Economics of Banking and Finance Markets
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Lecture - 43
Fed Fund Rate

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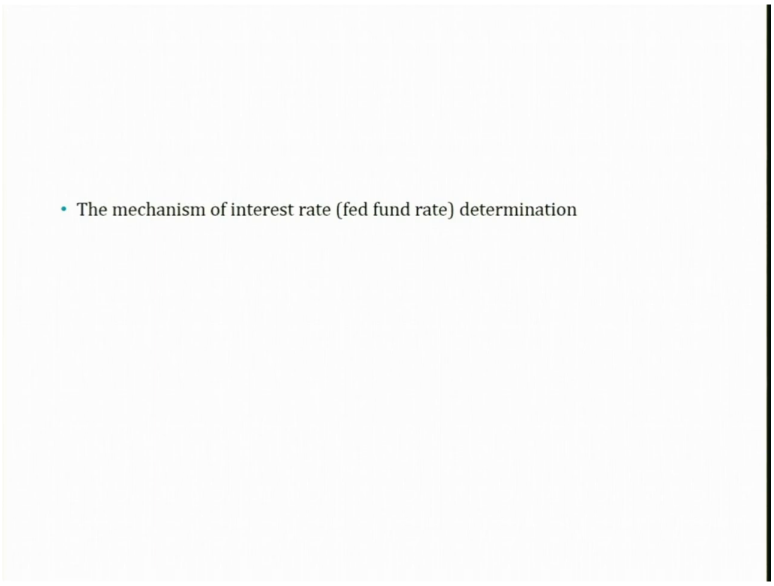

Welcome to this session. The main objective of this session is to discuss the mechanism of interest rate determination, that is the Fed Fund Rate determination in the US. The Fed's use of the monetary policy tools has such an important impact on interest rates and economic activity not only in the US, but across the globe.

So, in recent years the Federal Reserve has increasingly focused on the Fed fund rate, that is interest rate on overnight loans of reserve from one bank to another as the primary instrument of monetary policy.

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Motivation

FINANCIAL AND MONETARY SYSTEMS

US makes most aggressive interest rate hike since 1994

Jun 22, 2022

Data Journalist, Statista

- Facing the highest inflation in over 40 years, the US Federal Reserve has raised the target range for the federal funds rate by 75 basis points to 1.50-1.75%.
- A further rise of 50 or 75 basis points is expected in July, bringing the total increase for this year to 2.00-2.25 percentage points – something that seemed unthinkable just a few months ago.
- And that is unlikely to be the end of it – the midpoint of the target range for interest rates could be around 3.4% by the end of the year.

Faced with the highest inflation in more than 40 years, the Federal Reserve has once again turned up the heat, taking its most aggressive step yet in the attempt to curb inflation. The Federal Open Market Committee (FOMC) unanimously decided to raise the target range for the federal funds rate to 1.50 to 1.75, with further rate hikes looking inevitable. The 75 basis point hike follows an already aggressive 50 basis point increase in May 2022 and marks the largest upward step since 1994.

"We at the Fed understand the hardship high inflation is causing," Fed Chairman Jerome Powell said in a press conference following the FOMC meeting. "From the standpoint of our Congressional mandate to promote maximum employment and price stability, the current picture is plain to see: The labor market is extremely tight, and inflation is much too high," Powell said. Since the last meeting in May, "inflation has once again surprised to the upside, some indicators of inflation expectations have risen, and projections for inflation this year have been revised up notably," he added, explaining why the Committee decided to raise its policy rate by even more than the previously anticipated 50 basis points. And more hikes are coming. As it stands, Powell expects either a 50 or a 75 basis point increase at the next FOMC meeting in July. That would bring the total increase to 2.00-2.25 percentage points this year, something that seemed unthinkable just a few months ago.

1.50% – 1.75%

FFR → inter-bank loan rate

US Fed meet this week: Markets discounting 75 bps interest rate hike amid inflation, recession fears

The US Federal Reserve is widely expected to raise interest rates by 75 basis points or 0.75% at its July policy meeting this week to a range of 2.25% to 2.50%, according to economists.

Written by Harshita Tyagi

July 26, 2022 2:41:59 pm

So, as a motivational factor, let me show you some of the newspaper cuttings. So, you can see here that for example, this one, US make most aggressive interest rate hike since 1994. What you can see here is that the facing highest inflation over 40 years, the US Fed reserve has raised the target range of Fed fund rate by 75 basis point to 1.750. So, from this what we can see that the Fed fund rate, that is the inter-bank interest rate, on overnight loans of reserves from one bank to another.

