Microfoundations of Macroeconomics
Prof. Wasim Ahmad
Department of Economic Science
Indian Institute of Technology - Kanpur

Module No # 07
Lecture No # 32
Monetary Policy II

Welcome back so we were talking about the monetary policy design and implementation and what are the rules through which the monetary policy should be functioning. And we focus more or less on the discretion and rules. Under discretion we mentioned that you have when you have a short run decision and short run decisions when they are undertaken. And these lead or impact the long-run decision then there it matters a lot.

And then we focus on the monetary rules under that we mentioned about the constant money growth rate, given by Milton Friedman. And then we focus on the approaches that we have non-activists and activists. And we understood that if you are going by either the money constant money growth rate or the Taylor rule. Then you are going to solve the problem of what we were talking about the time inconsistency problem. So here we will have the same reference for this session.

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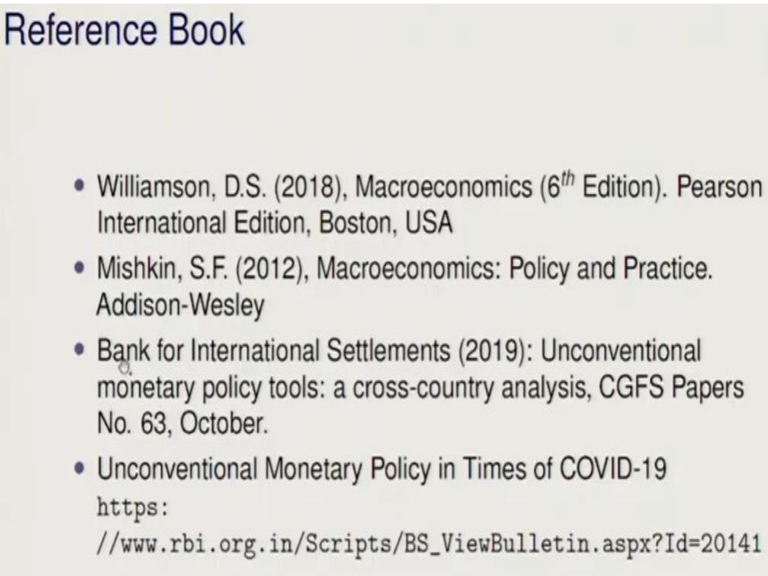

So here we will have the Mishkin book 2012, macroeconomics policy and practice. And here we have the bank for international settlement unconventional monetary policy tools. And then here we have the unconventional monetary policy in times of COVID- 19, so this we are talking about.

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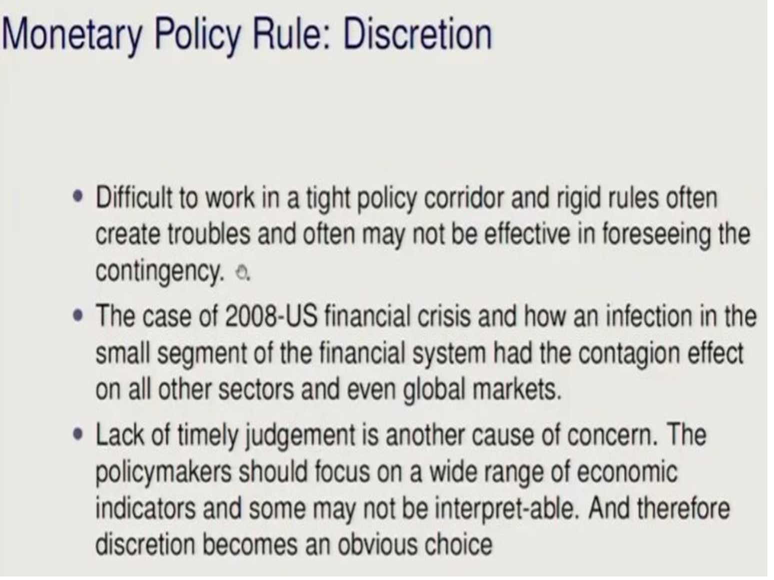

So here we focus more on here on the discretion that what are the scenarios under which under which the discretion may be playing very important role.

