# Financial Institutions and Markets

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## Lecture – 11
## Theories of Interest Rate Determination – I

So, after discussion on the different major issues which are related to the financial system as a whole or financial market in particular, today we can start our discussion that how the price of that particular financial market is determined. Whenever I mean price, price means this is the interest rate. Whenever you talk about bond market is the coupon or the yield one of our stock market it is stock return, whenever we are going to the foreign exchange market it is exchange rate, and whenever we are going to the call money market it is called money rate.

So, there are different ways the prices in the financial system is determined but whenever we talk about this pricing in the aggregate sense the price is nothing but the interest rate in the market. So, the first of all today we can start the discuss on how exactly the interest rate is determined in aggregate sense, then every pricing basically you can relate it to the every market that how this particular notion or particular theory works in different individual financial market context.

So, there are whenever you talk about the interest rate theories there are two types, there are two ways the interest rate is determined, one is normal interest at a level of the interest rate in the aggregate market, another one is the structure of the interest rate. The structure of the interest rate means, why there is a different rates available for short term and long term, why I mean for a same type of maturity the interest rates are different for the different for the different type of assets. The maturity period is same but the interest rate is different. Those kind of questions are answered by the term structure theories that we will discuss later.

So, today we can discuss on the how the interest rate in general sense determined, what are the theoretical arguments behind that and what are those factors which determine this particular variable.

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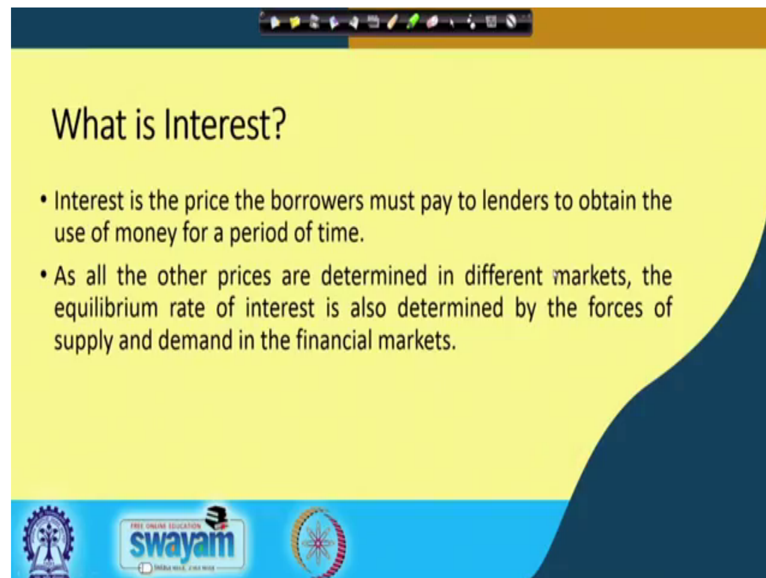


So, let us see that what exactly the interest is or interest rate is. In general sense the interest is basically nothing but the price to the borrowers must pay to lenders to obtain the use of money for a period of time.

Basically, the loan rate, savings rate whenever you are keeping the money or money in the deposits, saving deposits we are getting some interest out of this, that is also reward what you are getting. And whenever we are taking a loan from the bank for some specific purpose we are also they paying the interest to the bank and a bank is charging interest on or on us. So, that is basically we call it the interest rate in the system or in the aggregate system as a whole.

So, as all the other prices are determined in different markets the equilibrium rate of interest is also determined by the forces of supply and demand in the financial markets. So, we have to ensure that what are those supply forces, which are those demand forces which determine the equilibrium interest rate in the market or different type of financial markets. And the demand and supply forces vary on the basis of the market or on the process of the specific market where we are operating. Whether it is money market, whether it is stock market or foreign exchange market or derivatives market etcetera etcetera.

So, here that means, first before we go into specific market that we will be discussing in upcoming sessions, but today I am just going to explain that in aggregate sense in the

how the level of interest rate is determined, how basically we can say that the interest rate is determined in this way. So, the supply and demand there is a big debate over this economic history or various economic theories argue that how this level of interest rate is determined in the market system.