So, we can also call that Fed fund rate, that is FFR is nothing but the inter-bank loan rate, that is overnight very short-term rate. So, that the central bank is fixing it at a target range. Because you know that this rate is determined by the demand and supply by the banking system; the demand by those banks who needs reserve those who is show deficit of reserve and to meet the reserve requirement is borrowing from another bank who is having surplus of funds.

So, this finally, determined by the market forces, demand for supply of reserve. What the Federal Reserve System is doing here is that; they are fixing a target range; that means, here the target range is 1.50 to 1.75 percentage but the transactions between banks determine the rate.

So, what the central bank is doing here is that they are applying the monetary policy tools: that is the open market operation, discount loans and cash reserve requirements, so that the effective rate can fall between 1.5 and 1.75. So, finally, the rate is determined by demand and supply of reserves.

So, we can also see that from this; that means, a further rise of 50 or 75 basis point is expected in July bringing the total increase for this year is going to be 2 to 2.25 percentage point, something that seemed unthinkable just a few months ago.

The market is anticipating that there will be 75 percentage points interest rate hikes amid inflation because there is a fear of uncertainty, fear of recession in the US.

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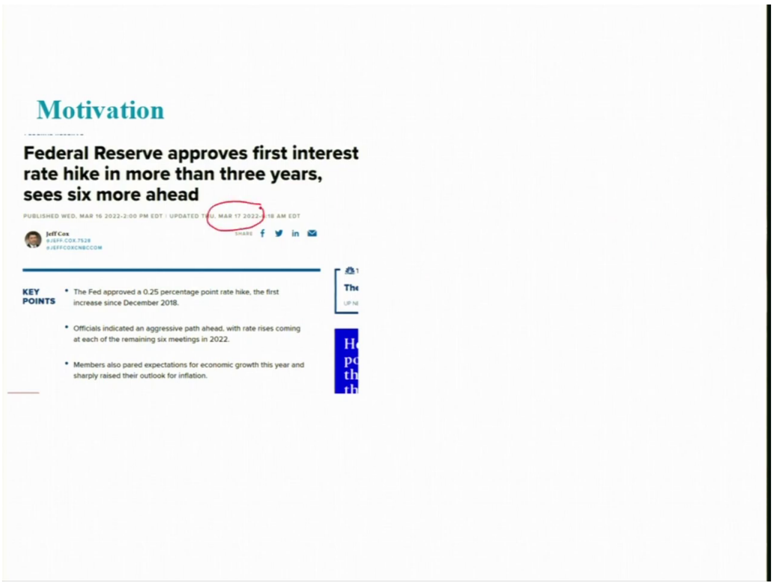

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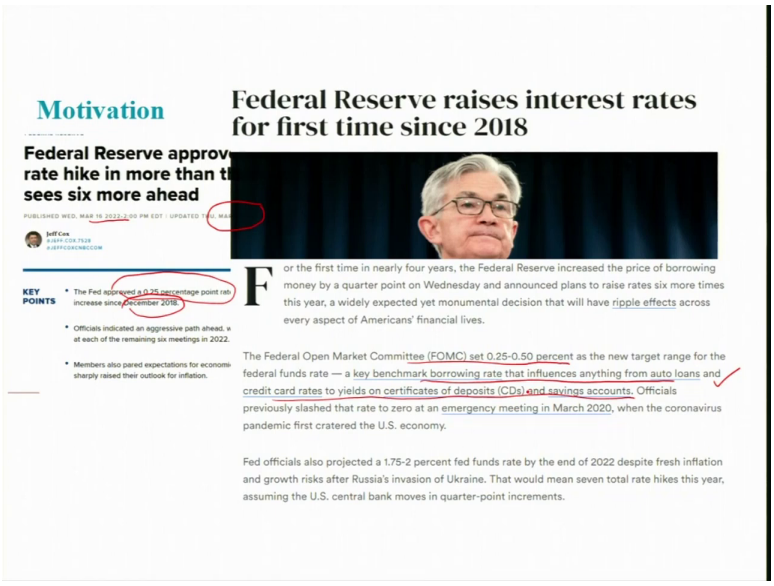

Then see for example, March 2022; that means, Federal Reserve rises interest rate for first time since 2018. So, because of the Covid crisis, and all there was almost a pause of Fed fund rate. And they raised it, the Fed approved 0.2 percent of rate increase since 2018 there was no rise in Fed fund rate since 2018, and it was in March 2022 that was they approved a 0.25 percentage point hike in the Fed fund rate.

