Petroleum Economics and Management
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Module - 12
Implication of Fiscal and Trade Policies
Lecture - 58
Crisis and Efficiency of Exchange Rate Policies

Hello everyone, I am Dr. Anwesha Aditya, offering the NPTEL course Petroleum Economics and Management. So, we are in our last module of the course that is module 12, where we are discussing the fiscal and the Implications of Fiscal and Trade Policies. And this is lecture number 58 in our course, where we will be discussing about the Crisis and Efficiency of Exchange Rate Policies.

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Concepts Covered

- The Reform Policies following the BOP crisis in India
- J-Curve Effect
- Effect of exchange rate reform

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Now, if you remember in this last module, we are discussing about how exchange rate is determined and the implication of oil price shock under different exchange rate regime. And our special at focus is on the Indian economy. So, we are discussing this issue with a special reference to Indian economy, because you see sometimes, we need to have a historical perspective also. We can learn a lot from history so, that we should not repeat the same mistake, so the oil price shock will be there.

And you see in near future India, we cannot see, we cannot tell that India will find a good substitute of oil. So, given India’s very less endowment of oil, we have to continue to import oil. But oil and oil price shock will be there, because we know that various types of event, political events, war, geopolitics and even natural calamity like the pandemic, COVID-19 pandemic can impact the oil market in various ways.

So, oil markets will be, oil price will be fluctuating, but that how that will affect our economy that we should know, because then we should learn from history, so what happened in India in 1991.

Because if you remember, we have already discussed the balance of payment crisis of Indian economy in 1991, but our purpose was only to see from the global oil market perspective. So, we discussed about how the events in the oil market have affected might have triggered the balance of payment crisis. So, we should learn from this and we should not repeat similar type of problem.

So, the because we cannot control the oil market, but what we can do, we can of course, have a control on our domestic economy. So, in this lecture, what we are going to do, we will be discussing about the reform policies which were undertaken to overcome India from the balance of payment crisis.

But once again, you see the reform policies it is itself it is a vast area. So, a lot of reform policies were undertaken. So, we cannot discuss everything. So, what we are going to do? We are going to only focus on the exchange rate reform part, because that is of our interest. Because we have seen that how the oil market can affect the domestic economy that depends on the exchange rate regime.

And one of the important reasons behind India’s balance of payment crisis has been the overvalued pegged e. We have already discussed in detail, because the overvalued pegged exchange rate cannot be sustainable in the long run. We have discussed both the policies that is selling foreign currency reserve as well as putting an exchange control. Both are not sustainable in the long run.

And in addition to this, if we have oil price shock or any external event that will accentuate or deteriorate the crisis like it happened in India. So, how India moved into an exchange rate regime change that we are going to discuss and it is not that a change in

exchange rate regime can instantaneously improve balance of payment of the country. So, what are the underlying conditions and what is the situation currently? So, these are the concepts of the ideas to be covered and discussed in this particular lecture.

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So, if we just give a brief overview of the set of reform policies and then we will be focusing only on the exchange rate policies. So, if you know the common objective underlying all the changes introduced since July 1991 in India was to create a more competitive environment, more conducive environment to improve the productivity and efficiency of the Indian economy.

Because before that as we already discussed that we followed a more inward-looking strategy, export promotion was not the focus and since at least since mid-1980s and we are earning less export revenue. But you see for a country like India which is a major importer of oil, we cannot substitute oil. So, this import bill will be high. So, only, way out to finance that import bill is to promote our export.

So, that was not a considered till mid-1980s, but after that we gradually changed our policy also. From inward looking we have gradually shifted to a more outward oriented economy and that has improved India’s productivity and export performance also.

Now, economy was also protected with lot of trade policies, lot of policies on the domestic economy also. So, how those were abandoned? Because when India faced the

crisis India had to take loans from the World Bank and the IMF, and those loans were conditional loan or tired loan.

So, those loans were sanctioned in the condition that India has to gradually open up its economy, has to undertake the reform policies. Not only the external sector or international trade sector reform, but also reforms were targeted towards the domestic economy out there.

Now, you can categorize the set of reforms into two part, one is the stabilization policy. So, the idea of the stabilization policy is to stabilize the economy in the short run, ok. So, like the policies on the exchange rate, interest rate and controlling the fiscal deficit.