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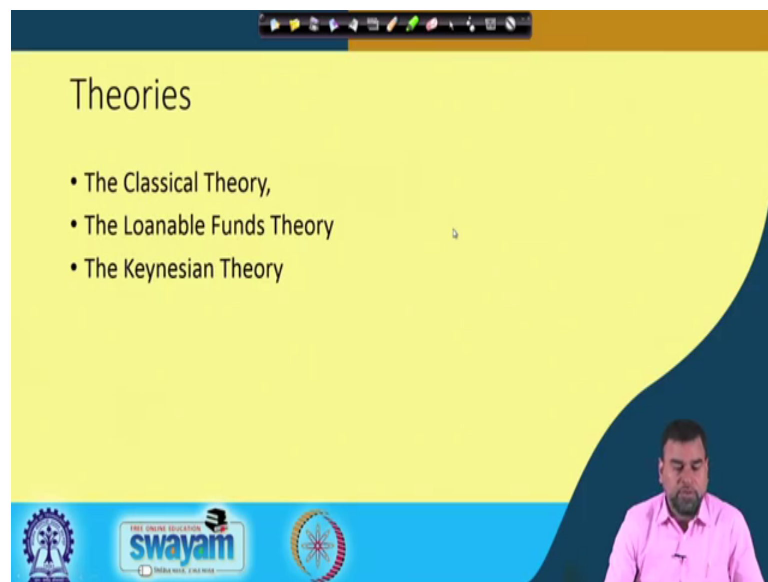


So, in this context if you see that there are broadly 3 theories which are very much prominent, all of you might have aware about this. All kind of theories are answered by the Classical Theorists, you have the Loanable Fund Theory, the new of the Keynesian Theory. So, these are the bigger theories or the prominent theories which try to answer that how the level of interest rate determined in the market or financial market in particular.

So, if you see one by one every theory provides the different type of supply and demand forces or the factors which are responsible for the supply and demand, which are responsible to determine the equilibrium interest rate in the market.

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So, if you see the classical theory according to classical theory interest rate is a real phenomena in the sense that it is determined by the real factors.

So, already I have we have explained about the real and nominal interest rate though there are certain factors which are real; that means, monetary factors does not play any role for the determination of the interest rate in the market that is what basically the classical theory assumes. So that means, interest rate itself is a real concept. It is determined by some of the real variables, real macroeconomic variables which are available in the system. So, how basically it is, then how it is determined? It is nothing but it is the interaction of the supply of the savings and demand for the investment determine the equilibrium. If you see this is your supply, this is your demand, this is your supply, and this is the equilibrium basically always we get it. So, this is your r and this is your quantity supplied and quantity demanded.

So, here whatever basically I am trying to see what this classical theorists or classical economists are trying to explain that what are those supply side? What are those demand side? What are those factors which affect the supply of the savings? And what are those factors which operate the demand for savings? Then only your equilibrium can be determined in the market.

So, therefore, already we are clear the interaction between the supply of the savings and demand for investment determines the equilibrium as per the classical theory, that is basically we are sure.

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Then we are going to that how basically the supply of savings, where we the same savings come. The saving is nothing but it is the difference between the national income and total consumption expenditure.

You see already you know that your total income is equal to total consumption plus savings. Then your savings is equal to Y minus C, that means, total income minus total consumption is equal to the savings that is a saving investment identity we make for the equilibrium sometimes we call it is Y is equal to C plus I, then if Y is equal to C plus I then; obviously, your I is equal to S. So, if saving investment equality happens, then what basically we can say? That is equilibrium which can be established.

Then who saves? That is fine then who are those stakeholders who are available in the market who saves the money. The savings may be basically always done by the individuals, household savings, business and the government. So, these are the different sources from where the savings come. Mostly the savings come from the household sector, because they we are more the business sector is known for more investment and the household sector is more known for the savings. The household sector saves the money and that money goes to the business sector for the investment and whenever that

is the investment and in investment and saving equality happens that particular point the equilibrium interest rate determined in the market.

So, therefore, why the household sector save, somebody can ask you the question that why the household sector save. You see whenever household sectors save they expect that they should get some return out of this that is what they charge they always expect some interest payment against their saving deposits because they are following their consumption instead of saving they could have spent the money, they could have got their utility from that by utilizing that particular resources what they could have bought. But instead of consuming that what they are doing? That basically saving it, if they are saving it why they are serving, because they are expecting that they will get some return out of the savings which is nothing but the interest rate.