When the FOMC set FFR from 0.25 to 0.50 percentage as the new target range, this is the key benchmark borrowing rate that influence anything from auto loans to credit card rates to yields certificated deposits and savings accounts. So, from this we see that the Fed fund rate that the newspaper the reported; Fed fund rate has influence at the rates you just simply recall what we discussed in previous session, while discussing the theories of interest rate, looking at the term structure and risk structure, we have seen that interest rates move together.

So that means, each interest rate is highly correlated; that means, Fed fund rate has influence on all the other rate of interest.

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So, look at for example, in October 2009, the Fed open market committee lowers its benchmark rate by 25 basis points to a range of 1.5 percentage to 1.755 percentage as expected.

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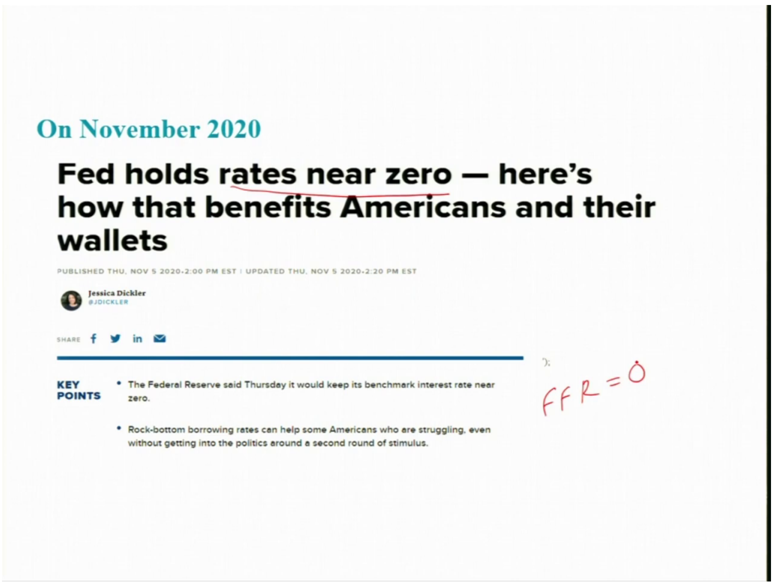

You just see, on November 2020, Fed holds rate near zero; that means, the Fed fund rate set up is almost zero; that is the Fed fund rate is just zero.

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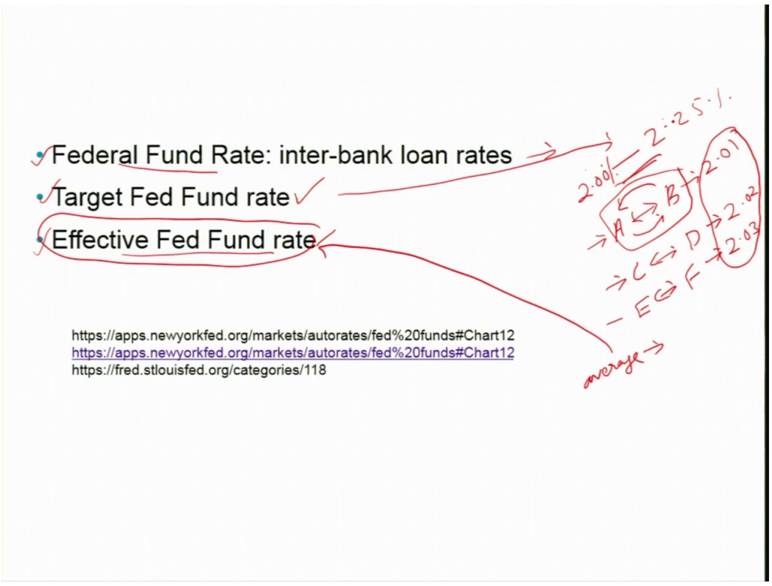

So, from this we can see that we are using different terms; one is called Fed fund rate, then another term is that target Fed fund rate, and the third one is effective Fed fund rate. So, coming to this one, let me explain this one by one, what does it mean.