Because if you remember we have already seen that a large and growing fiscal deficit was there in India then that also culminated into the crisis. So, in stabilization policy, the objective was to make the economy more stable in the short run and the policies were focused on exchange rate, interest rate and controlling fiscal deficit part.

However, there were some policies which were undertaken with a medium term to long term view. So, these are clubbed under the structural reform policies because in the long run or medium run, so the idea was to gradually change the structure of the economy from a more closed economy to open economy and to deregulate the economy. So, the objective of the structural reform policies was to accelerate economic growth in the medium term to long run.

And by undertaking policies like industrial licensing, deregulation, policies related to foreign trade and investment like oil coming foreign direct investment and the financial sector reform, because we had lot of restriction in our financial sector as an in the industrial sector also.

So, many policy changes were undertaken gradually because; you remember one thing that the economic policies are not one short. They are often taken gradually step by step because in economics we cannot do a lab experiment. So, economic policy change will affect the domestic citizens in different ways. So, these are gradually done I mean.

They are not one short policy change and you also do not know whether the policy will be successful or failure. So, you have to take a risk and you have to gradually change the policy.

Like trade policy for example, these are not one short, these are done gradually. So, India had huge amount of tariff and quantity restriction, quantity restriction was also there. So, when India became a member of WTO. So, India had to gradually reduce the tariff and change the quota into equivalent tariff.

It is not that one fine morning you abolished all the quota because your domestic economy then will not be able to adjust with the rest of the world. So, you have to introduce the changes very gradually. So, that is how we are following our reform policies.

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The Stabilization Policies

- 18 percent devaluation of the Indian Rupee vis-à-vis the US Dollar in July 1991.
- Reduction in fiscal deficit through expenditure cut, tax reforms and privatization or disinvestments of PSUs.
- Granting autonomy to RBI for maintaining internal and external balance.

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So, if we look at the stabilization policy. So, 18 percent devaluation of Indian rupee vis-a-vis US dollar was carried out in July 1991. But we will see that devaluation is a temporary as well as conditional measure. We will see the conditions which will lead to improvement in balance of payment following devaluation.

Devaluation means when by when the domestic currency becomes weaker by a policy of the government. So, you are making the domestic currency weaker with government policy, ok. This is policy induced. And the idea is when you make the domestic currency

weaker, so you become more competitive in the export market. So, export earnings will increase. At the same time, your means rupee becoming or the domestic currency becoming weaker means your dollar demand means import demand will fall because your import becomes costly. So, if price of a good increases we know by law of demand quantity demanded falls.

So, the idea is that devaluation will promote export and reduce import hence improving the balance of payment. But there are some underlying conditions also. So, we will see that as we proceed in the lecture. Second type of stabilization policy relates to controlling the fiscal deficit.

So, reduction in fiscal deficit through carting expenditure tax reform and privatization or disinvestment of the public sector units. As we have seen that after 1991, we have gone for privatization of many PSUs. And finally, granting autonomy to the Reserve Bank of India for maintaining external and internal balance.

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- Transition to a market-driven exchange rate regime along with reduction of exchange controls.
- Allowing select Indian corporates to raise funds from the international capital markets.
- Encouraging capital inflows in the form of foreign institutional investment (FII), FDI and NRI deposits.

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Now, you see transition to a market driven exchange rate regime along with reduction of exchange control was one major part of our exchange rate policy as part of the stabilization program. Then, we also talked about you, remember we have also talked about the interest rate policy. So, the policy was to allowing Indian corporates to raise fund from the international capital market and encouraging capital inflow in the form of foreign institutional investment like FDI and NRI deposit.

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The Structural Reform Policies

- Abandoning the legacy of import substitution strategy: phased liberalization of imports through tariffication of QRs, reforms in tariff structure and successive reductions of peak tariff rates.
- Delicensing and de-reservation, thereby permitting private investors to set up production units with an exception for defense and industries of strategic importance.

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Now, about the policies in the long run or in the medium run we know these are the set of structural reform policies. So, a major policy shift was making Indian economy more open. So, abandoning the legacy of the import substitution or the inward-looking strategy and we started with faced liberalization of import by converting our quantity restriction in to equivalent tariff rates, and then gradually lowering the tariff rate.

