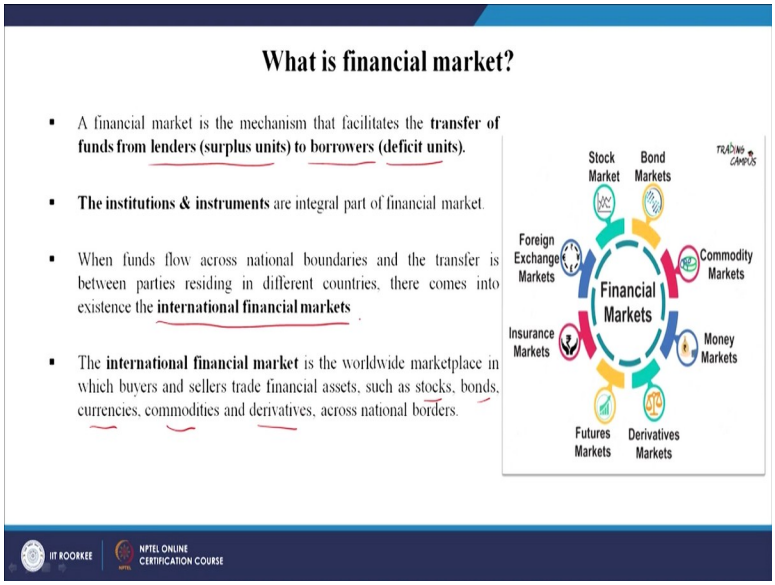

So, what is this financial market? How it is defined? So, a financial market is defined as the mechanism that facilitates the transfer of funds from a lender; who has surplus units to a borrower; who has deficit.

So; that means, there is somebody who has got extra money and he does not have any let us say, he wants to give it to somebody and there is somebody who wants the money, so that he can use it for his business purposes or something.

So, in these two cases, so this lender is has the surplus and he gives the money to the borrower and the borrower uses this money for it is advantage, right and then the borrower maybe would pay an interest to the lender, right.

So, the institutions and instruments are integral part of the financial market. So, what are these institutions? For example, you can see the stock market, the bond markets, money market, derivatives market, futures market, and insurance foreign exchange markets, they are all part of the financial markets, right. And we have several instruments for like for example, we have stocks, bonds, the commercial paper, the deposits, right; bank acceptances, etcetera.

When funds flow across national boundaries and the transfer is between parties residing two different countries; let us say, there comes into existence the international financial market. So, when you extend the financial market to more than two one country then it is a case of international financial market; we say it is as an international financial market.

The international financial market is a worldwide marketplace in which buyers and sellers trade financial assets, such as stocks, bonds, currencies, commodities and derivatives, across the national border. So, you can get an example idea from this figure, right.

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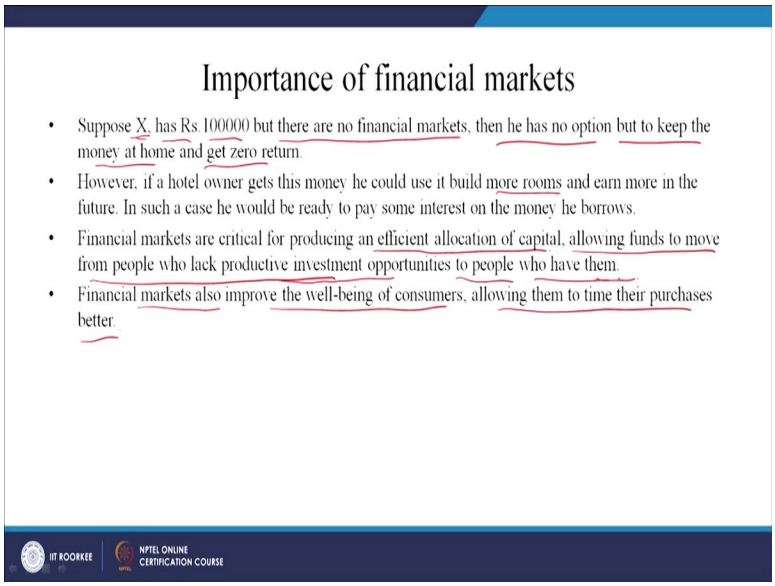

So, why it is important? Let us see, let us go with a basic example. Suppose X, right suppose X, you are X and has you have rupees let us say, 1,00,000, but suppose there would have been no financial markets. What you would have done with this money? So, there is no option, but to keep the money at home and get zero return. So, you are not getting any return out of it.

However, suppose there is a hotel owner, he wants this money to build more rooms, right; and so that he can earn more through; let us say rents. Now, in such a case this owner, hotel owner would be ready to pay some interest on the money he borrows from you.

So, in this case the financial market exactly does that. It tries to connect the lender and the borrower. The financial markets are critical for producing an efficient allocation of the capital, right. So, efficiently it helps in allocating the resources. Allowing funds to move from people who lack productive investment; as suppose you did not have a let us say, productive investment you had the money, but you do not know what to do. So, there are lots of people also they do not know what to do with the money.

So, in that case it when they do not understand and they do not have a productive investment opportunity, it goes to those people who now have them. Who have this, who want to use this money and have an opportunity to invest it, right. They are running short of funds, in that case, so they are looking after such money, right.

So, what else? The financial markets also improve the well being of the consumers allowing them to time their purchases better, right. So, the financial markets are very dynamic and it allows the you know the customers for example, the participants in the stock market to get better dividends or better returns on their money which is lying idle. So, this is the basic importance. How does it function?

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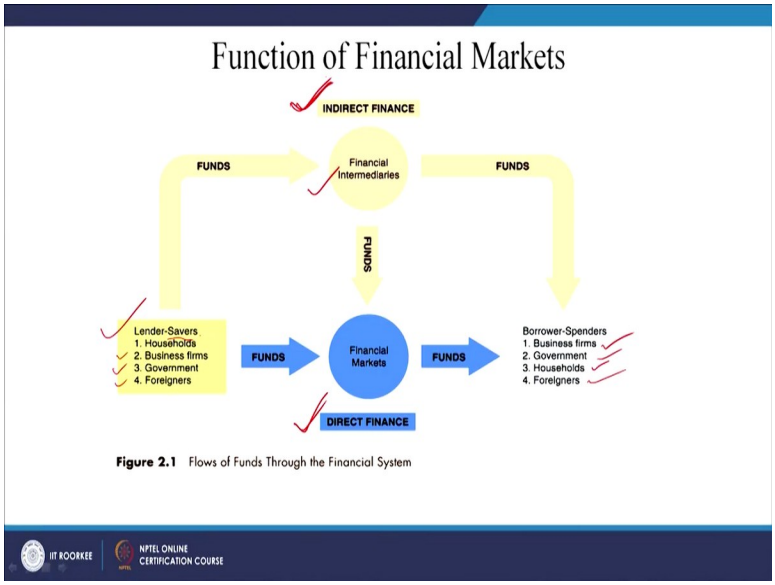

So, there are two ways; you can see, this side there are lenders, right. People who have saved some money, so savers, lenders or savers. So, there are some, let us say household people, some housewives who are saving some money; business firms who have got some cash reserves; government; foreigners, right. Who have got some money saved with them, right?