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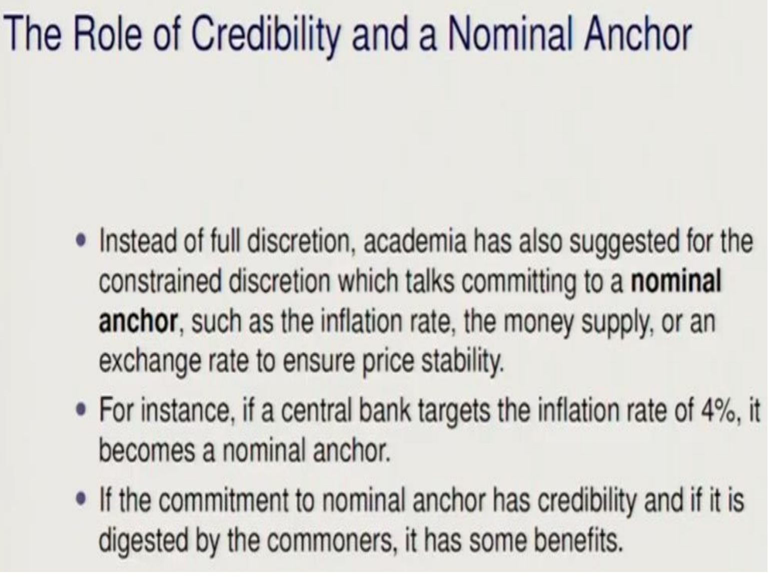

Now let us talk about the new dimension which is called role of credibility and the nominal anchor. Once I mention about so a nominal anchor so it becomes really difficult. So most of the countries monetary policies are decided based on either the single and indicator approach, or they go by multiple indicator approach. Now in this particular session we will be focusing on how do you decide about the credibility of the central bank?

What are the approaches through which the central banks credibility's are tested, and second is the role of nominal anchor. Nominal anchor role becomes really important that how you are going to emphasize. So, here we are talking about so economists have more or less agreed to the viewpoint that there should be a nominal anchor in the economy. Economy should identify the nominal anchor that which particular factor is more important for the monetary policy stand.

So, depending upon the orientation as I mentioned in the last session also that based on the orientation of the economies whether; it is export oriented domestically driven economy. Based on that you can think about that which; particular indicator can act as a nominal anchor. In most economies it has been found that it is the inflation rate acting as a normal anchor, money supply exchange rate. So, all these factors are having a more or less implications on the economy.

If a central bank targets the inflation rate of 4%, it becomes a nominal anchor. Which; means that if you have the inflation rate acting at the nominal anchor, then you can decide about what will be the threshold of this nominal anchor. If the threshold is around 4%, 5% then it means that the central bank central bank's monetary policy has to make sure that they have to supply enough money in the economy.

So that prices do not go up more than 4 to 5% so whatever is the target rate this is what we try to understand. And the second term that we are mentioning which is about the credibility. So, if the commitment to nominal anchor has credibility and if it is digested by the commoners, it has some benefits. What are those benefits will be trying to see from demand and supply side shocks perspective?

If as I mentioned in the discretion part even that if the common individuals in the economy have some expectations. And if these individuals digest easily that whatever stand the central bank has taken to control the money supply, it is good enough to control the inflation. Then they will not expect higher inflation which will further solve the problem of higher wages prices and further adjustment.

If the individuals are not having any kind of I would say faith or the central bank credibility is really low, they are not having any faith on the central banking structure how the especially with regard to the monetary policy stand. Then they will be forming the expectation against what the monetary policy is trying to convey to individuals then there you will have the permanent kind of disequilibrium in the economy.