Because you see when you open up your economy means if you remove your protection, so your domestic industries which were till protected one of the major arguments behind protecting the domestic industries infant industry argument. So, after independence, you know India was setting up the domestic industry. So, when at the initial stage of setting up the domestic industries, the industries cost of production may be high. So, it may not be able to face the foreign competitors.

So, this is the protecting the domestic economy, the major argument is the infant industry argument. Just like we have to protect our infant when they are very young. So, similarly when in the growing stage of the or setting up stage of the domestic industry we have to protect the industry, but it is a dynamic argument. See, infant industry argument means gradually we should withdraw the protection; otherwise, the industry will never be able to compete outside.

But often you see there are lot of political implications also. Once the industry operates under protection, it does not have the incentive to upgrade and innovate, and it becomes

quite complex. And so, it may become at difficult to remove protection, ok. But after 1991 we started with face liberalization and we should not also remove protection at one go. So, the idea was to convert the quota into equivalent rate of tariff and then reducing the tariff gradually. Even in some lines of production we had tariff rates even greater than 200 percent.

So, after the liberalization in 1991, we started reducing the tariff rates one by one gradually, not at one go, ok. So, as we discussed. So, reform in tariff structure and successive reduction of peak tariff rates. So, these are the policies related to the international trade. Then, coming back to the domestic economy, we went for policies regarding de-licensing and de-reservation and permitting the private investors to enter the market with setting up their production unit.

And the exception, there are some exception like in the cases of defence equipment and industries of strategic importance like say nuclear power. So, these were not open, but in otherwise we welcomed a private entrepreneurs and investors to enter the market. So, we started disinvesting even the PSUs were also privatized as we discussed earlier also.

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Now, see each of these reform needs greater means if you want to have a more in-depth analysis. So, you should go for a course on Indian economy, but we do not have time. So, we are just telling you roughly what are the policies we cannot go into the detail of any policy measure. So, that will take another module at least or even more than that.

Coming back to the financial sector reform in the as part of the structural change or structural adjustment program, we see that entry of private bank, both domestic and foreign banks were allowed. So, banking sector reform is a major financial sector reform and then mutual fund and other financial intermediaries were also allowed to enter the market.

And we empowered banks and other financial institutions to fix their lending and borrowing rate or the deposit rate and except for the short-term saving deposit. And one major step in the financial sector reform was setting up of the SEBI, the Securities and Exchange Control Board of India for making the private equity and bond issue very easy and rule based and proper functioning of the stock exchange to be transparent. So, these are the reforms, the structural adjust adjustment programs.

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Crisis and the Effectiveness of Exchange Rate Policies

Nominal Devaluation:

- Only a short-term or temporary measure.
- It improves the trade balance only if the Marshall-Lerner (sum of import demand elasticity and export supply elasticity is greater than unity) condition is satisfied:

$B = (P/e).M* - P*M

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Now, we cannot devote more time on the reform policies rather our point of interest is only the exchange rate policies because that is directly related to the events in the global oil market. Because we have already seen in the second lecture of this module that impact of same oil price shock that means, sudden increase in oil price will have different implication under different exchange rate regime.

Under clean float only the domestic currency depreciates. Under dirty float domestic currency depreciates and if the central bank wants then reserve will run down. But in the overvalued pegged e we have seen that entire shock in the global oil market will be

absorbed by change in the reserve. So, reserve will run down faster. And otherwise also without the shock in the oil market also we have seen that overvalued pegged e is not sustainable. We have discussed it in detail in the previous lecture. So, I am not going to elaborate on that.

So, in addition to this overvalued pegged e if you have oil price shock situation become means even deteriorating so, balance of payment or the reserve will run down even faster. So, what are the policies undertaken to correct this? First as we discussed that we have gone for nominal devaluation in 1991, even before that also in the 70s, 80s also we did some extent of devaluation. But devaluation is only a short time or temporary measure because you see if you draw this overvalued pegged e.

Suppose this em is your market determined e, and this is your overvalued pegged e bar. Now, if you devalue your currency, suppose you make it from e bar to e dash, you see then again it is not that your entire excess demand for dollar is wiped out. Again, this excess demand for dollar remains, right. So, it is a temporary measure. You cannot correct your entire balance of payment problem right. So, it is a short term or temporary measure.

And as I also mentioned that if you remember in the class where we discussed the dollar demand and dollar supply curve and how the equilibrium is achieved, we mentioned about the Marshall Learner condition which tells that a sum of the import demand elasticity and the export supply elasticity of the foreign home country should be greater than 1. So, epsilon star is basically home countries export supply elasticity which can also be interpreted as foreign countries import demand elasticity, ok.