So, these funds, they can give it to the financial, through the financial market. They can give it to the borrowers or the spenders. So, the borrower are the again the people who are the business people, the government requires for, let us say to make bridge, schools, hospitals etc. There could be people households, foreigners, again the same kind.

So, there are two ways you can see the financial market funds; one is called the direct and the indirect finance, right. So, direct finance is when there is direct connection between the saver or the lender and the borrower, right. So, for example, you can trade it through the stock exchange. For example, let us say the stock exchange is a good example; where the shares of the companies are being traded and a person can directly buy, right; own or buy or sell it.

But, indirect finance comes into play when the there is a financial intermediary comes into play. Who is this financial intermediary and why is he required, right? This financial intermediary has a lot of importance, we will see in the next slide. But who are when you go through this financial intermediary, when the fund comes, when the financial intermediary collects the fund and through the market it gives it to the borrower, then there is an intermediary and because of this intermediary we are saying it is a case of a indirect finance, right.

For example, the bank collects you know deposits from several large number of people, through savings account and other kinds of accounts, right; and it uses this money to give it as to as loan to, let us say industrialists and other people, who utilize this money in a more productive manner supposedly, right. So, this is where the such institutions like, the banks come into play and this funding is called indirect finance, ok.

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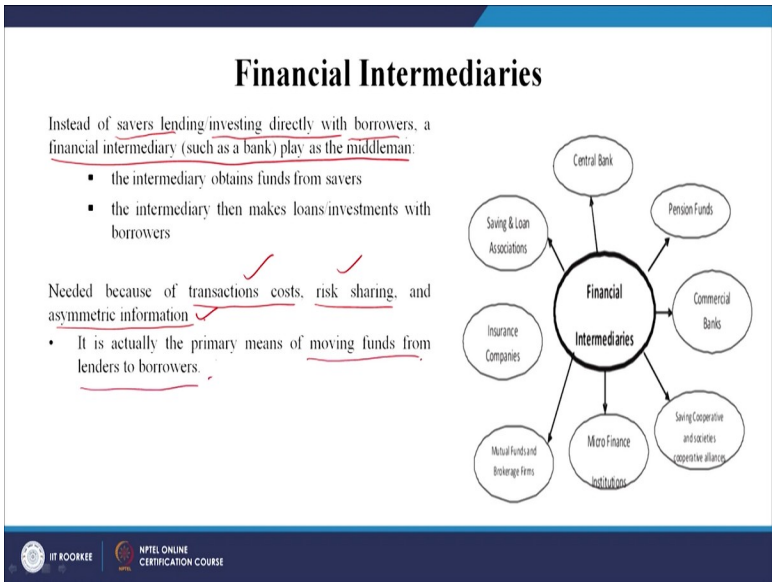

Now, look at the financial intermediaries. As we said, why they are important, first of all and who were they are? Instead of the savers; the people like you and me who have saved some money, investing directly with borrowers; a financial intermediary such as the bank, places the middlemen, right.

So, the intermediary obtains the funds from the savers. As I said, the banks does it from us and it then makes the loans and investments with the borrowers. It is needed because of few things, the transaction cost, risk sharing and asymmetric information.

So, what it is doing? Why this intermediary is important? Because of three basic reasons; one, it has a good influence through the transaction cost; through the risk sharing mechanism; and because information is not in a symmetrically distributed across to all stakeholders, right.

So, who are the basic financial intermediaries? You can see, Central Bank, the saving loan associations insurance companies, mutual funds and brokerage firms, micro-finance institutions, right; commercial banks, pension funds, so many are there. It is actually the primary means of moving funds from the lenders to the borrowers, ok.

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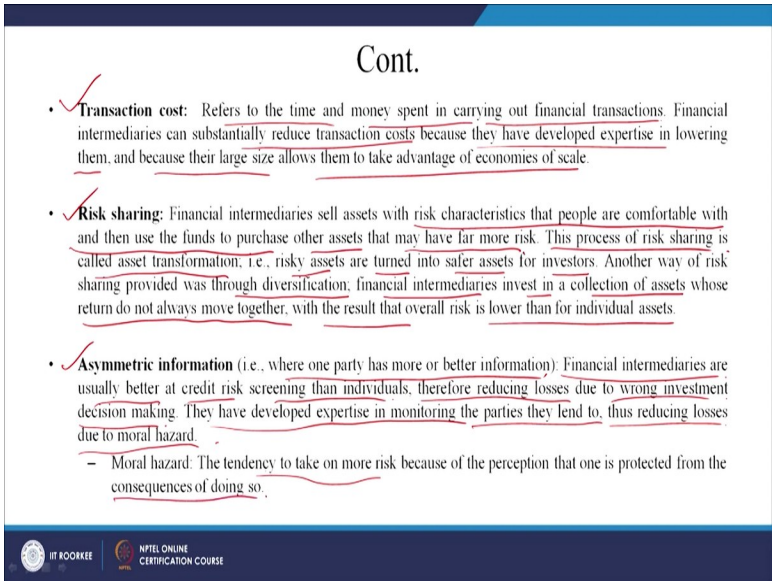

So, what are these thing three things we talked about? One, we said transaction cost. Now, it refers to the time and money spent in carrying out financial transactions, right. So, when you make any transaction there is always a cost attached to it, right. You are spending money, you are collecting information, so, all these takes an you know, there is a resource spent on it.

Financial intermediaries can substantially reduce transaction cost. These intermediaries like, banks; they can substantially reduce the transaction cost because they have developed expertise in lowering them, and because their large size allows them to take advantage of economies of scale.

So, that is why it is always, you can understand, that when that is the, how the reason the you know, the firms also came in to existence, right. Because there are firms and these firms can produce in large bulk, that is why the when it is when the resources are given to them and the

resources are utilized by a firm, is always more efficiently done, than when it is done by a small player who may not achieve such high economies of scale, right. So, this is one advantage where the financial intermediaries help us.

Second point is, it helps in risk sharing. Now, what does it mean? Financial intermediaries sell assets with risk characteristics that people are comfortable with and then use the fund to purchase other assets that may have far more risk.

This process of risk sharing is called asset transformation, that is, risky assets are turned into safer assets for the investors. Another way of risk sharing provided was through diversification. Financial intermediaries invest in a collection of assets whose return do not always move together, with the result that overall risk is lower than for the individual asset.

So, many a times, the investor when it invests, let us say in an asset, one asset if I directly put it in a asset, let us say that asset could be a very risky asset, right. Suddenly, the market may collapse and you know I may lose as an investor I may lose all the money. But suppose, I am going through a financial intermediary, like a for example, a bank, right; or a financial institution, then what happens? This financial institutions has have got the expertise, right.

