Strategic Trade and protectionism Theories and Empirics

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Lecture – 23
Terms of Trade with Cases

Welcome friends once again to the NPTEL module on Strategic Trade and protectionism Theory and Empirics. In last 21 lectures we have almost done with the theoretical section of trade, but still there are other tariff related theories are left. We will take it forward in the next week onwards, but this lecture today's lecture specially on offer curves and its connection a terms of trade.

So, this is to a lecture number 23 were in an week number 5, where we are explaining offer curves. And its connection with terms of trade which we already explained offer curve, in its derivation shaped, movement in detail to define the international equilibrium price or terms of trade. Now, we are emphasizing on the terms of trade which are defined through the offer cover analysis with some cases. We are now explaining terms of trade with cases.

So, myself Dr. Pratap Mohanty from IIT Roorkee. I teach with the Department of Humanities and Social Sciences. So, once again what are the terms of trade? Terms of trade simply is a index of export prices to import prices in to 100. This is what is written here as well. The ratio of prices of export nations export community to the prices of its import commodities.

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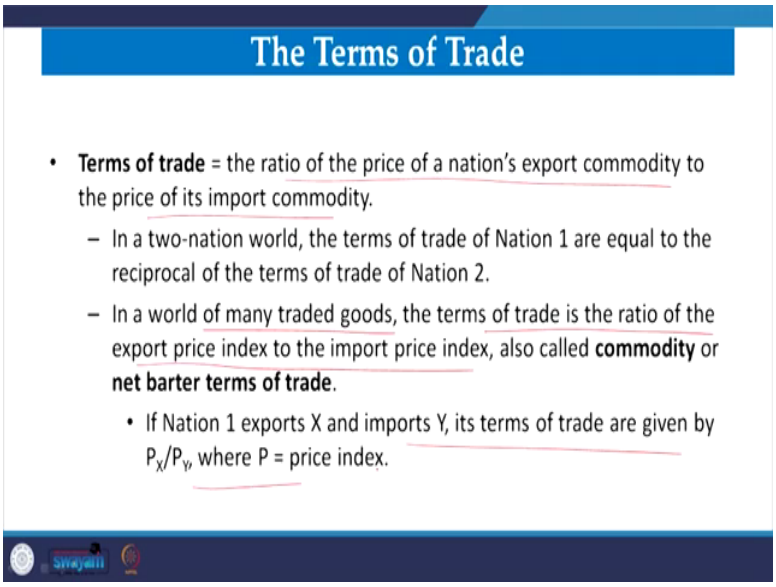

So, in a two world nation terms of trade of nation 1 are actually equal to the reciprocal terms of trade of nation 2; if there are only two nations exchange. But in reality there are no two nations there are so, many nations where we are simultaneously explaining their terms of trade. Now, broadly it is explained with commodity terms of trade or net barter terms of trade. In a world of many traded goods the terms of trade is the ratio of export price index to the import price index and these are also called net barter terms of trade, because we are concerned with the commodities exchange.

So, nation 1 export X and imports y the terms of trade is given by P X by P Y where P is the price index.

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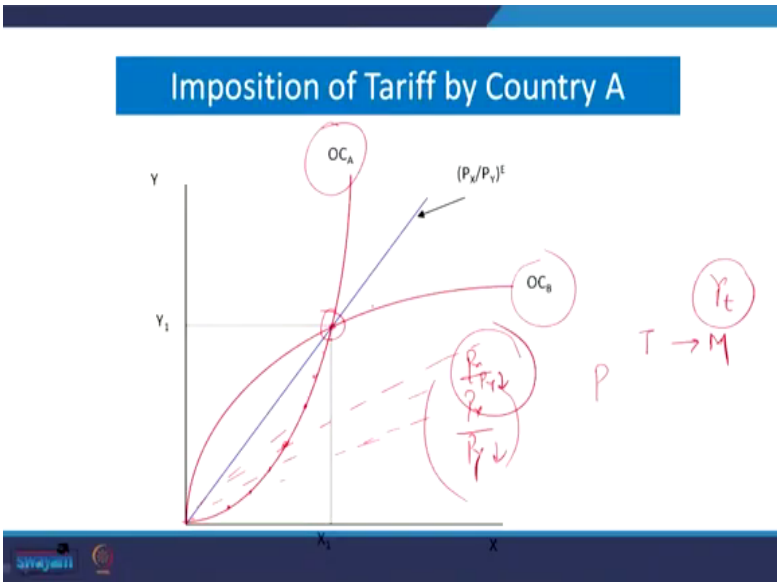