So, about the Fed fund rate, it means the interest rate between interest rate for interbank loans, that is the inter-bank loans rate, that is the overnight loans for reserve among banks. So; that means, this is the interest for very short term loans by one bank giving to another bank, which is taken for meeting the reserve requirement, it is the Fed fund rate.

Then, the target Fed fund rate. For example, we can see that if it is 2 to 2.25; that means, the Federal Reserve System wanted the Fed fund rate for somewhere between this and this; that means, between 2 and 2.5 percentage, that is the target.

So, when the FOMCs announcing the Fed fund rate, they are not announcing the actual Fed fund rate because they cannot really determine the actual rate of Fed fund rate because that is determined by the demand for and supply of reserve by the banking system; that is the market force determine the actual Fed fund rate, but what is the Federal Reserve System can do that it can target between these ranges; between 2 and 2.25, that is the target Fed fund rate. This is what we read in the newspaper that is about the say FOMC decision.

Then comes the effective Fed fund rate. So, the effective Fed fund rate means because there are for example, among these 4000-5000 banks there will be some banks bank A and bank B, there will be transaction here right. Some will be supplying here, and some will be demanding reserve here. So, it is between just between them. So, suppose their rate of interest is for example, the rate at which bank A borrow from bank B is for example, 2.01 percentage.

And similarly, another bank, bank C and bank D, they may be settling their transaction for a rate for example, 0.02. And similarly bank E and bank F their transaction, the Fed fund rate between them may be falling somewhere between this.

So, what we do that we calculate the effective Fed fund rate that is the average of all these rate, all this rate means the what are the transaction happening that the for example, the transaction between all the participating banks that actually, we are taking the average of the actual Fed fund rate in each transaction among the banks, we are going to call this one as the effective Fed fund rate.

That is what the FOMC wanted, but they cannot determine, as it is determined by the market forces that the demand and supply forces in the reserve market. So, here accordingly the FOMC fix a target between this one. For example, this one and then using the tools the monetary policy tool, they were able to ensure that the actual Fed fund rate falls between these two, that the lower range and upper range.

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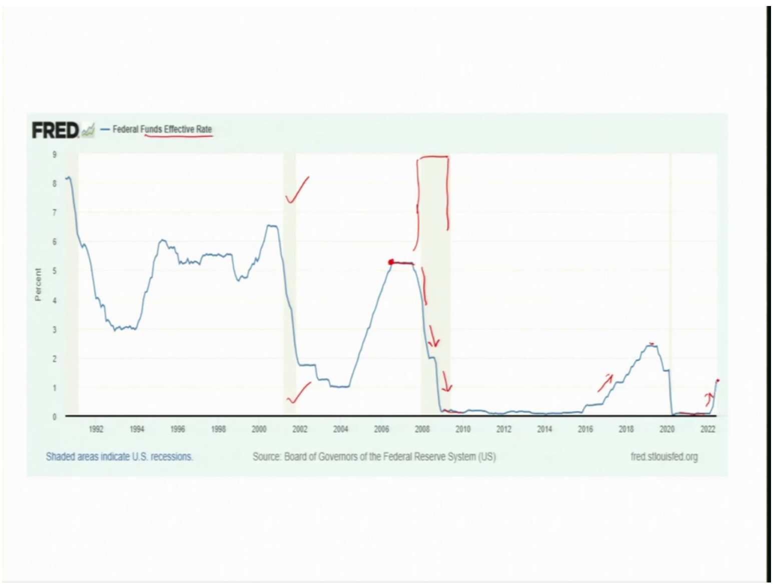

So, you can see, for example, this figure, this is the movement of effective Fed fund rate which I just mentioned here. So, you can see here that before the crisis in 2007 it was very high; that means, when the economy is at the peak normally the rate of interest will be very high, and then the crisis started then the Fed fund target rate they reduced, accordingly the effective rate also declined.

This gray bar is the recession period, there a mild recession, this also we discussed in one of the previous sessions. So, you can see that the FFR has declined the effective fund rate became almost near to 0 here then again after 2016 they gradually raised the Fed fund rate target rate accordingly the Fed funds effective rate also increased. Then again after 2018 the Fed reduced Federal Reserve System reduce the targeted Fed fund rate target rate then accordingly you can see that during Covid time. You can see that this almost near to 0 the active.