So, they know now, that what is best going to be done with this money. So, instead of me if they putting the money in a better asset which is more safer so then what happens, my risk of my risk of you know utilizing the money is lessened. So, that is how the financial intermediaries are very important because they help in sharing the distributing the risk, ok.

Third thing is, the asymmetric information. So, this is risk sharing and asymmetric information also connected, if you can understand, you will see that. When one party has more or better information, right. In fact, most of the things in this world happens because of asymmetric information. Financial intermediaries are usually better at credit risk screening than individuals, right because they have more expertise.

Therefore reducing losses due to wrong investment decision making. So, suppose I do not know for example, I would have put my money in suppose, buying some stock, let us say. So, I suppose or let us say putting in some real estate, now let us say the government is coming up with taxes in the real estate sector. So, now, this effect could be negative for example, for suddenly the you know real estate demand may go down.

Let us say, assume. So, this information is always not distributed equally. So, the people who are involved; for example, there is banks and the financial institutions and the real estate agencies and all, they are better equipped than an individual.

So, in that case, this helps. They have developed the expertise in monitoring the parties they lend to. Suppose, you are instead of you buying directly through the you know an asset if you buy routed through the bank it is much better, because the bank knows how to analyze and calculate the assets safety, ok. Thus, reducing losses due to moral hazard.

Now, what is moral hazard? The tendency to take on more risk, because of the perception that one is protected from the consequences of doing so. So, these kind of things, it helps you helps an individual. So, the financial intermediaries have a very important role to play.

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Then we come from the, as we said, when it the transaction happens across the border it is called international financial market, right. Why international financial markets? Why use them? So, the investors and the borrowers. So, the investors invest in foreign markets to take advantage of the favorable economic conditions.

So, suppose as we have learnt in some other classes, because the there is a continuously dynamic market, right. So, and the currencies are changing, traders are doing business and the currencies are one is going against the other and it is going up, some is going down. So, in certain such situations the investor finds that his money could be better utilized would give

better returns if it is put in another market, right. So, to take advantage of favorable economic conditions is one reason.

Second, when they expect foreign currencies to appreciate against their own. So, if they feel that the foreign currencies are going to appreciate, so that would give them better return. So they would go for it. To reap the benefits of international diversification. So, diversification always reduces the risk, that is the biggest advantage. To capitalize on higher foreign interest rates. So, this is related, right.

Now, what do the borrowers gain? To capitalize on lower foreign interest rates. So, suppose my domestic interest rates are very high so if I am getting money from other markets at a lower interest, why not utilize it.

When they expect foreign currencies depreciate against their own. So, in such conditions the both investor and the borrower tend to use the international financial market, right. How are the financial markets classified?

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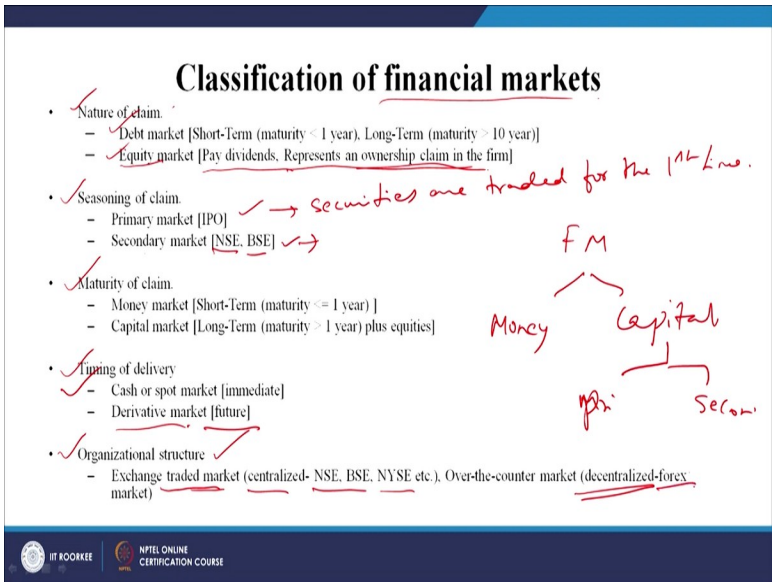

This is, I can show you, on terms of several ways nature of claim, seasoning of claim, maturity, timing and organizational structure, five ways I have mentioned here. So, on terms of nature of claim, the financial markets are divided into debt markets and equity markets. So, debt market, as you can see I have written here, short term it could be, a long term.

When any instruments matures or the time of maturity is less than 1 year, it is called a short term, right. When the instrument, the maturity time for the instrument is more than a 10 years, it is almost 10 years or more than that, so that is long term. Similarly, in the debt is always we can you know, debt is loan, basically borrowings, right.

And equity market is the market where the one individual becomes an owner in the firm, right. So, suppose, let us say you have, let us say you are a participant in the equity market. You own certain shares of or equity of TATA. So, you are a partial owner of TATA; that means, the true meaning of it is the same and you get regular dividends, right.

So, in terms of seasoning; there is a primary market primary market and secondary market. Primary market is where the you know the securities are often the securities are first time are traded for the first time, for the first time, right; first time.

So, when the suppose, for an example, an IPO as I have said, initial public offering. So, the when the first for the first time it is done, it is creating for the first time it is called a primary.

When it is then regularly traded, for example, in the National Stock Exchange or the BSE stock exchange, it is called a secondary market. In terms of claim also, basically, when we understand financial markets, generally financial markets are shown like this. So, one is the money market and the other being the capital market. So, this is different way of understanding, that is all.

And then capital market is again primary and this is secondary it goes on, right. In terms of maturity of claim, this is again, timing of delivery in terms of delivery also on the timing you can classify the market as a cash market or spot market which is on the spot, right; immediate or a futures market or derivative market, right.

Finally in terms of structure, either it is an exchange, traded structure which is more centralized and all the routings are done through the centralized manner. For example, the BSE, NSE, New York Stock Exchange etcetera. Or an over the counter market, which is a decentralized market, right and for example, the forex market, right.