So, if the sum of the home countries imports demand elasticity and export supply elasticity if that exceeds 1, then we say that the Marshall Learner condition is satisfied. So, unfortunately due to lack of time I cannot do the proof over here. So, this is how you can write the trade balance condition. So, this is the difference between the value of import and value of export, ok.

So, you can see how whether trade balance will whether devaluation or making the domestic currency cheaper or weaker. How that will lead to improvement in balance of payment that finally, depends on satisfaction of this Marshall Learner condition. So,

devaluation will improve the trade balance only if the Marshall Learner condition is satisfied.

Now, if you remember when we draw, we have drawn the Marshall Dollar supply curve upward rising, we already assume that epsilon star is greater than 1. So, if epsilon star is greater than 1 of course, this Marshall Learner condition will be satisfied. But that may not necessarily be the case because if you remember we have also mentioned that if your epsilon star is less than 1, we can have a backward bending dollar supply curve, so where the epsilon star varies, ok.

So, that means, if epsilon star is less than 1. So, dollar supply curve it becomes downward sloping. So, if your dollar supply elasticity varies your dollar supply curve may not be throw out positively slope. So, that means, what? That means, if you are exporting the goods and services which are inelastic in supply. Like say agriculture products.

And if you are also importing products like in petroleum which is again inelastic which has inelastic demand. So, what will happen? So, there is if there is sum is less than 1, Marshall Learner condition will not be satisfied. So, that means, what constitute your import basket and export basket is very important. See, in the import side you cannot help because for a country like India till now we have to import lot of oil which is inelastic in nature. So, epsilon is less than 1.

Now, in the export side; that means, if in the export side also if you have inelastic supply products. So, like say agriculture products, primary best products, they have inelastic supply. So, for this product also if your import basket and export basket constitute inelastic product there is a chance that there some may be less than 1. In that case, Marshall Learner condition will not be satisfied.

But if you have more elastic supply product, like for example, see the high technology intensive product, air craft pharmaceutical products those which are R and D research and development intensive, high quality products which have elastic supply. So, that means, if your export supply is greater than 1. So, of course, you see the Marshall Learner condition will be satisfied.

So, for a country like India we cannot help with the import demand because we have to import lot of oil. So, one of the major policy focus for India should be to introduce more and more high quality variety differentiated product, technology intensive product to be included in the export basket.

Because till now you see we run a trade deficit. Till now our value of import exceeds our value of export. So, promoting export and including more quality differentiated high quality, high variety differentiated product in the export basket should be a major policy target for India, and we are doing so.

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- A devaluation (raising the pegged rate) raises $B if

$$\varepsilon + \varepsilon^* > 1$$

- Note, if $S curve is upward sloping, this condition is satisfied and hence devaluation improves trade balance.

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Because you can see the policies like make in India actually focus on improving India's export performance. So, now you see that is what we discussed that a devaluation will improve balance of payment only if this condition is satisfied, ok. And if dollar supply curve is upward rising, so the condition is already satisfied.

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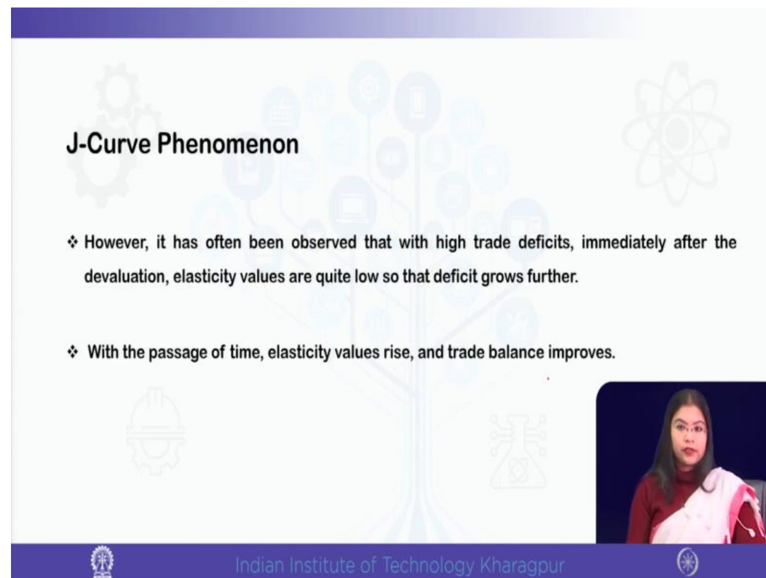