So, if the interest rate is increasing; obviously, the supply of savings will be more. So, in that sense what basically we are trying to say that interest rate is also determined from the savers point of view and the supply of savings increases once the interest rate increases.

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Then next one is basically the demand for investment. Who demands? Already I told you that the business sector demands, firms demand, producer demand, producers basically demand. Why they demands? Because they demand to invest that money to create some profit and also increase the output, and this is basically and here also why they are

investing now? They are investing, they also investing and also sacrifice their consumption by what are the reason, the reason is they can create more profit in the future and that profit can be utilized again for the consumption whether from the household point of view or from the business sector point of view.

So, in that case the opportunities to produce more effectively by using, the methods of the production determine the investment demand. How much scope is there, how much opportunity is there? If the opportunity is high then I can go and invest in the market, more projects are available market is ready to capture the demand what basically we have on that particular product. The demand for product should be there. The consumer's appetite for that particular product should be there. Test on preferences should be there. So, all those considerations always we consider whenever anybody goes to invest in the market or they want to produce certain product in the market.

So, once we get all those idea then what we do? You go and invest in the particular system produce more and once you produce more their profit may increase and again the profit come to the market for the more investment and they also from there again the production will increase then finally, the output can increase. In this process the producers or the business sector basically demand the money or demand this particular fund which is coming from the household sector savings.

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So, finally, what is happening? We have equilibrium which can be established. So, already I told you that the your supply is upward sloping and demanded downward sloping, more the interest rate, more the supply of savings, less the interest rate, less the supply of savings but if the interest rate is less the demand for funds will be more. So, therefore, we can say that always we can have the equilibrium point here which is the market equilibrium interest rate in that particular point of time.

So, therefore, the equilibrium rate of interest is determined by the interaction of the savings and investments schedule in the economy. So, we have to know that according to classical theory the interest rate is basically determined by; interest rate is determined by the interest rate is a function of the savings the total savings and total investments. Then wherever the savings is equal to investment they are basically we have the equilibrium interest rate can be determined. So, this is what basically always we use it from the classical theory point of view.

But that is not the only theory we have other theories in the in the system. We have the Loanable fund theory which is the extension of the classical theory because there are certain issues which was discarded by the people who believes in the loan able fund theory.

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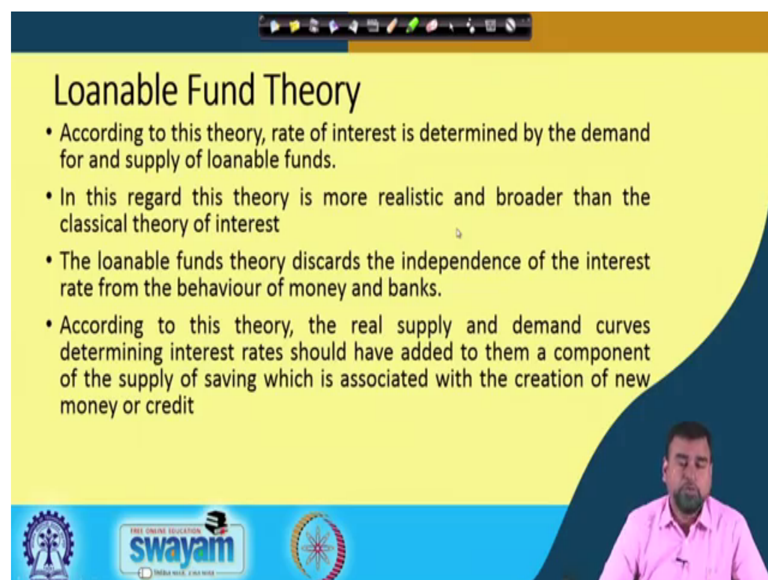


According to this theory the rate of interest is determined by the demand for and supply of the loan able funds. Not all fonts are playing the role for determination of interest rate,

it is the fonts which are lone able which are, actually we are saving not all the savings may not be demanded by the business sector that may not be demanded by the producers. So, if it is ideal that does not play any role for the determination of interest rate in the market. So, therefore, this theory is more realistic and it is much broader than the classical theory of interest.