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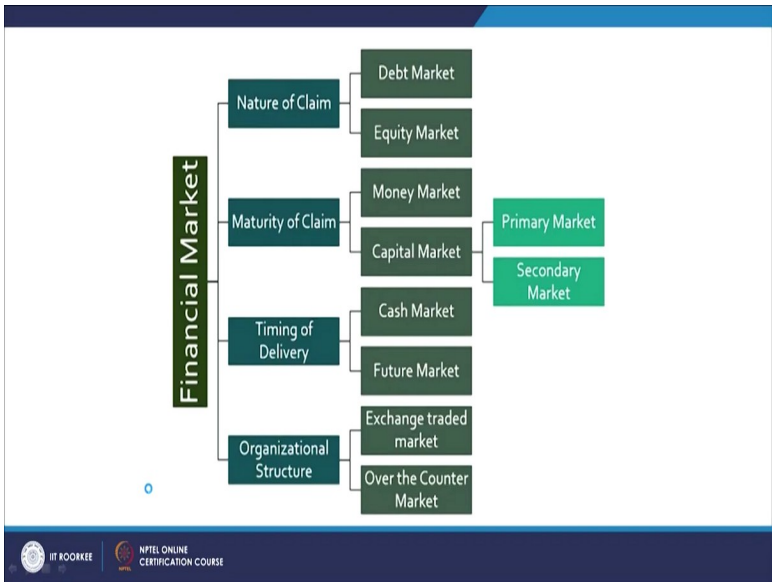

So, the different ways of classifying the financial market. So, this is a diagrammatical representation, ok.

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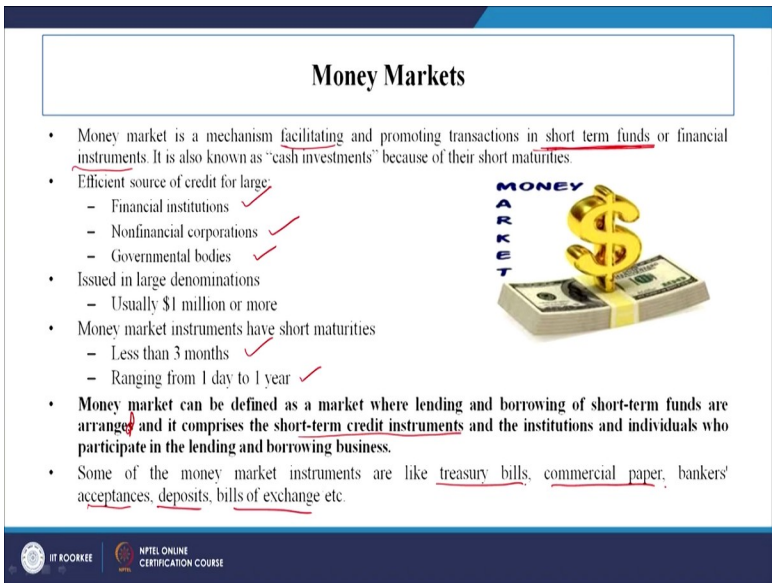

Money market, as we said, so there are two; when you divide the financial market basically it divide into two types; one the money market, the other is the capital market. So, let us start with the first part, the money market. So, what is this money market? Money market is a mechanism facilitating and promoting transactions in short term funds. So, this is the key

word or financial instruments. So, the funds are for a short term purpose, used for a short term purpose. It is also known as cash investments, because of the short maturities.

Efficient source of credit for, it generate sufficient source of credit for large financial institutions, non financial corporations, government bodies who use this money for different purposes. They are large, generally issued in large denominations usually 1 million or more kind of it, right. Money market instruments have short maturities as the first line itself says. It is less than three months or it ranges from 1 day to 1 year.

Money market can be defined as a market where lending and borrowing of short term funds are arranged and it comprises the short term credit instruments and the institutions and individuals who participate in the lending and borrowing business. So, what are the short term credit instruments? Some of the instruments are like treasury bills, commercial paper, bankers acceptances, deposit, bill of exchange, etcetera.

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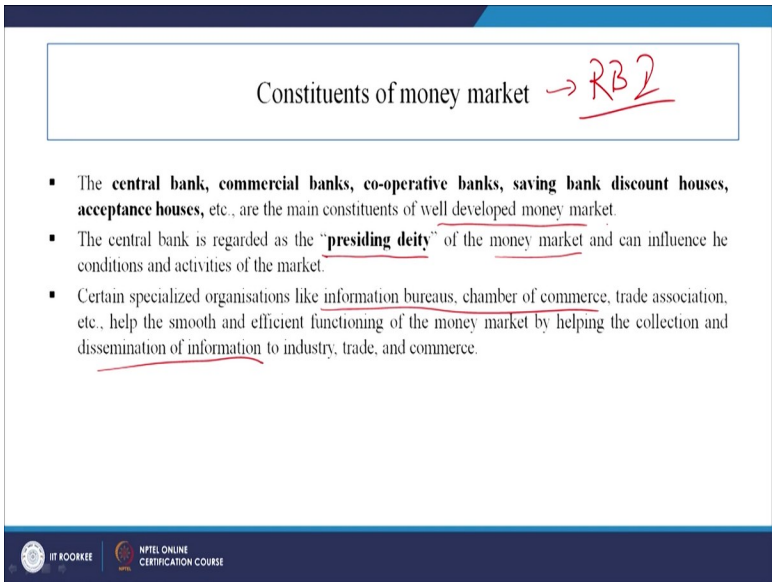

Now, the constituents of the money market. So, who, what constitutes? The central bank, the commercial bank, the cooperative banks, saving bank discount houses, acceptance houses, etcetera are the main constituents of a well developed money market. The central bank is regarded as the "presiding deity", so it is like a god, ok; of the money market. For example, in our case our RBI and can influence the condition and activities of the market.

So, the money market is largely is controlled by the RBI, who is as per this line, it is the presiding deity or the god, right. So, this deity will influence the condition and activities of the market.

Certain specialized organizations like information bureaus, chamber of commerce, trade association, etcetera help the smooth and efficient functioning of the money market by helping the collection and dissemination of information. So, these other organizations are also important because they help in the circulation of the or dissemination of the information.

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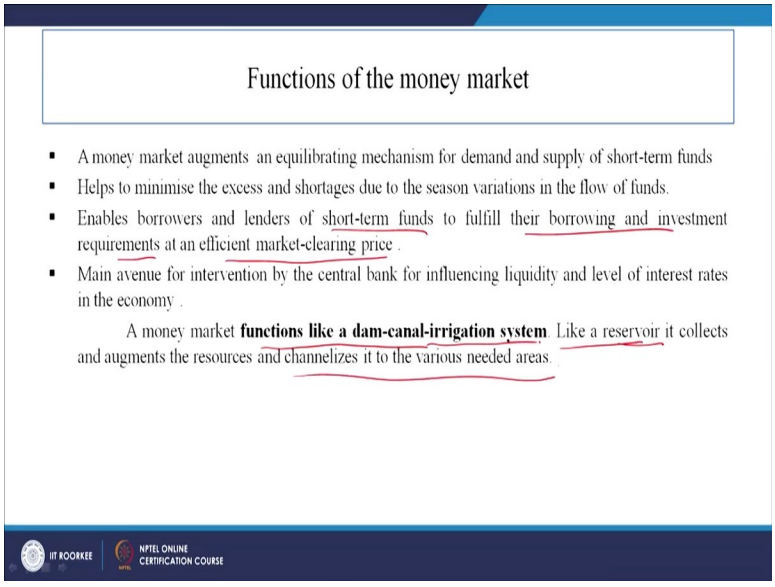

What is the function of this money market? A money market augments an equilibrating mechanism for demand and supply of short term funds. So, somebody require short term funds for a short term nature. So, here the money market comes into play, ok.