However, as I mentioned that it may not always be the case. So, if your import and export basket constitute inelastic product. So, after the devaluation, what will happen? If the elasticity values are quite low and you start with high initial trade deficit. So, this condition epsilon plus epsilon star greater than 1, this becomes even more stringent. So, it is difficult to satisfy, and after devaluation trade balance may even deteriorate rather than improving, ok.

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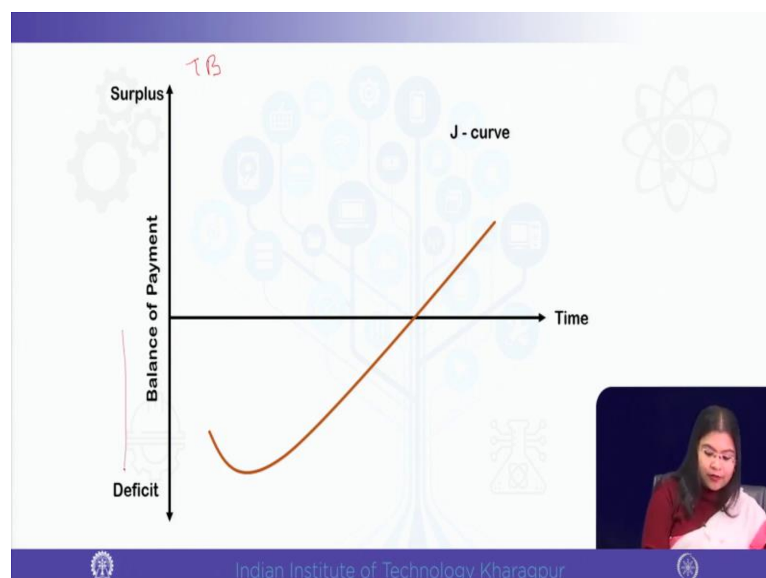

So, if we plot trade balance of a country. So, in the vertical axis we are plotting trade balance like the value of export minus the value of import over time, often we see the movement in trade balance over time look like say J, the later J. So, this is called a J-curve phenomenon. So, after devaluation the trade balance initially can deteriorate. And after some passage of time with time it can improve. So, this is the famous J-curve.

So, you see as long as your sum of elasticity the import demand and export supply elasticity is less than 1, what will happen? The trade balance means a devaluation will lead to deterioration of trade balance. So, trade deficit increases. So, you are in this negative quadrant you see trade deficit increases.

But with passage of time over time as your import and export basket change, ok as the elasticity values increase, trade balance can improve. So, devaluation leading to improvement in trade balance that is conditional that depends on the elasticity values.

So, you see how this is important for India because in the import site, in the near future we cannot replace oil, but although we have started with, if you remember we have started a lot of experiments and we also are focusing on shifting to renewable sources of energy and ethanol blending.

But till now we have to import oil. So, what we should do? We have to focus on our export site. We have to include more elastic products in our export basket, so as to achieve this upward rising part in the J-curve where we have trade surplus, ok.

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Exchange Rate Policies

Major changes in the exchange rate policies introduced as part of the stabilization programme:

- Major devaluation of Indian Rupee during June-July 1991.

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LERMS

- Liberalized Exchange Rate Management System (LERMS), often called partial convertibility of Rupee, was introduced in 1992 and was carried out in 2 phases:

I. In phase I, effected on and from March 1, 1992, a 40:60 rule of converting foreign currencies into rupee was introduced.

II. In Phase II, effected on and from March 1, 1993, the 40:60 conversion rate was replaced by 0:100 percent formula.

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Now, with this background we see what were the exchange rate policies undertaken in India as I already mentioned. The major devaluation of Indian rupee during June and July 1991, and a switch to the managed float or dirty float from the overvalued pegged e. But as I mentioned this type of economic policy changes these are not often one short, but these are done in step by step.

So, this switch to the dirty float or managed float from the overvalued pegged e was again done in two phases. So, this is known as the liberalized exchange rate management

system or the LERMS. And this is often called a partial convertibility of rupee that means, convertibility in the current account and this was introduced in 1992, and it was carried out in two phases.