And this may lead to deviation so time inconsistency problem may arise here. So credibility has lot of role so this is the new term you may be encountering. So credibility matters and that is why we find that for the most credible scenario for the central bank is to give positive real interest rate for most of the investors or I would say depositors. If you are depositing your money in the bank and if the nominal interest rate is 5%, inflation is 6%, your real interest rate is -1%.

In that scenario you know that you are going to get less of return on your deposits and it is not compensating you the rise in inflation, then this will create a very bad impression for the central bank inflation management. Which; means the central bank has not been able to convey to the people that they will be generating enough money or enough they will be giving you enough interest earning. So that you your payoff is always positive whatever is the inflation rate.

So you will see that most of the central banks whenever they see a rise in inflation they also go for increasing the interest rate. Because if real interest rate is not positive if you are not getting good returns from your bank saving account, or from savings, from post office, or different sources. You will be moving to riskier investment and riskier investments are not advising for every individual.

So maybe when you are young you may be invested, you may be attracted to invest in stocks, or some other but if you are older so maybe the pensioners those who are they may not like to taste the saltiness of the stock market. And they may not be saving that much amount or may not be allocating that much amount. What we see these days about mutual fund and our different types of equity management funds.

They may be interested more in this risk-free kind of saving, if the risk-free kind of saving is having not enough return if it is not compensating for rise and inflation. Then this will have a lot of implications on the credibility of the central bank. And in even in the recent scenario when we see about the central bank even in India, when we are going to almost touch the inflation rate of 6% or so the banks are offering you 4% so your real interest rate is actually negative.

And this is one of the also reasons that why we see we are seeing a sudden surge in the stock market that whatever happens in the economy. Even if your economic outlook is not that great you are moving towards the even your economic outlook is not good your stock market is going up. That does not show any kind of a good fundamental underlying fundamental that your economy is not in a good shape it is still recovering, but the stock market is reacting in a different way**.**

So that also shows that the individuals are feeling that they are not compensated in the risk-free market. So, they are moving their money towards the risk investment, so you will see that lot of IPOS and you have a lot of listings going on the stock exchange. Because here the low interest rate environment also gives the opportunity to replace the finances, so there we talk about the top and equity ratios. That if in case of low interest rate environment replacement cost of capital becomes really important.

So maybe companies want to go for a certain kind of replacement technology automation or some kind of expansion it is easier to do that in the low interest environment. Because you can borrow from the bank and whatever amount that you are not able to borrow you can borrow through the equity market. So credibility has wide implications and it has wide implications because it mentions about the role of nominal anchor in the economy, if you are talking about a nominal anchor then. So here it mentions about the credibility in that dimension.

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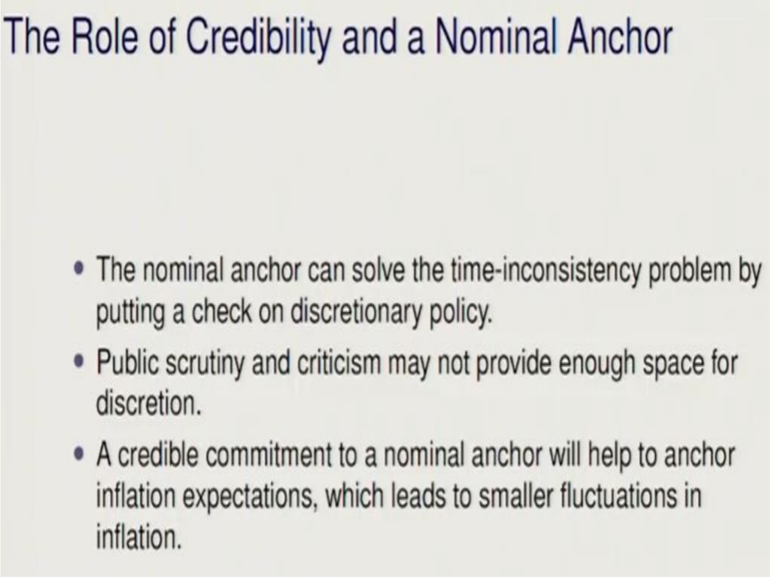

Now here also we mentioned that one of the reasons why nominal anchor is selected because it also deals, or it also solves the time-inconsistency problem and it also puts a check on the discretionary policy. That if you are having a particular target and if you are targeting your economy that if you are targeting that variable nominal anchor variable then you may not face the discretionary scenarios.