Helps to minimize the excess and shortages due to the seasonal variations in the flow of funds. So, sometimes there is an excess, sometimes there is a shortage. So, this there is a this disequilibrium is to be, there is a equilibrium is to be maintained which is done through the money market.

It enables the borrowers and the lenders, both parties for short term funds to fulfill their borrowing and investment opportunities, right; at it is efficient market clearing price. So, at a minimum at so that it is a win situation for both; the borrower also and the lender also.

Main avenue for intervention by the central bank. So, central bank in our case, RBI for influencing the liquidity and level of interest rates in the economy. So, this is where the RBI makes a lot of influence, creates a lot of influence. As it says, a money market functions like a dam canal irrigation system. Now, what happens here?.

Like a reservoir it collects and augments the resources, right. So, like a reservoir in a dam it collects all the water, so in a dam collects all the water; in a reservoir, right. Similarly, the bank like dam it collects all the money from different you know investors and stores in like a reservoir and then helps in channelizing it to the various needed areas.

So, as in damn you give it to different places, the water is you know channelized for agriculture; for drinking purpose; for several uses; for industries; similarly, the banks also channelized to the various needed areas, ok.

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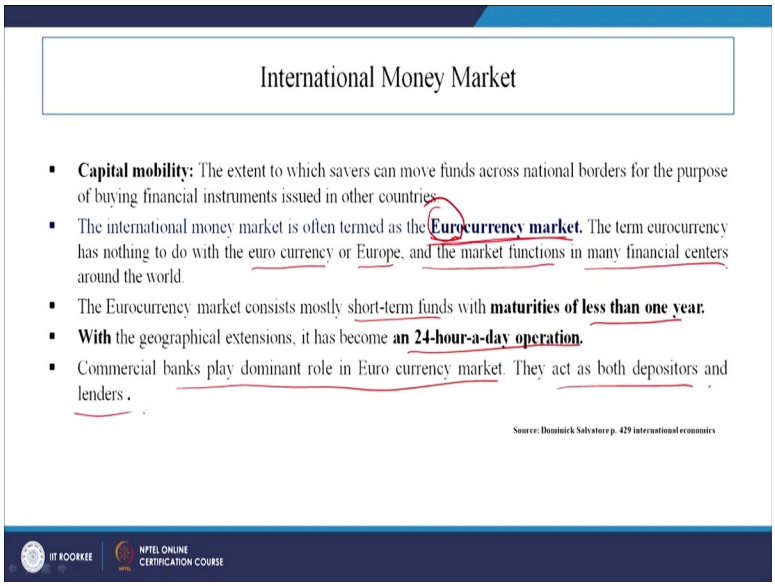

Now, coming to International Money Market. Capital mobility: the extent to which savers can move funds, right; across national borders for the purpose of buying financial instruments issued in other countries is part of the international money market. So, now, you are more interested in capital mobility. So, to buy assets maybe in some other countries, right. The international money market is often termed as the Eurocurrency market. Now, please this is do not confuse it with euro, right.

The term Eurocurrency has nothing to do with the euro currency or Europe, right; which because this word euro is slightly confusing to many people, it has got nothing to do. And the market functions in many financial centers around the world, ok.

The Eurocurrency market consists mostly short term funds with maturities of less than one year. So, the Eurocurrency consists mostly short term funds with maturities of less than one year, this is the condition of money market.

With a geographical extension it has become a 24 hour a day operation. Obviously, because there are different time zones around the world. So, India for example, what time it is in India, America is US is around 11 hours there is a gap. So, some countries we have a 3 hour gap. So, taking altogether we are a it is working 24 hour, right. Commercial banks play the most dominant role in Eurocurrency market. They act both as depositors and lenders, both, they do both the job.

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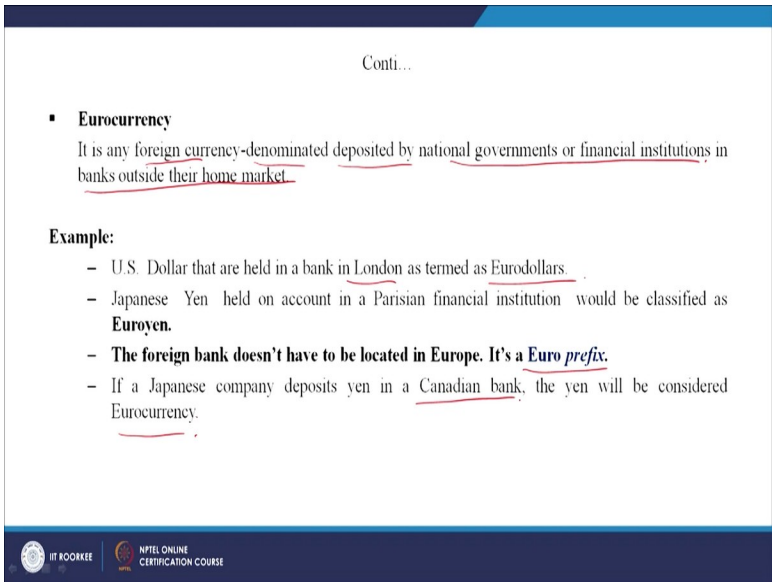

So, what is this Eurocurrency? It is any foreign currency, any foreign currency denominated deposited denominated deposited by national governments or financial institutions in banks outside their home market. So, when we deposit for example, a some money Indian money, rupee in some other market outside the home market, so then in that case it is called a Eurocurrency.

Example, U.S. dollar that are held in a bank in London is termed as Eurodollars. Japanese Yen held on account in a Parisian financial institution, would be classified as Euroyen, right. The foreign bank does not have to be located in Europe. It is a prefix, just as I said. If a Japanese company deposits yen in a Canadian bank, the yen will be considered Eurocurrency. So, this is just an understanding, so do not get confused with it.