So, we are now trying to understand our self; that terms of trade which we have explained with the help of power graph defined at a point or at a specific equilibrium price where both the countries settle their transactions and countries define the best possible contract by which the trade. So, this is the point defined in this diagram and these are possible with the help of offer curves.

So, offer curve of A and offer cover of B. If we remember in the last class which we discussed the offer curve have different regions to shift and have various factors for its different shapes may be flatter, may be steeper. Now, imagine if offer curve is like this at the initial stage these points gets changed due to the fact that we have different you know; price line. Higher the price line higher the points this backward banding upward sloping ah, but you know banding after certain time now, these are due to higher P X by P Y is not it.

Now, what I am trying to emphasize here; due to you know certain reasons now, these regions are defined as per the following. Now, we say that you know if there will be tariff imposed by country A. So, if tariff imposed by country A is there so; that means, you know higher the tariff on tariff is usually on the imports which you have said earlier and we discussed this number of times even, when impose on or imports I mean tariffs is impose on imports or Y is attach with a T term.

If tariff is imposed with imports now, the demand for you know in the internal demand for imports actually declines. Now, this has led to less price of imports the internal market. So, P X by P Y; P Y actually falls this one P X by P Y every time P Y falls given the export prices. So, relatively the export price is to import price actually increases, when there will be; when there will be tariff imposed nation 1 or nation A. So, therefore, there will be shift I mean; the price line will be actually changing.

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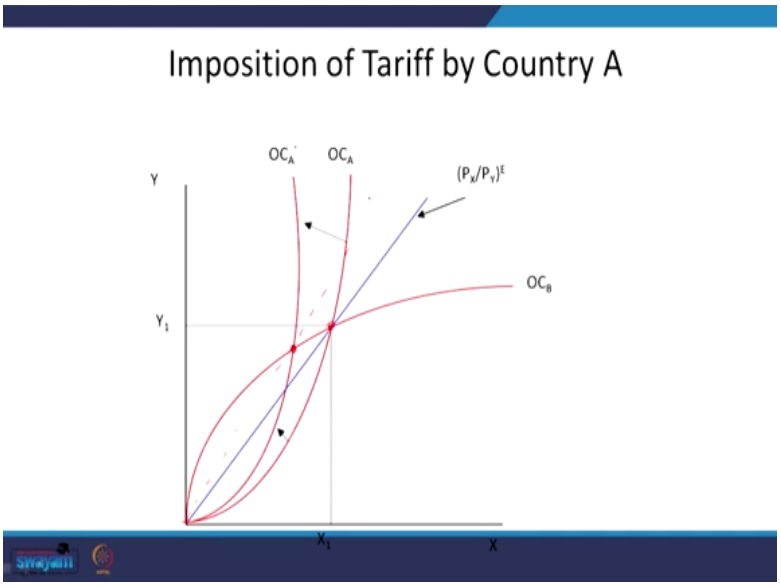

So, given the tariff imposed by nation A so, therefore, the offer curve offer actually be shifted. Now, you can find out this is the point now, it, it is given this it is responsible with another equilibrium point, with the new. Because you know now the this is another line P X by P Y; Y relatively P X is higher than that of P Y. Now, this just the reverse may also happen, by another country may also impose tariff is there will be you know retaliation usually, what happens? The tariff is retaliated.

If there will be retaliation then again they boiled down to a newer price level and there will be settlement. So, this has led to less demand and in other country. Now, given this fact the country may not able to actually willing to export less. Because of the fact that I mean, you know price is charged by higher as a higher rate in domestic country in the internal level total demand is not there.