So, therefore, the loan able fund theory discards the independence of the interest rate from the behavior of the money and banks. They give the importance of the creation of money by the banks, they give importance to the monetary factors because the classical theory was believing the real factors determine the interest rate. For loan able fund theory basically believes, the role of the money and bank for the determination of interest rate in the market.

So, here according to this theory the real supply and demand curves determining interest rates should have added to them, a component of the supply of savings which is associated with the creation of new money on the credit. We will come to know more I will discuss with you that bank is the organization who can create the money, how the bank can create the money there is a process called money multiplier through which the band the bank is able to create the money.

If the bank is able to create the money, then what is happening? That the loan able fund theory gives the importance to money which is created by the bank and the role of the banks in the determination of the interest rate, because you know bank is the most important economic units, economic agent in the system because it is the payment gateway all kind of transactions take place through that. It is the most important intermediary, and all kinds of loans most of the loans and everything always carried out by the commercial banks.

So, here the loan able fund theory gives the importance to the role of the banks on the determination of interest rate. That means, the funds which are loan able those funds only play the role for determination of the interest rate. That is what that is why the bank can the creation of money has given importance in the context of Loanable fund theory.

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Demand for Loanable Funds

- Investments
  - Investment refers to the expenditure for the purchase of making of new capital goods including inventories
  - There is an inverse relationship between the demands for loanable funds for investment to the rate of interest
- Hoarding
  - To satisfy their desire for liquidity.
  - The demand for loanable funds for hoarding purpose is a decreasing function of the rate of interest.
  - At low rate of interest demand for loanable funds for hoarding will be more and vice-versa
- Dissaving
  - This demand comes from the people at that time when they want to spend beyond the current income
  - It is also a decreasing function of interest rate

Then here, so there are two things one is your demand for loan able funds and supply of loan able funds. Then what are those demand for loan able funds? The demand for loan able for the factors which are fed the demand for loan able funds are investments, hoarding and discerning. What exactly those are? How it is defined? Already I have again and again explaining to you investment is the most motivating factor for determination of interest rate or is the most important one of the important factors.

So, one is investment, investment is what? Investment is basically nothing but the expenditure for the purchase of making of new capital goods including the short term inventories. And here already told you there is an inverse relationship between interest rate and the investment. Lower the interest rate more the investment because the cheaper cost of fund will be cheaper more people will demand for money and money will come to the market and they can invest it in the market and by that the demand for funds will go up. If your interest rate will be higher than the cost of the funds will be higher if the cost of funds will be higher then demand for that particular fund will be low. Then the investment will go down this is what basically from the investment perspective.

Then another factor we have the hoarding. Why people hoard the money? The people hoard the money because to satisfy the desire for the liquidity. You see whenever they feel that the interest rate is basically, basically what happens there is a some relationship with the interest rate. The demand for loan able funds for hoarding power poles is a

decreasing function of the rate of interest. What does it mean? A low interest rate demand low interest rate of interest demand for loan able funds for hooding will be more and vice versa.

Why? You see that whenever why we call that as a decreasing function; the people basically what they do if somebody is going for saving if interest rate is low. Then what they will do? They will not go for saving that money in the bank they better to use it for their consumption. But if the interest rate is high they will hoard the money in the bank or any other financial institution because to increase their return from this. So, there is a some kind of inverse relationship exists between then your propensity towards the hoarding, or your intention towards the hooding of the money and the interest rate. So, that is why the hoarding and interest rate basically inversely related.

Dissaving means they this particular concept comes from the people that at that time when they want to spend beyond their current income. It also did, it is also a decreasing function of the interest rate. What does it mean? You see that when I want to sometimes what they do I do not have much money but still I want to invest or I want to spend. So, that is why already in the in the system we have the possibility your conception may more than your income, then how it is possible? I can borrow, I will borrow from the market I will borrow from the bank and spend it and I can borrow from the market and invest it.

So, dissaving means I do not save and when I do not save whenever the interest rate is quite low that is there is no motivation, there is no motivation for the savings, so because of that I do not save it in the market. So, in that sense what basically we are trying to say that interest rate and dissaving are basically and mostly related.