Because if you are efficient enough to control your inflation with the given target, then you may not require the discretionary, so this will also solve the time inconsistence problem. There will be synchronization between the short run objectives and long-run objectives. Second is about the there is also a check on the central bank right so here you have public scrutiny and criticism, that everyone knows that central bank has to abide by certain nominal anchor targets.

And if the central bank is not going to meet then there will be public scrutiny, there will be opinion, there will be a lot of newspaper writings digital media reactions, and as a result your discretionary stand may be thwarted. A credible commitment to a nominal anchor will help to anchor inflation expectation, as I told that if you have the people have a faith on the credibility of the nominal anchor and even the central bank.

Then the central bank decisions are also well appreciated they are taken in a right mood, if the individuals are taking their central bank decisions in a right mode then this is going to also create a optimistic scenario in the economy. So as we have discussed about the coordination failure models under the Keynesian setup, that how strategy complementarities play important role.

So if you have a nominal anchor playing a very significant role then what typically happens is that you have in the economy one sector dependent upon another. So if you have optimistic scenario prevailing in the economy you will have higher linkages across different segments, and this will create ultimately the good scenario for higher output. So those; things are leading so which means that you will have a smaller fluctuation.

So Software Company they know that since there is a good demand of hardware products. So it is better that my product will also be sold and demanded in the market. So they will be also hiring more labour and more level to produce software because hardware market is doing good so you have a strategy complementarity is playing very important role here. And as we had also gone from multiple equipment so if, you have a more optimistic scenario less of pessimistic scenario then this optimistic scenario will override. In the same way that we often mentioned with the case of substitution and income effects that we always examine.

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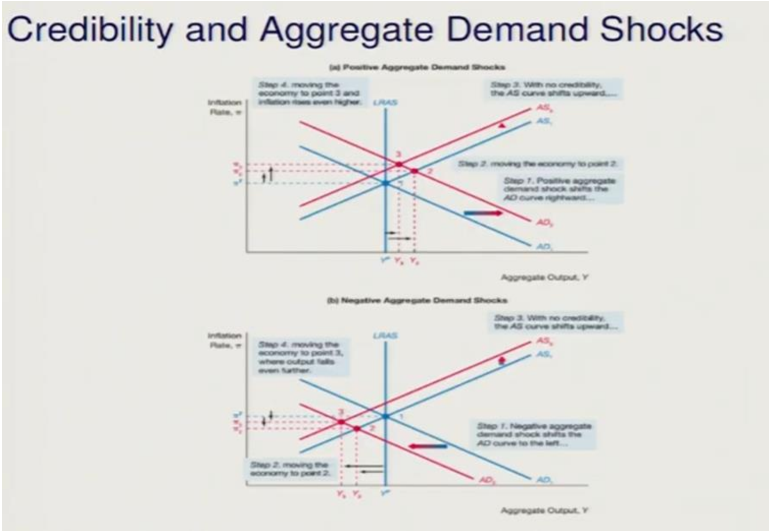

Figure: **Credibility and Aggregate Demand Shocks**
Source: Mishkin, S.F. (2012). Macroeconomics: Policy and Practice

So let us understand here we have the credibility and aggregate demand shocks. So here we are saying that at point 1 which is this Y_p so this is the output and this is the inflation. If you have a positive aggregate demand shock so this might be because the forms are interested so you have a good investment scenario, good consumption scenario so maybe Y = c + i + g + n - x that you always mention.