So, therefore, the you know offer curve of country A will be shifted towards left. Now, with this we have already explained this is P X by P Y at the new equilibrium point shifted towards left and reaching at a new equilibrium point.

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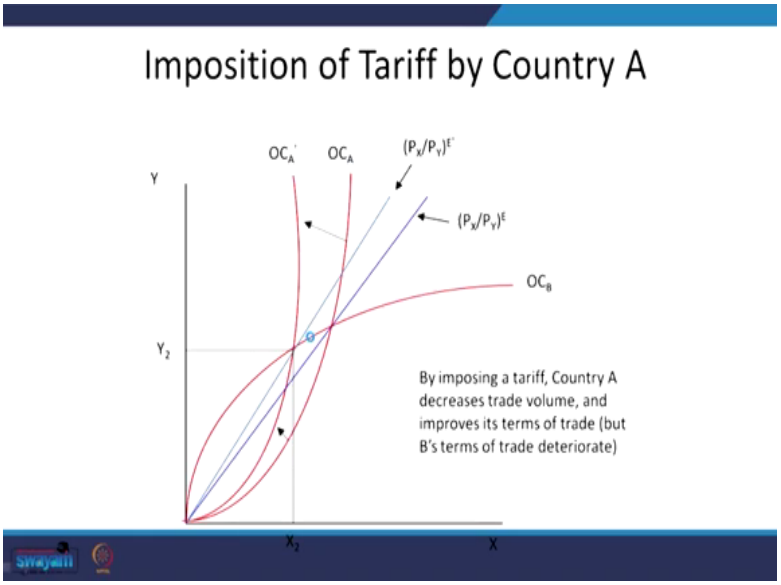

So, let us come back to the interpretation once again. So, by imposing a tariff the country A actually decreases trade volume by import and improve his terms of trade. But B terms of trade deteriorate. Why did so? Because its less demand in the international market, ok. In the international market the terms of trade actually declines. When terms of trade of A increases, the terms of trade of another country actually declines.

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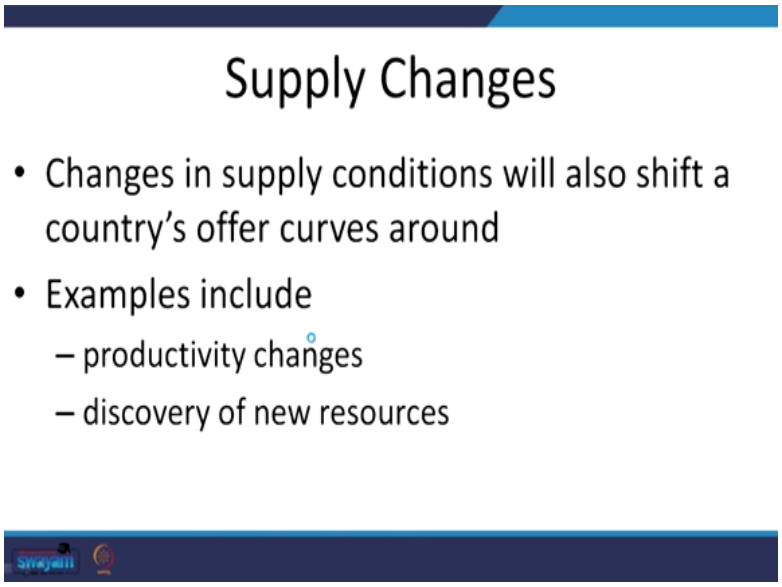

So, therefore, there will be supply changes. So, changes in the supply conditions will also shift countries offer curves around. So, I mean due to tariff productivity also changes. So, and due to tariff or even due to you know its internal factors, new innovation, new resources discovery, terms of trade also gets changed.

Now, one such examples in front of us is the following. So, we have you know we have already experienced 1970s oil crisis issue, oil shocks not crises oil shocks in the world market especially after the OPEC formation OPEC formation in the gulf countries and in middle east countries; where they form an you know cattle, a group and be form that you know they impose you I mean; they charge higher prices for their oil exports.

Now, which has led to huge impact for the industrialized country and therefore, the impact on the industrialized is countries are, are expected to be you know imposed in a different you know, negative manner actually it (Refer Time: 08:45) of their terms of trade.