So, these are the factors which basically decide that how much money will be given or taken as a loan from the financial system which is nothing but the demand for loan able funds. Which are the fonts can be loan able, how much funds can be loan able, that is decided by these 3 major factors one is investment, hoarding and dissaving.

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Supply of Loanable Funds

- Savings
  - Individuals as well as business firms will save more at a higher rate of interest and vice-versa
- Bank Money
  - The banks advance loans to the businessmen through the process of credit creation. The money created by the banks adds to the supply of loanable funds.
- Disinvestment
  - Disinvestment occurs when the existing stock of capital is allowed to wear out without being replaced by new capital equipment.
  - High rate of interest leads to higher disinvestment
- Dishoarding
  - Individuals may dishoard money from the past hoardings at a higher rate of interest
  - If the rate of interest is low dishoarding would be negligible

So, after this we have another point that is the supply of the loan able funds. Then how the supply basically comes; what are those factors which motivate to supply because you see producer or the business sector are demanding this that is fine. If the business sector is demanding this and investment, hoarding, dissaving these are the some of the factors which basically compel them or basically motivate them to demand for the money or to get the loan from the financial system. That means, it is loan able that is why this is called the loan able funds.

But whenever we are talking to the supplier side who supplies? From where the supply of the funds come? The supply of the funds come from the reverse side that is basically first point is savings. Then savings, if you see who saves, individuals save the individuals basically save to some extent there is a corporate savings corporate sector also saves some money. But if the interest rate is higher then savings will be more people will say more but that money cannot be demanded.

At that particular point of time what is happening? The producer may not demand that money because enough the cost of capital or cost of raising that fund will be difficult or will be costlier for them. But saving side it will increase, saving side it will increase; that means, supply of the fonts will be more but demand for fonts will not be there supply is there but demand is not there. But still saving is the most prominent factor who supply is this loan able funds which come to the bank or financial institutions, and it goes to the

business units or the producers who want to use that money for the production and as well as the maximizing the output.

Then another factor is bank money. Already I told the bank and create money that is a credit creation process through which bank can create money we will explain that. We will discuss more on this whenever we talk about the commercial banking.

So, what is the major job the bank? Major job of the bank is to provide loan and take your deposits the loan is their assets and deposits is their liabilities they pay the interest against the deposit and they get some interest against the loans. So, the banks basically advance loans to the businessman through the process of credit creation and a bank will create, bank will give more loans they will create the credit in the system then obviously the supply of loan able funds will increase. Because if bank is able to create the money and bank is inclined to provide more loan to the business units for their investment and as well as their other productive purposes. Then what will happen? Obviously, the supply of loan able funds will increase in the system.

So, that is why the bank money is quite important in that particular sense, the bank money also is quite important whenever we consider about the supply of the loanable funds because bank is a very important economic unit who is responsible for creation of the credit and they are the only intermediary who can create money. No other financial institution can create money there is a reason for that and bank is a special kind of organization in comparison to other financial intermediaries which are existing in the system.

Then another factor we have that is disinvestment. When the disinvestment occurs? The disinvestment occurs when the existing stock of capital is allowed to wear out without being replaced by new capital equipment. We do not want to invest. That means, we do not want to replace the new capital existing capital with the new capital. You see investment is mostly related to the fixed assets mostly, also if the inventor is a part of this.

But why we invest in the fixed asset. We buy more fix assets we create the infrastructure, why we create the infrastructure? With a notion that we want to create the infrastructure to generate certain kind of extra return or extra output. So, obviously, if you generate extra output then it will be more profitable or for example, for some reason I do not want

to replace my existing capital whether it is messing or whether it is building whether it anything which are the basically the fixed categories.

So, if the fixed capitals are not replaced then what is happening? That existing capital as are only utilized. So, in that case the investment goes down change in capital is nothing but the investment. The investment if you in the real sense if you define it is basically if the K is the existing capital minus K t minus 1, it is basically change divided by K t minus 1. This is this is the way basically the investment is defined change in capital. So, here you can also some people write it K t plus 1 minus K t divided by K t the same thing.