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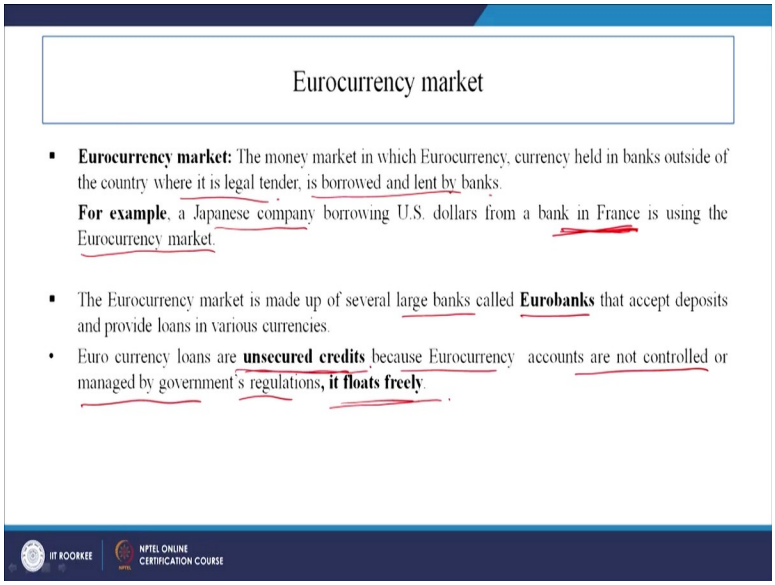

The Eurocurrency market; the money market in which Eurocurrency, currency held in banks outside of the country where it is legal tender; that means, as I said Indian rupee for example, is borrowed and lent by the banks. So, some outside market we are going to deposit it. Again the example, the Japanese company borrowing U.S. dollars from a bank in France is using the Eurocurrency market.

Again, let us understand, a Japanese company borrowing U.S. dollars, right; it is borrowing it needs U.S. dollars for a trading for a trading purpose from, but where did it borrow from? From a bank in France. Why did get it from France? The one reason is, because at this time there is a interest rate advantage for the Japanese company to borrow it from France, right. So, so this is called a Eurocurrency market. It is made up of several large banks called Eurobanks that accept deposits and provide loans in various currencies.

Eurocurrency loans are unsecured deposits credits, because Eurocurrency accounts are not controlled or managed by governments regulation, it floats freely. So, this is one thing that is

of major interest, this currency accounts are not controlled or managed by the governments regulations. So, it is floating freely. So, these are unsecured credits basically.

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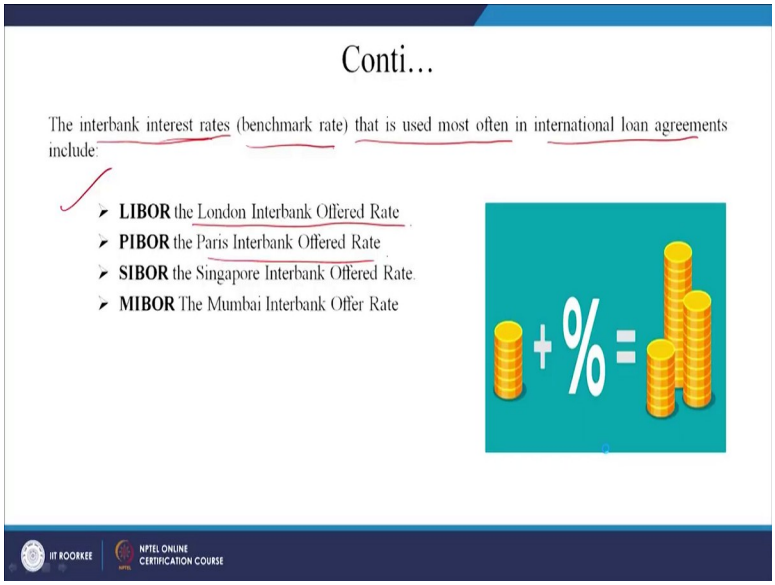

The interbank rate for example, the interbank interest rates that is used most often in international loan agreements include. Now for example, when we are talking about interest bank rates, so we are talk when any you know company wants to get money for example, or any government wants to get money, so when you talk about international money markets. So, what are the interbank rates, that is very important to understand, right.

So, interbank interest rates or benchmark rate is often used in international loan agreements. So, they can be like for example, LIBOR; the London interbank offered rate; that means, what when you want to make a transaction, what is the exchange rate? How do you, what is the exchange rate that you want to that you will get money?

Let us say, so LIBOR is London interbank offered rate, PIBOR the Paris interbank offered rate, Singapore interbank offered rate or the Mumbai interbank offer rate, right.

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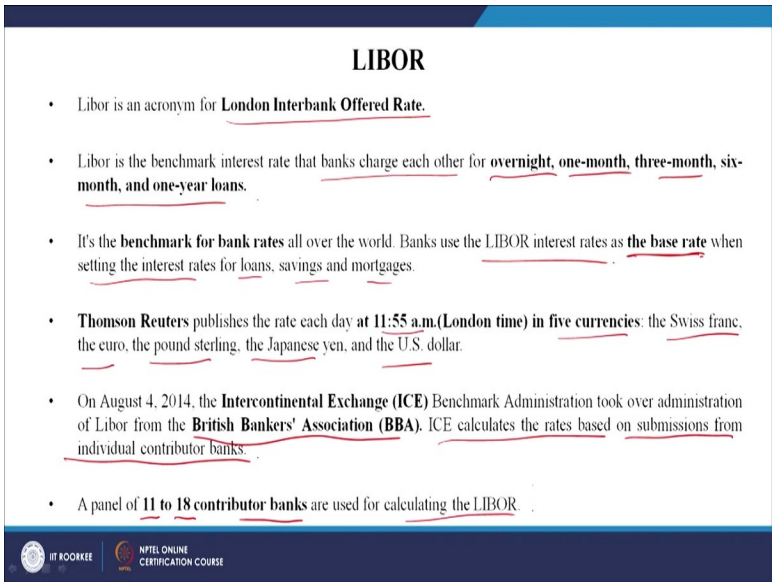

So, what it is lets us see, let us go with the most popular one, the LIBOR is an acronym for London interbank offered rate, right. Is the benchmark interest rate that banks charge each other, that the banks charge each other for overnight, 1 month, 3 months, 6 month or 1 year loans, right.

So, this is something that many people are not aware. How the banks get money from outside some other banks outside, right. On basis of maybe the London interbank offered rate. So, what is this? It is the benchmark for bank rates all over the world, right. It is a very standard practice. The banks use the LIBOR interest rates as the base rate, right; when setting the interest rates for loans savings and mortgages.

So, when the banks would like to give you know loans to others, on what basis would they give? So, they have a base rate; this base rate is the LIBOR interest rate, right. Because if it is less than that, then they are making losses simple, right.

Thomson Reuters publishes the rate each day at 11:55 a.m. London time in five currencies. Which five currencies? The Swiss franc, the euro, the pound sterling, the Japanese yen, and the U.S. dollar.

On August 4, 2014, the Intercontinental Exchange Benchmark Administration took over administration of LIBOR from the British Bankers Association. Earlier, it was there with the

BBA, but in 2014 the ICE took it over. The ICE calculates the rates based on submissions from individual contributor banks.

Now, what how it is calculated? We will see; a panel of 11 to 18 contributor banks are used for calculating the LIBOR, right. So, there are 11 to 18 contributory banks, right. So, all the banks which are part of the exchange system, the of the trading system, right.