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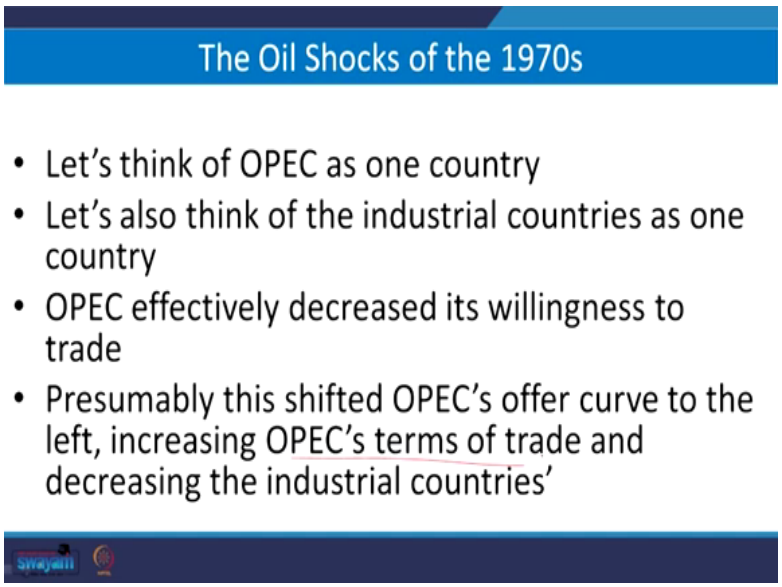

So, OPEC effectively decrease its willingness to trade as I just said, which as actually presumably shifted the OPEC offer curve to the left. Because, of the fact that there are impose higher you know taxes on their product and their exportable products are actually charge with higher prices. So, increasing OPEC terms of trade, because they charges high prices and decreasing the industrial countries one.

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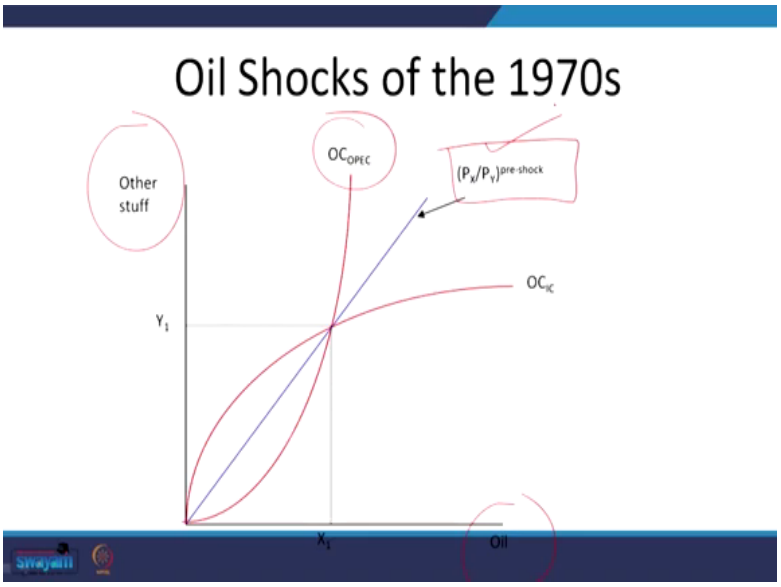

Now, if we are saying oil is here presented in this diagram and other stuffs are here for the OPEC; what is really important here? Now, OPEC term you know OPEC offer curve is presented in this offer line offer curve and this is the price line the or the you know, relative prices of export or import before the shock. This is pre shock you know, price ratio or the terms of trade. Now, based on these then this is basically industrialized country I C stands for industrialized countries now, this is this stands for OPEC countries.