So you think about that way that either there is increase in i because of the low interest environment. So, your aggregate demand shift rightward so positive shock demand shock shifts the aggregate demand curve rightward right. And here we have then the economy moves to point 2, but the ideal scenario is that at here point 2 we are seeing that you have inflation increase**.**

Once you have inflation increase so I am talking about the positive aggregate demand, this side you have inflation rate, and this side you have an aggregate output. What we are seeing that at point 2 here your aggregate output has gone up but at the same time because there is aggregate demand increase. At the same time the economy is also facing the higher inflation if the economy is facing higher inflation, then what typically happens is that? Here you have a Y_p and pi t and here you have a point 2 which is leading to here you have a Y_2 and π_2**.**

So here we have moving the economy to a point 2, if the individuals have enough credibility with the policy stand of the central bank. Then they will not be forming expectation of higher inflation in future, so economy may turn back towards the equilibrium point which is 1. But if the individuals are having a limited, I would say so if the individuals are having limited with regard to credibility.

If individuals are having limited faith on the central bank decision, then this will move further up, your aggregate supply moves leftward, and this will create a scenario with at most high inflation and your reduction in your output. So instead of thinking about π_2. and Y_2 which is just because of the rightward shift of the aggregate demand, and that could be because you have positive aggregate demand shocks in the economy.

Instead of economy moving towards 1 the economy has moved further because of the less credibility. Individuals are thinking about a more of more inflation in the future, because they have less credible less credibility on the central bank decisions. As a result the individuals may be opting for more leisure they may not like to work for more, and then the forms are also having a very adverse scenario. So that may create shrinkage of your total output right at point 3.

At point 3, so 3 at point 3 it is not good so if the central bank takes a credible decision here itself by increasing the rate of interest. If the central bank is taking the decision by increasing the rate of interest, then this may create adjustment in the output and the inflation both and the economy may move to point 1. But if the credibility is low then in that case economy may move to a higher rate of inflation path.

And this will further shift of the aggregate supply will further lead to decrease in output, so this is what we say about the positive agreed demand shock. That there you have the role of the credibility that how credible is the source of information. Second is about the negative aggregate demand shocks, once we have the negative aggregate demand stocks. May be negative agreement demands of the shock that you; have inflation low, consumption low, and all those scenarios.

So, what we are seeing that we are at equilibrium at π_t and Y_p so this is what we have the output, the long run aggregate supply is fixed here. We are talking about short run so the analysis that we have done here it is for the short run not for the long run, so long run agree supply is here. The short run adjustment that we are seeing with the positive demand shock here we are talking about negative demand shocks, so here we have the long run aggregate supply which is fixed.

Here we have the aggregate demand so because of this less or negative aggregate demand shocks, the output has moved down so the aggregate demand has shifted leftward. And these leftward shifts in aggregate demand here we are having the output which is nothing but π_2 and Y_2**.** If the central bank takes the decision here that there should be in lower rate of interest and this will further increase the money supply, and investment outlook will be better.

Then the economy may come back here people will not have expectation the pessimistic expectation here, that the prices are not going to be that higher so they may not be reacting in that way. If the individuals are having the positive credibility or they have higher credibility on the central bank from 2 the economy may move to 1. But if they do not have credible information then the individuals may then the economy may move to point 3, which is a much higher inflation rate and having the output further lower.

So, in case of negative aggregate demand shocks what we can see is that there is a lot of role of expectations playing and also there is a role of credibility. So, negative aggregate demand shocks are more crucial for the monetary policy management. Because here we are seeing that the aggregate output is decreasing in each case and it is decreasing much higher in the third case where it is π_3 and Y_3.

But here we are seeing that here we are having the long run aggregate supply fixed, here at least in case of positive demand shocks it is easier for the central bank to react. And what we see is that we are having the increase in output in both cases though the third case it is not increasing that much, but here we are seeing that in both cases here you have a decrease in output.