Now, you can see that what we have seen that the last few months; that means, again since there is a huge mounting inflation in the US and as a result, they raised the and economies back from the Covid pandemic not only in the us and across the globe. So, as a result there was pressure to increase the Fed fund rate the interest rate that is what we are seeing now. Accordingly, the effective fund rate also increasing.

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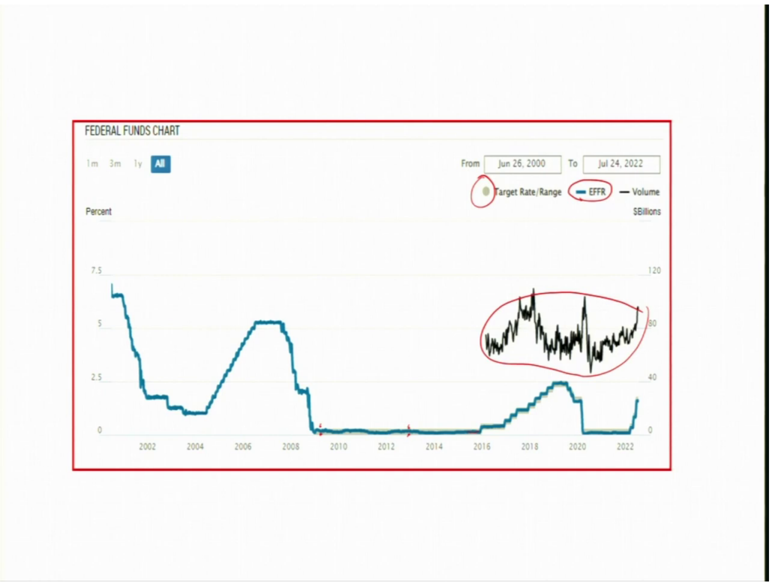

This is the target range also I am giving here in this gray colour; that means, the range given the lower limit for example, this is the lower limit, and this is the upper limit is here. So, you can see here that the lower limit and the upper limit. So, this is the Fed fund rate, and you can see the effective rate effective Fed fund rate is falling between that is determined by the market that I may stated a couple of times here that is determined by the market forces right.

The demand for and supply of reserve. So, it is falling between you can see that it is falling between this range. This is the volume; you can see here. I would suggest you visit Federal Reserve website, and you will get all this related data and how Fed fund rate, the target rate, effective Fed fund rate and the lower limit and the upper limit etcetera.

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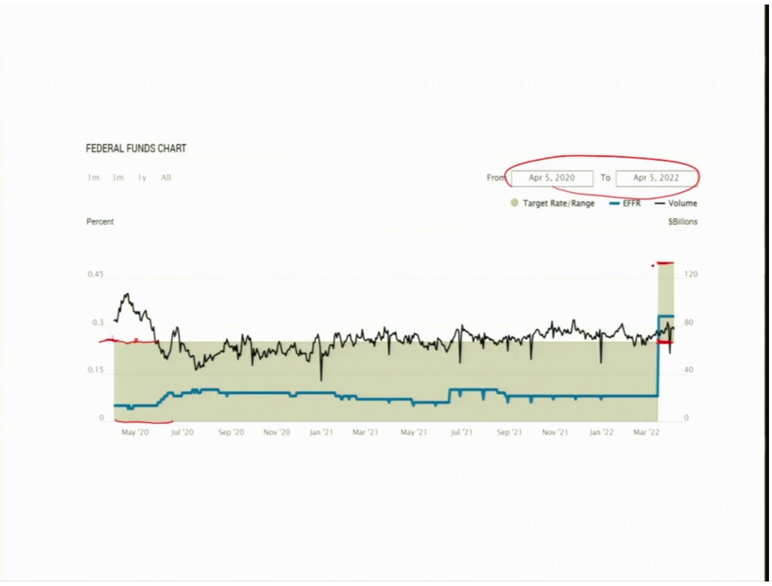

I have just taken here only for the last two years just to show that the lower limit and upper limit, to highlight this one, this is the upper limit, and this is the lower limit. Now after March 2022, you can see that upper limit became this one, here this is the lower limit, and this is the upper limit.

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So, this is for again just for last one year. So, you can see that after March 2022, in every FOMC meeting, they meet every 8 times in a year, you can see that they increased the Fed fund rate; lower limit and upper limit.