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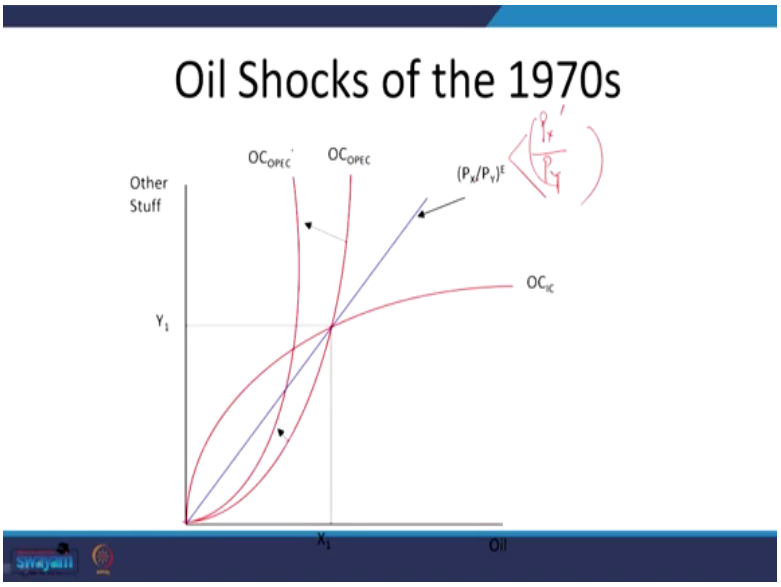

Given this fact; the countries are I mean the OPEC countries are now charging higher prices. So, P X straight way in this case P X the new P X by P Y P X is higher than that of the given P X by P Y before trade or pre shock and post stock prices are different therefore, offer curve shifted towards left.

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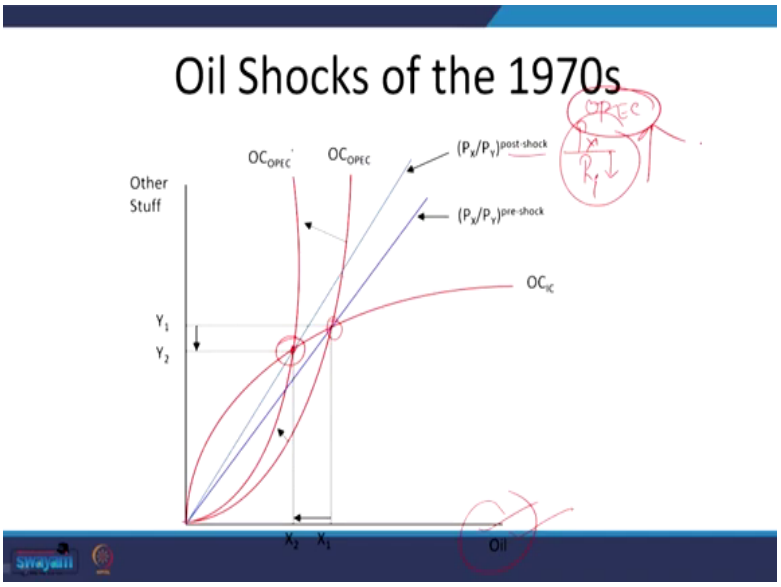

Now, since you know the post shock impacts are very huge and that has led to due to post shock impact you know, it is not may not be charging higher, but when the OPEC was formed so, they control the supply so, that is a list of some kind of other shocks and the parties are other parties the importing country for the oil are ready to you know, imported I mean; at a higher prices (Refer Time: 10:58). Now, in this context since we are taking oil here for the product for the OPEC country or I mean; the offer curve shifted towards left we arrive into a new equilibrium point.

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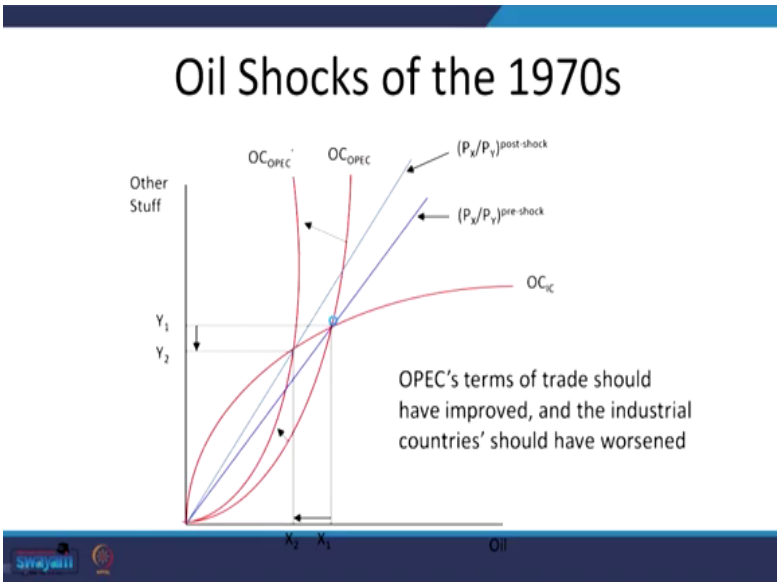