You remember in till 1991 we had unified peg regime. In 1992, what we did we allowed a 40-60 conversion formula. What does it mean? As we already saw that in 1991, till 1991 we followed the overvalued pegged e, so there was the official exchange rate and the exporters had to convert their export revenue into the official exchange rate.

But as we saw that may lead to with exchange control the overvalued pegged exchange rate can often lead to black market. So, what we did? We started abandoning this overvalued pegged e. So, we allowed the exporters were allowed to convert 60 percent of their earning into the market rate and 40 percent in the official rate. So, you can see this phase 1 in 1992 can be interpreted as a dual exchange rate regime.

So, you are allowing a 60-40 conversion rule. Suppose you are exporter so, you can convert your export revenue that means dollar, 40 percent of your earning into the market rate which is often higher than the official rate. So, and the official rate you can convert only 40 percent.

And in 1993 this 40-60 formula was completely replaced by 0-100. So, that means, what? That means, the official market ceased to exist in 1993. So, that means, entire export earnings could have been converted into the market rate. That means, 100 entire 100 percent could be allowed to be converted in the open market.

So, the official market ceased to exist. And with this the Hawala market that is the black market for foreign exchange also ceased to exist because you are actually legalizing the black market. So, you are legalizing the illegal transaction. Because you no longer have a fixed exchange rate overvalued pay exchange rate and exchange control that was leading to a leakage of your export earnings. So, you abandon that policy.

So, you see that the switching from the overvalued pegged to a dirty float or managed float was done via the lamp system. So, first we moved in 1991. You can write here. So, in 1991, till 1991 we had a unified pegged e. In 1992, we had a dual exchange rate, dual e where you had a 40-60 formula, 40 percent at the official rate say e0 and 60 percent at the market rate say em.

And finally, 1993 there was no more of official rate, so 100 percent was allowed. So, unified market determined. So, we switched to a dirty float. It was market determined, but as we know that in dirty float or managed float the monetary authority can interfere if it feels so.

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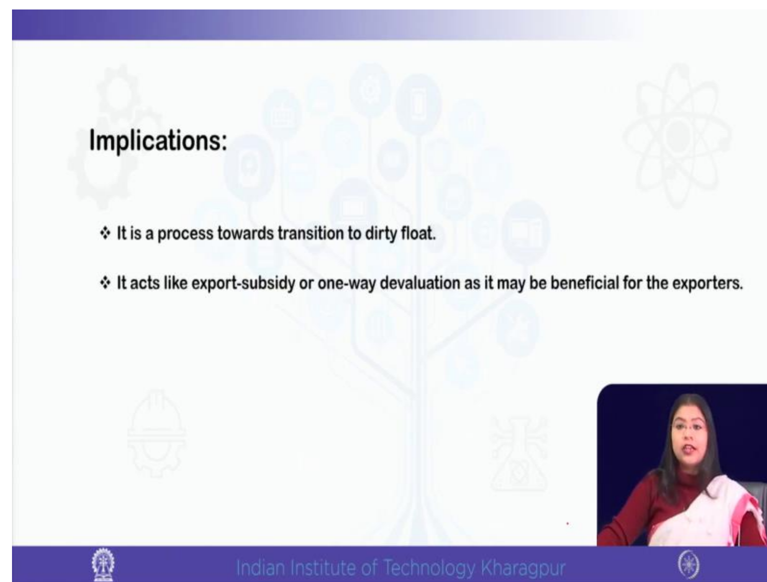

So, that means, for; that means, no longer we have in build balance of payment crisis in our exchange rate system. So, if there is now oil price shock occurs, which increases India's import bill and dollar demand increases, will not run into a balance of payment crisis because e can depreciate. And if the level of depreciation is too high then only RBI can interfere. So, it is a process towards transition to dirty float. And this LERMS is often called one-way devaluation or it acts like export subsidy.

See, I mentioned that devaluation means exports become cheaper and imports become costlier. Now, in LERMS you are only targeting the exporters. So, exporters are actually getting a higher return because they can convert their currency into the market rate. So, it is you can also think or interpret it the LERMS system as an export subsidy or one-way devaluation because it is not targeting the import sector. Only, the it is focused on the export sector.