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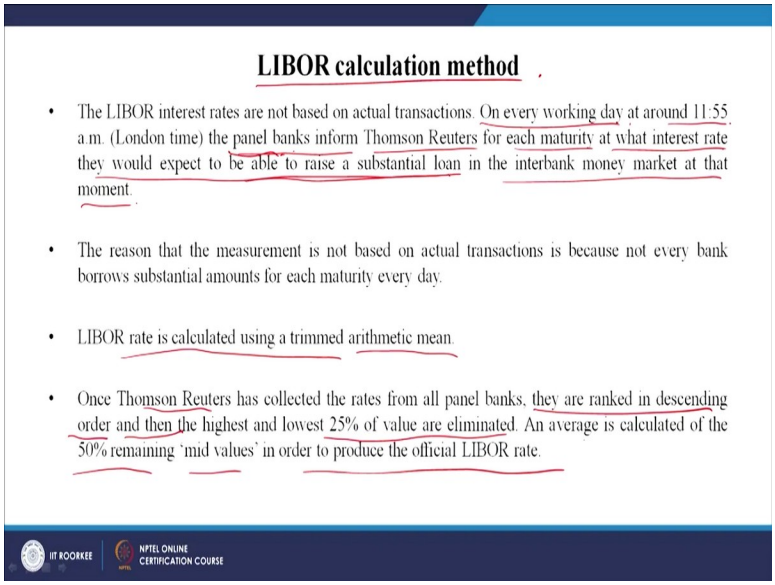

So, LIBOR calculation, how it is done? So, the LIBOR interest rates are not based on actual transactions. What it is saying? The LIBOR interest rates are not based on the actual transaction. So, then what it is based? On every working day at 11:55 the panel banks inform Thomson Reuters for each maturity at what interest rate they would expect to be able to raise a substantial loan in the interbank money market at that moment.

What it is saying? At a particular time 11:55 when the information comes, right. So, the panel banks; the panel banks means the banks which are involved, right or paneled or basically, they are part of this contributory banks basically. So, they would inform that at what interest rate they would expect to be able to raise a substantial loan, right. The reason, that the measurement is not based on actual transactions is because not every bank borrows substantial amounts for each maturity every day, right.

So, it is not same, right. So, do not borrow a substantial amount each of our each day. LIBOR rate is calculated using a trimmed arithmetic mean. Now, I will solve a problem, next.

Once, Thomson Reuters has collected all the rates, right, of these banks or which they can get the loan, right; at which they will be able to raise a loan, right. So, they are ranked in descending order, they are ranked in a descending; the most or the highest, then second highest, third highest, goes on till the lowest. And then the highest and lowest and 25 percent of value are eliminated.

What it does? They are ranked in descending order and then the highest and lowest 25 percent. So, the highest 25 percent and the lowest 25 percent are eliminated, right. An average is calculated of the 50 percent remaining 'mid values' in order to produce an official LIBOR rate. Why it is done? Why they are eliminating 25 percent of the top and bottom? Simply, just they want to get rid of any effect of outliers. Any extreme value should not get affect should not affect them, right.

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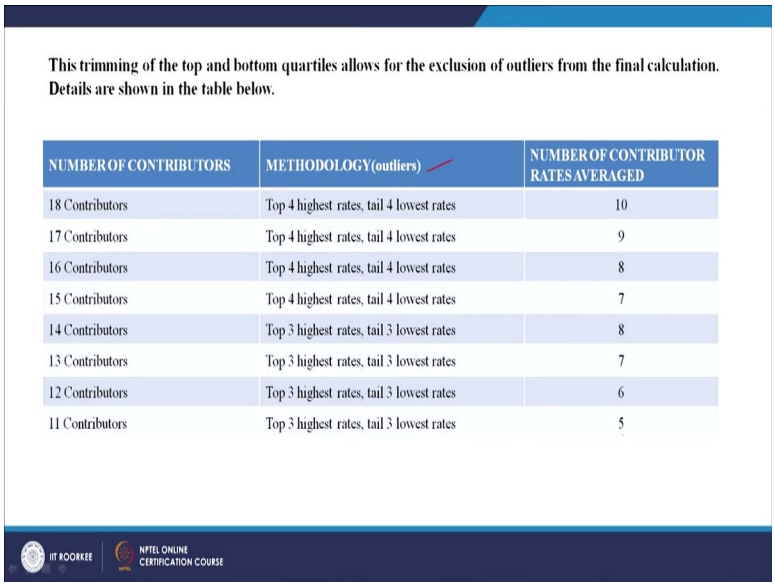

Let us see this; this trimming at the top and bottom quarters allows for the exclusion of outliers from the final calculation. Number of contributors; suppose, there are 18 contributors, 17 contributors, 16 contributors, 15, 14, 13, 12, and 11.

What is the methodology? To find the outliers and remove them. So, when there are 18 contributors, the top 4 and the tail 4; that means, the lowest 4 are removed. So, how many is remaining? Number of contributor rates average this now 10, right.

17 contributors, right. So, 4 and 4. So, it is not exactly 25. Do not get into the calculation of you know, because I had said 25 percent top, 25 percent at the bottom, so do not get into that exact calculation.

But generally what they do is, they take the first 4 and the last 4, right. If it is 16, 17, or 18 or even 15 contributors, but once it is low than less than 15 contributors banks, then for example, 14 contributors. What they do? The 3 and 3. So, 3, 3, 6 is almost what percentage of 14? 6 would be 14 14 fours are 56. 40 some percentage, right. Almost close to 50 percent that is, right. So, this is what they do, right. So, this is the number of contributor rates averaged.

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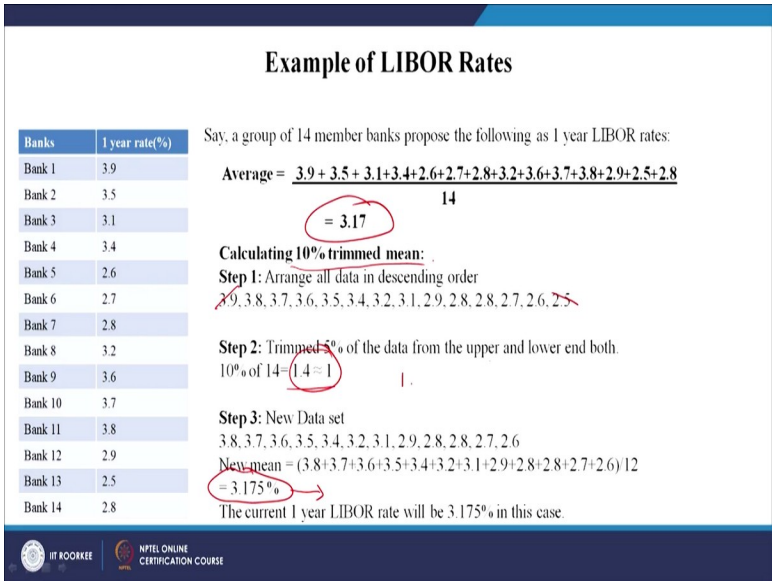

Now, say this is the bank 1, who says they can get raise a loan on 3.9 percent interest rate. Bank 2 says 3.5, bank 3 says, 3.1 the se are the lending, the loan raising interest rates, right. So, say group of 14 member banks propose the following as 1 year LIBOR rates, ok. So, what is the average 3.9, 3.5 goes on till 2.8 divided by 14. So, this is my average.