And this creates the scenarios for the central bank how credibility matters a lot, especially when you have a downturn in the economy when you see negative shocks at that time the stand of the monetary policy play very important role. And you have to always think about how we can bring new additions into this particular type of models.

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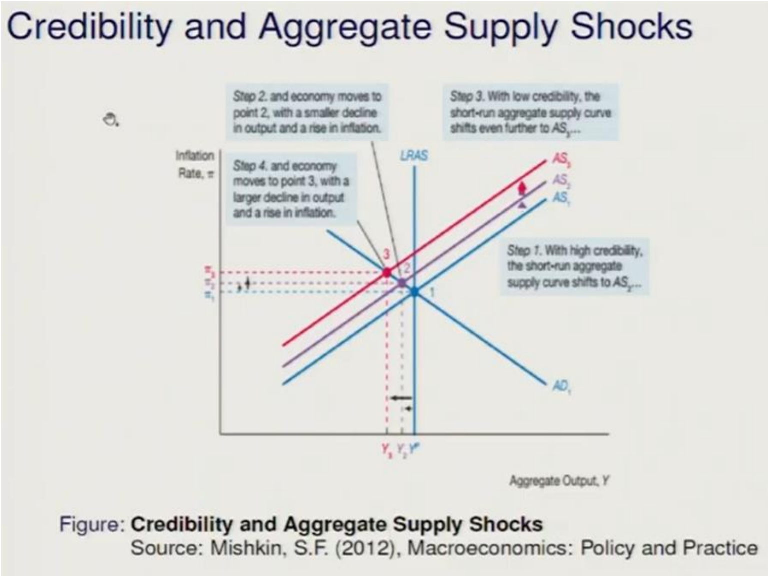

Figure: **Credibility and Aggregate Supply Shocks**
Source: Mishkin, S.F. (2012), Macroeconomics: Policy and Practice

Second is about the aggregate supply shocks, so suppose if you have aggregate supply shocks so here we are talking about credibility and aggregate. So if you have aggregate supply shocks arising in the economy so this could be for 2 to 3 reasons. One is that either the crude oil prices have gone up so this is also creating an extra pressure on the on the price increase and further inflation so here we mention about with so economy is at this point.

The aggregate supply moves upward right because of this so here we have the leftward shift of the aggregate supply, so at long run aggregate supply we here, we have the Y_p and here we have π_2. Here we are seeing that because of the policy stand monetary policy stand here this is leading to increase in inflation rate, your output is getting smaller which means that with high credibility.

The short run aggregate supply curve shift to AS_2 with low credibility; the shorter aggregate supply curve shift even further to AS_3. So if it is moving further which means that if individuals are not having enough faith on the central bank decisions and if they are not convinced enough. Then your economy may permanently move from 2 to 3 in the short run and it will be very difficult to have the scenario or reaching towards the Y_p the ultimate equilibrium is Y_p and π_1.

But because of the supply shock and because of the low credibility of the central bank the economy may not be able to move from 3 to 1, 2 to 1 it is possible and why it is not because individuals are forming the expectation based on low credibility. If they feel that the central bank decisions are not that credible then they will be forming the expectation, and these expectations will further react to the inflation wage and then you have the whole lot of disequilibrium scenarios prevailing in the economy, so this is what we always try to mention.

If you have low credible information then if you have a credible information then what happens that this equilibrium that we have disequilibrium this may move to point 1 which is much easier. But the moment has moved to point 3 then it is very difficult to revert back, and the economy must point with a larger decline in output and a rise in inflation. So this is what we have the credibility and aggregate supply shocks in the economy that we always mention.