Now, so, OPEC terms of trade should have actually improved or we wanted to say here, this would have actually improved. Why improve? Because of you know there are certain shocks whereas, the you know industrial countries actually detracted and their terms of trade you know have been detracted.

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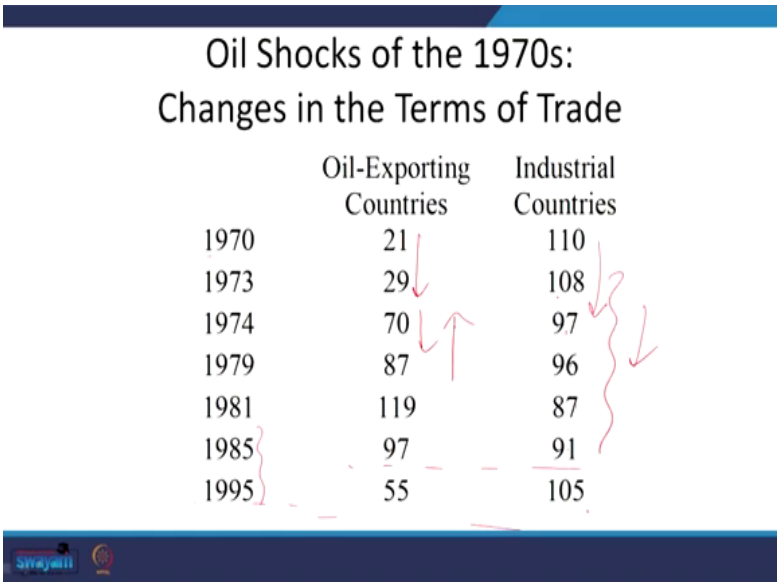

There are certain some examples where we are you know collect collected the information from different books. Here is the example from 70s onwards now, you can see study rise; rise in the oil exporting countries and their prices. I mean; the terms of trade, where the industrial country is actually declined. I mean just the reverse look at the differences actually, reverse here there is bit of rise here there is a fall, I mean; if you look at the numbers.

But very recently again due to many other reasons, due to American strategy due to oil reserves captures and due to over you know supply oversupply of you know, oil recently that is led to specially 95 1 that has been there has been a fall again. There are other regions which are responsible for the trends of change in the terms of trade.

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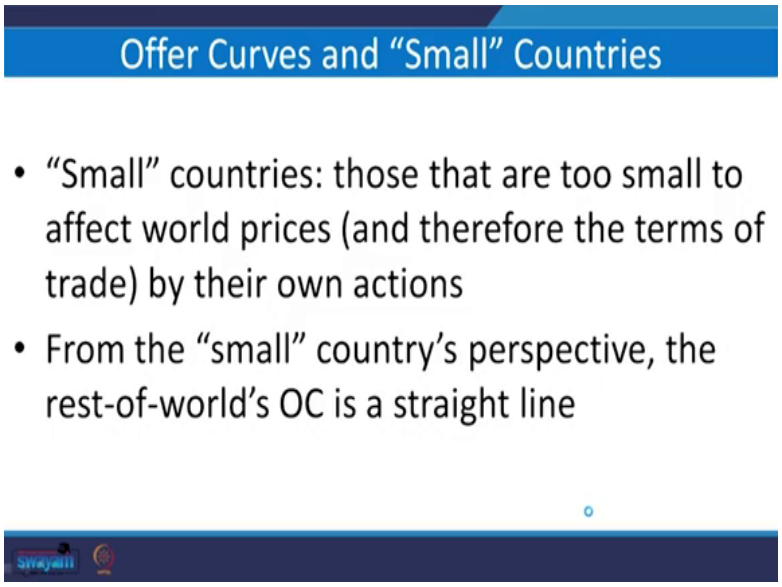

But that 1970 is very important for the country I mean, countries across the world because, the OPEC has given a strong you know impact us in terms of change in the terms of trade. Now, either another most important argument before us to examine especially as a case of terms of trade and their changes.