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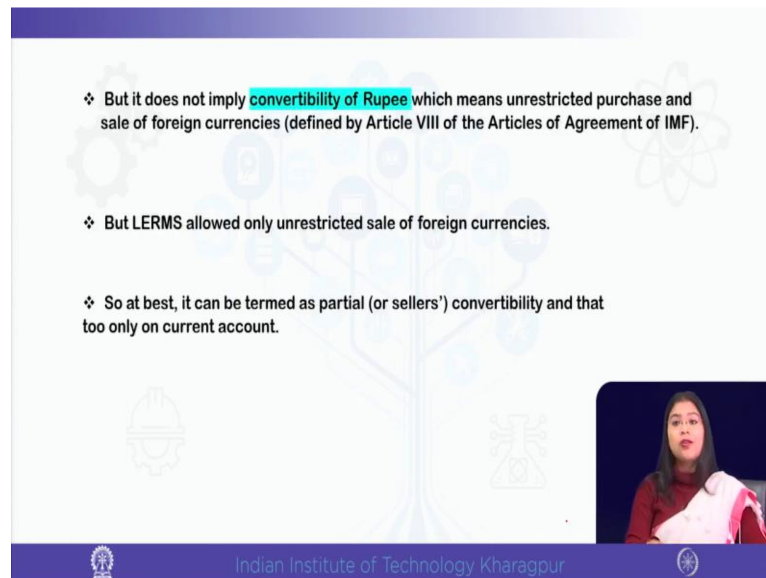

However, this LERMS does not necessarily imply convertibility of rupee. What do you mean by convertibility? Convertibility means unrestricted purchase and sale of foreign currency as defined by Article 8 of the Articles of Agreement of the International Monetary Fund.

But LERMS only allowed unrestricted sale of foreign currency not purchase of foreign currency. So, we can interpret the LERMS system as at best it is the partial or seller's convertibility and only on the current account.

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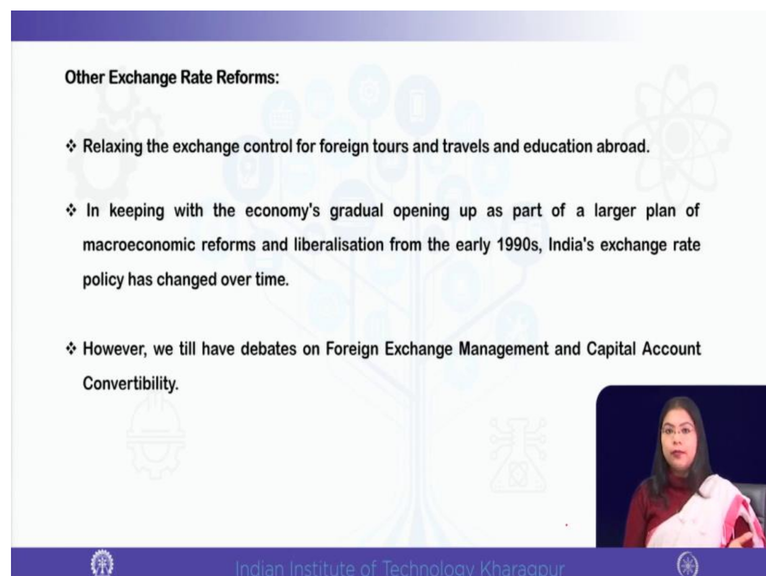

So, till now see in the capital account we do not have full convertibility and apart from switching to a dirty float via LERMS. So, what were the other exchange rate reforms that were undertaken during this 1991 period? So, one policy was relaxing the exchange control for the purpose of foreign tour and travel and education abroad. Nowadays you see, foreign education or foreign travel has become very common even for the middle-class people. So, earlier it was not there. So, the exchange control is relaxed now.

Second policy was in keeping with economics gradual opening up as part of a larger plan of macroeconomic reform and liberalization from the early 1990s. India's exchange rate policy has changed over time. However, as I mentioned we still have debates regarding whether we should allow full capital account convertibility because that might lead to a sudden outflow of our foreign investment. So, till not, we do not have full capital account convertibility and also, we have debates on the Foreign Exchange Management.