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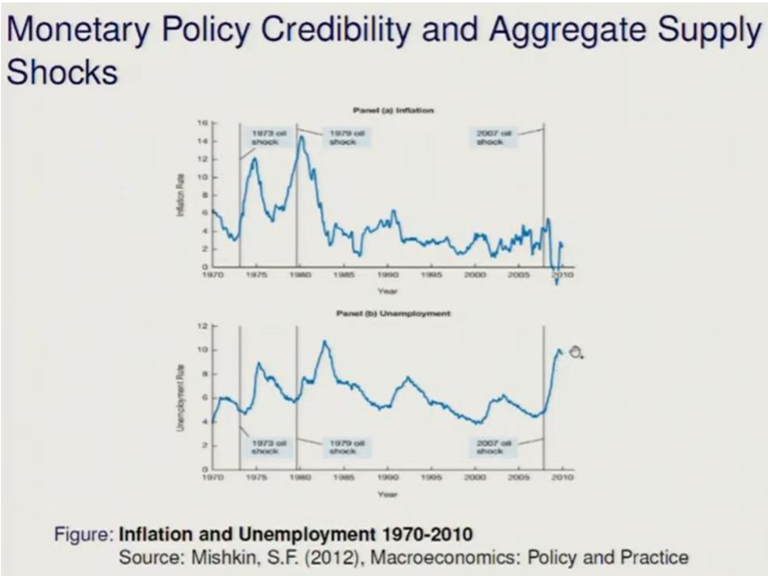

Figure: **Inflation and Unemployment 1970-2010**
Source: Mishkin, S.F. (2012), Macroeconomics: Policy and Practice

Now here we have the monetary policy credibility aggregate supply shocks. Then you will find that in most of the cases during 2007-8 as compared to the so this is the period, we have about 1970 till 2010. What we are saying is that with regard to inflation and unemployment, so a mention about inflation and b mentioned by unemployment. You will find that post 1995 the central bank I would say credibility with regard to managing inflation has been a good so there has been improvement.

Here also we can see that even post 2007 oil shock the economies have almost tried to manage this, so this is what we try and mention about that inflation rate it has not gone up. But here if you see during this part 1979 shock and 1973 oil shock, the inflationary scenarios were not having that much credible. And after that the central banks have worked on credibility and because of that they are in a much I would say a safer zone.

Such type of disequilibrium that we saw because of the 2007 wild shock we have not seen that much, so these are showing the reactions of the central bank with regard to the monetary policy.

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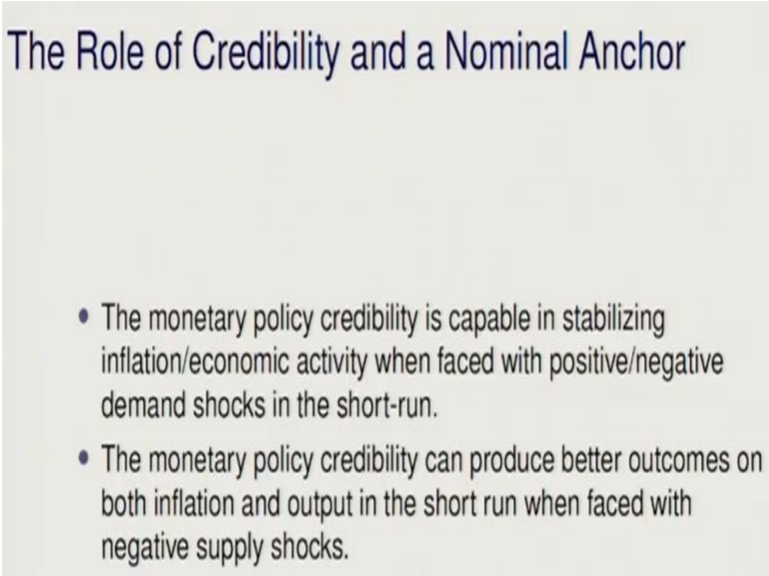

So here what we saw from the demand side and supply side, so monetary policy credibility is capable in stabilizing inflation economic activities when faced with positive negative demand shock in the short run. So this is what we have mentioned here right this talks about short run adjustment this is the long run**.** And here the money monetary policy credibility can produce better outcomes for both inflation and output in the short run when faced with the negative supply shock.