So, either of these way it can be represented. So, either we can use this existing capital for your investment or you can buy the more capital to increase your output that means, you are investing. But if some cases if the producer is not interested to create more capital or then do not want to invest more on that particular capital then what is happening that basically will affect the supply of the loanable funds. The high rate of interest leads to higher disinvestment that is what the same investment will be more then; obviously, they will not be interested to spend more money or borrow more money from the market. So, in that sense the disinvestment will go up or disinvestment will lead to the increase in the interest rate.

And another factor we have that is called the disordering. The individuals may dishoard the money from the past hoardings at a high rate of interest; if the rate of interest is low dishoarding would be negligible. You see why people dishoard? Individuals may, whatever money they have hoarded before, so they may dishoard the money from the past hoarding at the higher rate of interest [FL]. They will not keep their money with them what they will do? Instead of keeping the money with them what do they do; they basically go and spend that particular money, keep that particular money in the banks or the floor or they supply that money to the financial system.

So, in that case what is going to happen? That if they will supply that money to the system and when it happens and whenever the interest rate is high the dishoarding will be basically discarded the dishoarding is basically always will be not there whenever the interest rate is low.

So, the individuals might dishoard money from the past hoardings at a higher rate of interest and if the rate of interest is low then dishoarding will be negligible. So, these are the major 4 factors which are responsible for supply of the loan able funds. So, we have 4 things. So, we have savings, we have bank money, or creation of money by the banks we have the disinvestment, we have the dishoarding, these are the contributing factors from the supplier side. Then we have the investment, hoarding and dissaving which are coming from the demand side.

So, these are the factors which are responsible for the determination of the interest rate through the loan able funds.

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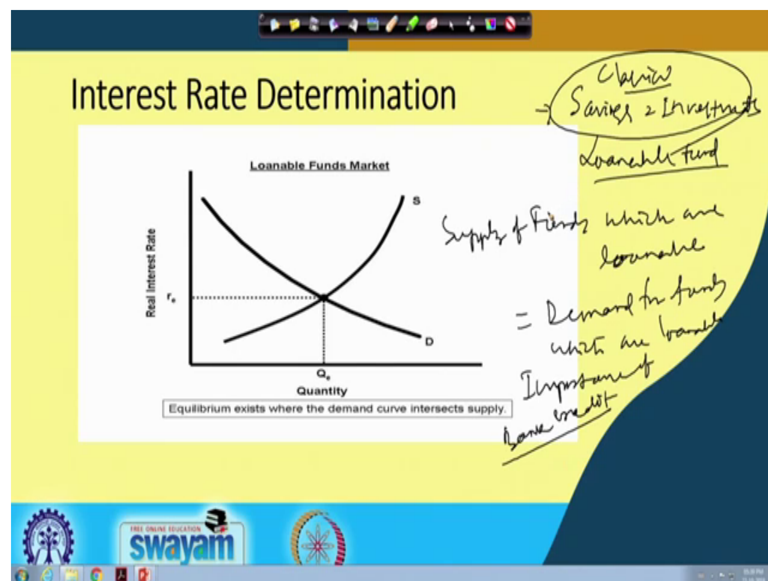


So, then if you see that finally the interest rate can be determined in the same way, but only difference is you see here we are talking about if I will summarize in this way. You see what is what was happening the classical theory classical theory based we are talking about all savings is equal to investments there the interest rate was determined according to the classical.

But according to the loan able fund theory we are basically going to the equality between the particular funds which are loanable, supply of funds is a loanable is equal to demand for funds which are loanable. And another thing what we can say another thing is basically another importance of bank credit which was discarded by the classical theory. So, these are basically the two major things which basically we have observed which is

deviated from the classical theory. So, there is a, that is why this loan able fund theory is more practical people argue and this gives a better idea for determination of the interest rate.

Then another most important theory we have that is the Keynesian theory which is quite relevant from the practical perspective or current perspective or maybe actual operations of the market perspective or the behavioral perspective. So, those particular concept will be discussing in the next class which is popularly known as the Keynes liquidity premium theory.

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So, this is what basically we are talking about. Then, please go through this particular references for this particular system. We can discuss that thing in the next class.

Thank you.