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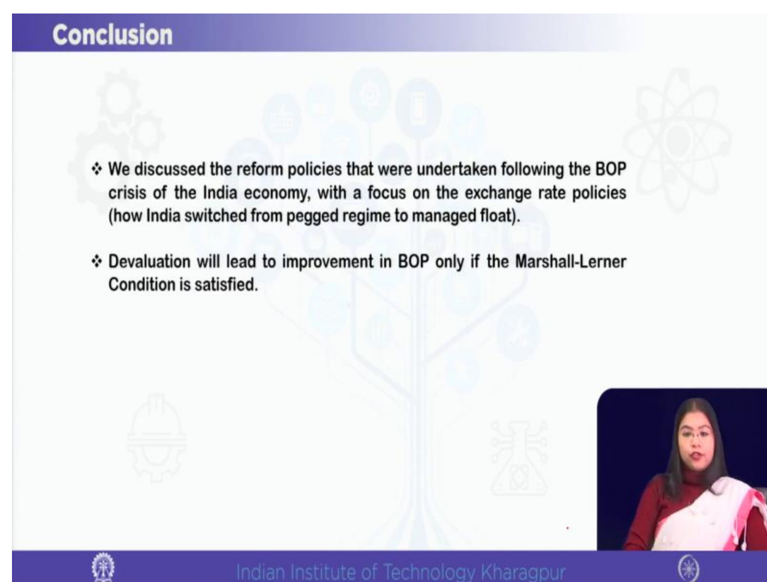

So, in this particular lecture, we discussed what are the reform policies that were undertaken to overcome Indian economy from the 1991 balance of payment crises. Now, it is a vast means lot of reforms were taken at the international level means India's trade policies as well as with a focus on the domestic market like the financial sector reform, banking sector reform, the industrial deregulation. But we could not discuss all the policies because of time constraint.

Our focus was only with respect to the reform in the exchange rate policies; how we switch from the overvalued pegged e to a dirty float. Because we know that the exchange rate policy the exchange rate regime is so much vulnerable to the oil price shock. So, oil price shock will have different implications under different exchange rate regime. And till 1991 we had the overvalued pegged e which had inbuilt balance of payment crisis. So, finally, we have to abandon that.

But we did it in stage by stage. So, we discussed how we went we switched from overvalued Pegged e to the managed float via LERMS. And we also discussed the effectiveness of the devaluation policy. So, devaluation can only improve balance of payments, only if the Marshal-Lerner condition is satisfied. But we see that for that we need our import and export basket to include items which are more elastic in nature. But unfortunately for India, since we are importing lot of oil and that is in elastic.

So, in the elasticity side, in the import side we cannot help. So, what we need? We have to make our export basket contain more elastic products. So, our export supply should be more elastic. So, we should include more high technology variety differentiated R & D intensive products.

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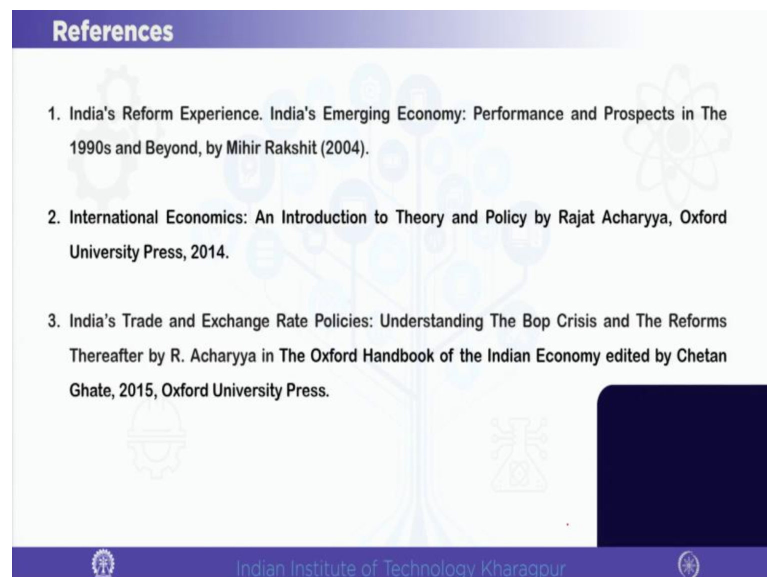

So, as I mentioned already regarding the references for the exchange rate part, you can follow any standard textbook on International Economics or open economy macro

economy and for our purpose since we focused on the Indian context. So, we followed these three references as I already discussed in the last in the previous lecture.

So, thank you very much. See you in the next class.