This I am talking about here that how we are seeing the adjustment here with regard to output. So, your Y-axis is aggregate output your Y-axis is aggregate inflation rate and here you have X-axis your aggregate output. There are different approaches of dealing with credibility so how central banks go for dealing with certain types of credibility scenarios, so here it is the nominal anchor.

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So here we have the approach one inflation targeting, so here we have the first we are talking about keeping inflation under control. So here what should be the approach of dealing with so the first approach which the economist always mentions is about the inflation targeting in case an inflation targeting how they do it. So, in case of India if you go on the reserve bank of India website, there you have monetary policy report.

What does this report say about the monetary policy report mentions about how what will be the direction of the inflation in future. So they will be having some short run or some kind of medium and long term targets of the nominal anchor so in most countries you have the inflation. They go for public announcement of medium-term numerical targets for inflation, they will be coming up with some reports they will be highlighting implicitly the stand of the monetary policy in future.

So, if you read between the lines of those reports then you will be able to understand. Inflation targeting should be part of the intuitional commitment as long-run strategy to ensure price stability. So this is what they have done that they have come they have set up the committee for example, in India we have the monetary policy commission committee they target the inflation target and this is for next 5 years.

And which means that the country will be targeting that kind of inflation for the next 5 years, and based on that they will be having learnings. And those learnings will be further accommodated for next 5 years and then they will see that whether we should go for higher nominal target or we should go for nominal lower nominal target. Then here you have multiple indicator approach so unlike you are just targeting the inflation that is not the right way, there are different variables playing important roles.

So maybe your economy is also facing pressure on exchange rate because if your economy is having the oil import from outside. Then this oil import may have passed through to your exchange rate and this exchange rate pass through may further have the implications on the money market financial market. So in order to understand the exact role of monetary policy it is always good to follow the multiple indicator approach.

So in most of the countries they have gone for multiple indicator approach. Then here you have the transparency in monetary policy through proper communication with general public and financial markets. So these days with the help of certain machine learning tools and you have different types of document trading mechanisms through which we can read the tone or the communication skills of the central bank, so how the central bank is communicating.

So people walk in these areas and they try to find out so central bank will always come up with a small write-up some notes through which they try to convey to the to the commoners that this is how the central bank is going to function. So maybe the auctioning of different repo auctions may also give you the signal. Increase accountability of the central bank for attaining is inflation objective.

So if the inflation objectives are if you have accountability higher then this also creates a good scenario for higher credibility. So maybe if the central bank is more credible so we are finding that in most of these countries. Inflation targeting countries are New Zealand, Australia, Canada, Norway, Sweden, Switzerland, United Kingdom, Brazil, India, Chile, then you have a Czech Republic, Hungary, Israel, Mexico, Peru all these countries are having the inflation targeting mechanism.

Inflation targeting mechanism works as a nominal anchor and then further it creates scenario favourable as I shown as I have shown here, that from 2 to coming back to 1, and from 2 to going back to 1 this is directly linked with the credibility. So, this is how it matters here, that inflation targeting becomes really crucial to understand that how certain mechanisms are really crucial to form the expectations, to control the expectations.

So most of the central bank they also conduct the household survey they try to find out that how individuals are trying to procure the information to form the expectation about futures. So if they are forming expectation about future based on just past, then how the central bank should be taking whether it is a rational expectation, whether it is adopting expectations. So what we can, so let me summarize what we have done today.

So in the beginning we talked about the different roles of the credibility and nominal anchor, and then we are now working on different approaches through which the central bank should be dealing with the higher inflation, or the better price stability scenario. So in the next session we will be talking more about this and will be taking ahead and will be also looking at India situation where we stand. So I am stopping now and thank you so much for your attention.