And in another meeting, they increased the lower limit and upper limit and again in July this month, July they increased the rate; the lower limit to here and the upper limit to here. From this what we can see that when they are increasing the lower limit and upper limit, that is nothing, but they are increasing the Fed fund rate, especially the FOMC is increasing the target Fed fund rate. They will be making a deliberate attempt to influence the demand and supply aspects of the reserve, and accordingly the effective fund rate has fallen in this range.

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Effective Fed Fund Rate

2019-05-01	2.39
2019-06-01	2.38
2019-07-01	2.40
2019-08-01	2.13
2019-09-01	2.04
2019-10-01	1.83
2019-11-01	1.55
2019-12-01	1.55
2020-01-01	1.55
2020-02-01	1.58
2020-03-01	0.65
2020-04-01	0.05
2020-05-01	0.05
2020-06-01	0.08
2020-07-01	0.09
2020-08-01	0.10
2020-09-01	0.09
2020-10-01	0.09
2020-11-01	0.09
2020-12-01	0.09
2021-01-01	0.09
2021-02-01	0.08
2021-03-01	0.07

So, this is some more data about the effective Fed fund rate. So, you can see that into 2019, for example, the rate was this much, but in 2021 the rate became 0.07 this is the effective Fed fund rate.

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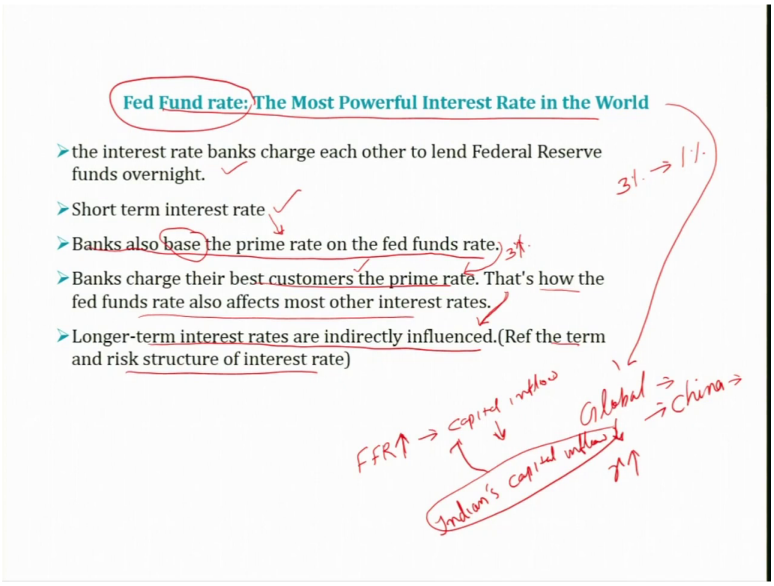

I am showing you some more information on the effective Fed fund rate. So, let us see why this Fed fund rate is attracting so much importance news importance across the world? Because this Fed fund rate is the most powerful interest rate in the world. And not only the Federal Reserve System is one of the most powerful central banks in the world, but it is also the most powerful interest rate in the world; the Fed fund rate is one of the most powerful interest rate in the world.

This the interest rate that banks charge, as we already discussed, each other to lend Federal Reserve funds overnight and you say short term interest rates. And one of the things is that this short-term interest rate. This is the rate at which one bank borrows from another bank to meet their reserve requirement.

But this rate is related to the interest rate of the rest of the interest rate as well, at this rate banks also base the prime rate on their Fed fund rate; that means, bank charge their best customers the prime rate. So, this is the rate at which banks charge their best customers.

For example, using this as the base rate plus they will be adding to when they charge for example, from their prime customer if it is very short term, they will be charging almost same, but additionally if the long term, they will be by charging some percentage point, it is normally 3 percentage point higher to the base of this Fed fund rate.

We can see that if the Fed fund rate is declining, for example, 3 percentage to 1 percentage. Then you know that that 2-percentage difference that the best customers the loyal customers of the bank also get that 2-percentage deduction. That is how the Fed fund rate also affects most of the other interest rates in the economy.

Now, let us recall our term structure and risk structure of the interest rate where we have seen that each interest rates are highly correlated so, that longer term interest rate also is indirectly influenced. This is the short term so, this one also first Fed fund rate has influence on interest rate on the prime customers, then it also has influence on long term interest rate.

You just recall our term structure of interest rate. So, refer the term structure and risk structure of interest rate so; that means, the changes in Fed fund rate have influence across other interest rates, that the government treasury rate and that the long term and short term, plus, the private short term and long-term interest rates.