Now, in this case, let us say that to calculate the LIBOR a 10 percent trimmed mean is calculate taken. So, the data are arranged like this and instead of now, 25 4 4 what we I will do? 10 percent of 14. So, trimmed 5 percent of the data from the upper and lower end. This decision has to be taken. So, 10 percent of 14 is how much? 1.4 which is actually almost 1. We cannot, because it had not been 1.5 and above we are taken to 2.

So, the new data set will now remove one from the top and one from the bottom. So, this is now you see. So, if you go to this one when they were all arranged. So, this one is cut and this one is cut. So, this, now the new mean is equal to this divided by 12, because two banks are gone. So, the new interest rate is the new LIBOR rate is how much? 3.175. So, the current 1 year LIBOR rate will be 3.175 percent in this case.

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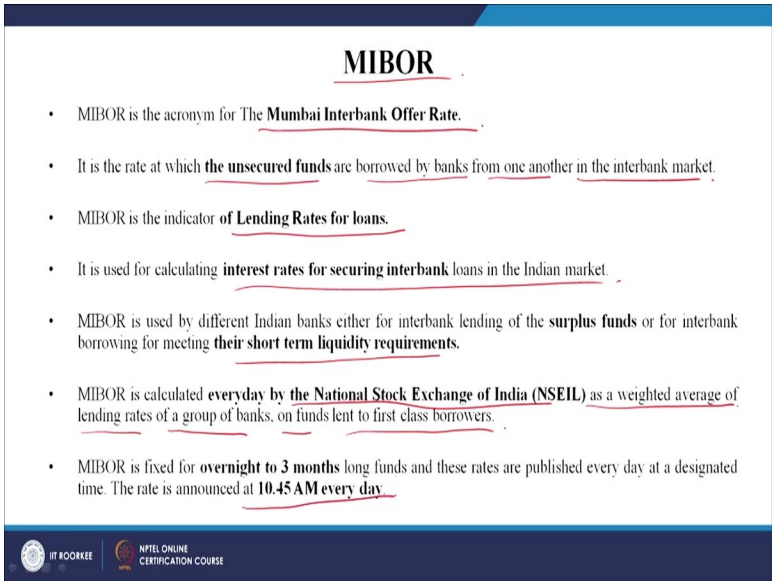

Now, any bank would or any the anybody, who wants to do any transaction, now they would take this rate as the base rate and then they would maybe add another percentage on that and then they will make the loans, right.

Another interbank rate is the Mumbai Interbank Offer Rate. Now, what is this? It is the rate at which the unsecured funds are borrowed by banks from one another in the interbank market. It is an indicator of lending rates for loans, ok. And used for calculating interest rates for securing interbank loans in the Indian market. So, we for to do any you know transaction in the Indian market, this is used for calculation.

MIBOR is used by different Indian banks either for interbank lending of the surplus funds or for interbank borrowing for meeting the short term liquidity requirements. So, if there is a extra excess or there is a shortage, in both case there is an interbank lending or interbank borrowing.

MIBOR is calculated every day by the NSE, right. As a weighted average of lending rates of a group of banks or funds lend to first class borrowers, right. First class borrowers mean-borrowers who have a very high credit rating. So, in this case the credit rating of becomes a very important parameter, right.

MIBOR is fixed for overnight to 3 months, right, long funds and these rates are published every day at a designated time. The rate is announced at 10:45 am every day, ok

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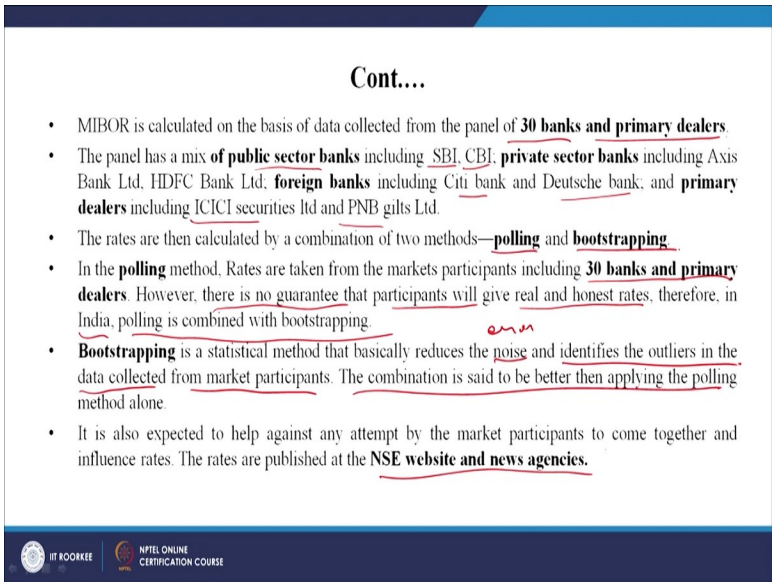

MIBOR is calculated on the basis of the data collected from a panel of 30 banks and primary dealers, ok. The panel has a mix of public sector banks including SBI, CBI, a private sector banks including like Axis, HDFC, and foreign banks; including Citi bank, Deutsche bank, and primary dealers including ICICI securities, PNB gilts limited etc, right.

The rates are then calculated by a combination of two methods; polling and bootstrapping. Now, what is this polling method? The rates are taken from the markets participants including these 30 banks and primary dealers. However, there is no guarantee that participants will give real and honest rates, therefore, in India polling is combined with bootstrapping. Now, what is bootstrapping? Let us see.

Bootstrapping many of you must have understood or done when you are doing data analysis which is a kind of a random number generation method, right. When you run short of data, you generally it is used. It is a statistical method that basically reduces the noise, noise

means; basically the error, right. And identifies the outliers in the data collected from market participants.

So, it generates you know the combination is said to be better than applying the polling method alone. Because here, people might be dishonest. They may not give the right information. So, a combination of polling and bootstrapping is used. It is also expected to help against any attempt by the market participants to come together and influence the interest rates, right. The rates are published on the at the NSE website and news agencies.

So, the LIBOR and the MIBOR are the two important rates. There are four basically we saw, right. The Singapore also and we also talked about the Paris interbank offer. So, these are the different interbank offer rates which is largely utilized by the in the international money market. And the interbank loans are calculated when somebody is offering a loan of a lender or a deposit is being made, so this interest rates are calculated on basis of this methods, right, this calculation methods. LIBOR or MIBOR or for Paris interbank rate or anything, right.

So, this is all we have for today. So, we will continue from here in the next lecture, right.

So, thank you very much.