In addition, it also has influence on rate of interest across the globe. For example, one of the implications that you can see that when the FFR has been increased in the US when FFR has been increased, then there will be global financial capital out inflow to the US, that is, capital inflow into the US capital inflow into the US and decline in capital outflow to the rest of the world.

So, when we can see for example, now when FFR is increasing, many countries including India will get affected. India's capital market will get affected when the Fed fund rate is increasing, we can see that Indians capital inflow declines and at the same time our capital outflow increases. So, whoever has invested in Indian government bonds for example, they pull back their money, not only from India, from other emerging economies also they withdraw their money, and it moves back to a US right, because the interest rate has increased in the US.

To counter this, some countries increase their domestic interest rate as well. Suppose there is huge capital outflow from India to US, that is, who had invested from the US in Indian capital market, they are withdrawing their money, then India will be forced to increase the domestic rate of interest to reduce the magnitude of capital outflow. Similarly, other countries for example, China also respond by increasing rate of interest if there is a risk of capital outflow due to increase in FFR.

In short, other countries also start increasing rate of interest. So that means, what I want to say here is that changes in Fed fund rate not only have effect in the US but it also has impact on the rest of the world, across the global economy.

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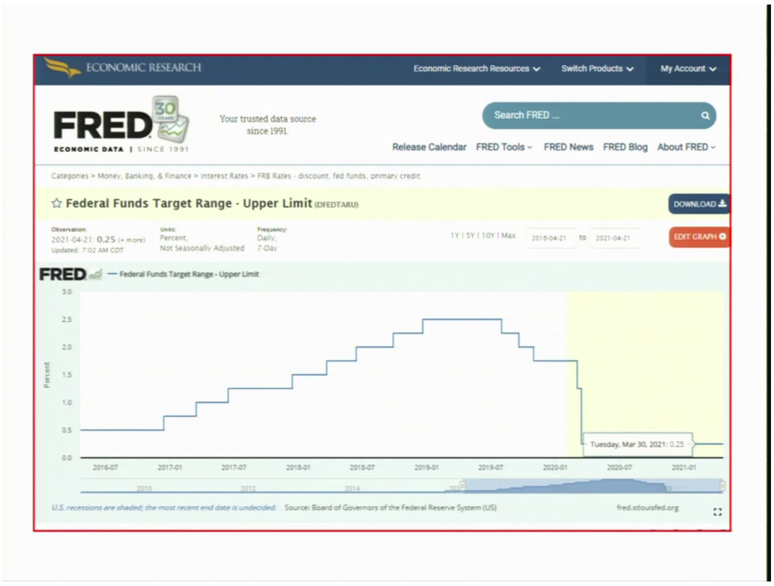

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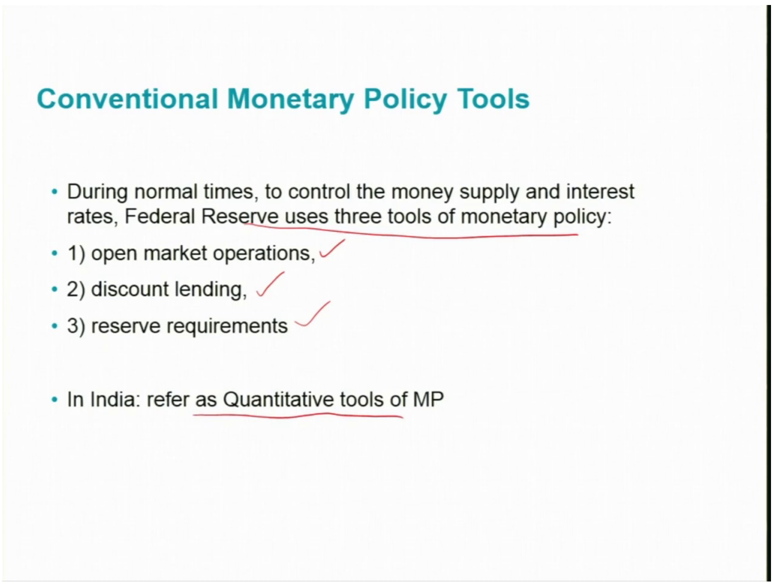

Again, I am showing the low upper limit and lower limit. Now, we are in a better position to discuss how the Fed fund rate are determined. So, during normal times the Fed uses mainly three conventional tools of monetary policy to control the money supply. And Federal Reserve in the normal time, but not in any financial crisis or recession time, mainly in the normal time they use these three tools: one is open market operations, second one is discount lending and the 3rd one is our reserve requirements.

This we have already mentioned in the previous sessions as well. These are the three widely used tool. In India we refer these tools as quantitative tools of monetary policy, that is open market operation discount lending and reserve requirements.

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So, the question here comes, why first, why such a Fed fund market? So, why would banks trade in the Fed market? That is some of the question that we are going to answer here while discussing the Fed fund rate determination. Then how the transaction has been settled and what are the procedures in open market operations.

So, coming to why would banks trade in Fed fund market. They trade in the Fed fund market to meet their reserve requirements.

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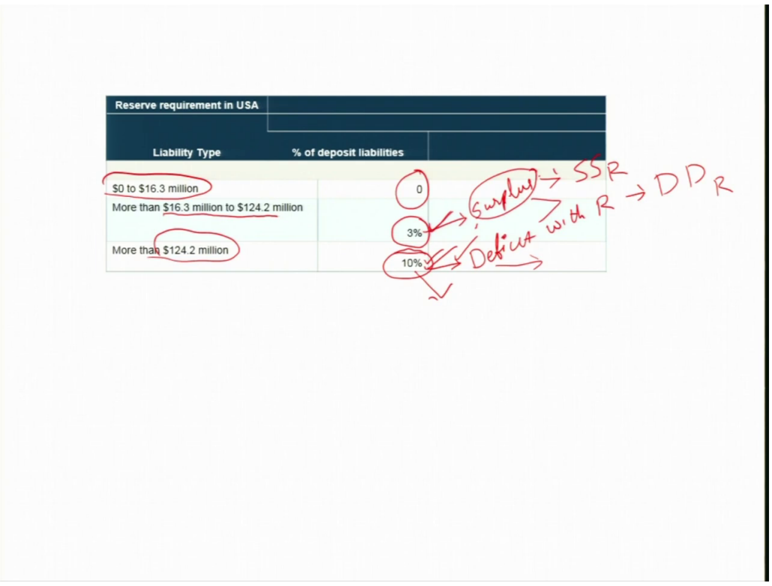

Because the reserve requirement in the US is based on the size of the bank, the banks with deposits having deposit maximum 16.3 million until: 0 to 16.3 million, they do not have to keep any reserve with the central bank.

But banks with a deposit ranging from 16.3 million to 124.4 million, they must keep 3 percentage of their total deposit as reserve with the central bank. Then those banks with a 124.2 million above, they are required to keep 10 percentage as reserve. So, based on the volume, the size of the bank; that means, we can say that mainly the deposit liabilities that they are having.

Then you know that it is mandatory for them to ensure that this much reserve is kept in the bank at the end of the business day. So, mainly these banks those who must keep 10 percentage, most often they confront with the deficit in meeting the reserve requirement. So, they will be demanding reserve from the reserve market.

And these bank, the small banks, we can say that they need to keep only 3 percentage. So, normally we can expect that, as compared to this large bank they will be having some surplus. Not only that, but the big banks also large banks are well developed and well-structured bank as compared to the smaller banks, they will be having more investment opportunities.

And they will be seeing more productive use of their resource than instead of putting that 10 percentage of their money in the Fed as reserve.

So, that is with the large banks, but the small banks sometimes will not find better investment opportunities for their fund. So, then accordingly, they will be having some surplus, then they will be supplying reserve in the inter bank rate. This is one explanation why there is banks trade in Fed fund market. And how the transactions have been settled? It is mainly through the Fed account; the transaction will be settled through Fed account.

It is much easier for bank lending by one bank to another. Both banks that is small banks and large banks, all of them are having account with the Federal Reserve System. So, the transaction can be easily settled between them through the Fed.

So, if some banks are having a deficit, they come to know immediately, they can borrow from small banks who have surplus, and within couple of minutes the transaction will be settled, thus, the banks with the deficit in the reserve they can immediately fulfil their reserve requirements.

We have covered some basic concept about the Fed fund rate.

In the next session we will see, by using all the tools of monetary policy, how Fed fund rate will be determined.

Thank you and see you in the next session.

Keywords: fed fund rate, target fed fund rate, effective fed fund rate, reserve requirement, interbank transactions, federal reserve system