Now, already said the terms of trade actually gets changed due to various reasons; demand side factor, supply side factors and there are you know many shocks; external shocks, internal shocks and the policy changes again those regions are responsible for change in the either demand side or in the supply side. So, that can this can be understood. Now, one such example can be unveiled with the help of you know with the help of small country nation.

We have in our syllabus also we mentioned small country versus large country set off, in case of small country; first attention to a small country argument is the following. Small country

where we are referring to their you know, their impact on the world prices. So, and their impact on terms of trade and, small I mean; you know either their domestic demand or the kind of you know policies they suggest may not be impacting too much on the world prices.

Usually country impact you know the world prices to through tariffs and some certain non tariff measures. Now, in this context; so, small we mean they are capture in the world demand and world supply. So, in the from the small countries perspective, we are referring to the rest of the world in terms of offer curve now, we are saying for the rest of country offer curve is straight line, because of the fact that we usually take prices for different countries.

So, rest of the world offer curve is straight line because the domestic country cannot able to impact by changing certain taxes on the products they are importing. So, therefore, there is no impact on the world prices. So, world prices whatever is there from the you know I mean from small countries perspective world prices is actually going to be constant.

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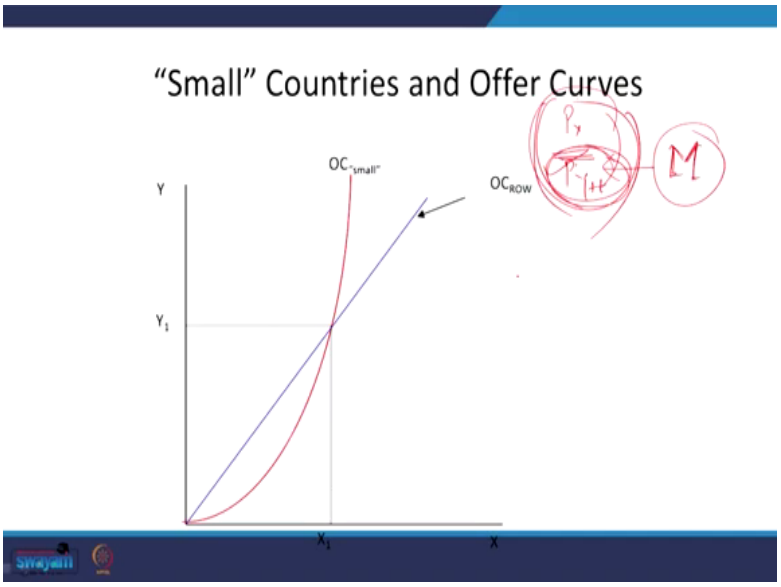

So the so, even if they are imposing like you know P X by P Y was trying to say it like this. So, even if the impose that you know velocity tariffs on imports as rest of this falls, but we are not trying to find out in terms of ratio directly after tax we wanted to find out the impact of their tariff on the imports and I mean, does it have any implications on the import demand.

In the world of our import demand is not going to change, or the import I mean; demand is not going to change due to tariff on the impose raised by the small country. So, therefore, the prices of imports is not going to change or the prices why is not going change because so, this is going to be constant.

So, when the tariff is impose on the imports by a very small county let it be Nepal. So, it is not going to impact though you know price terms of trade. Because the import prices are not going to be changed so, therefore, the ratio since it is constant since they are changing P Y

trying to change P Y, but it is not going to change this is the whole equation will be constant whole you know index will be constant. So, therefore, the world price is terms of trade is going to be constant.

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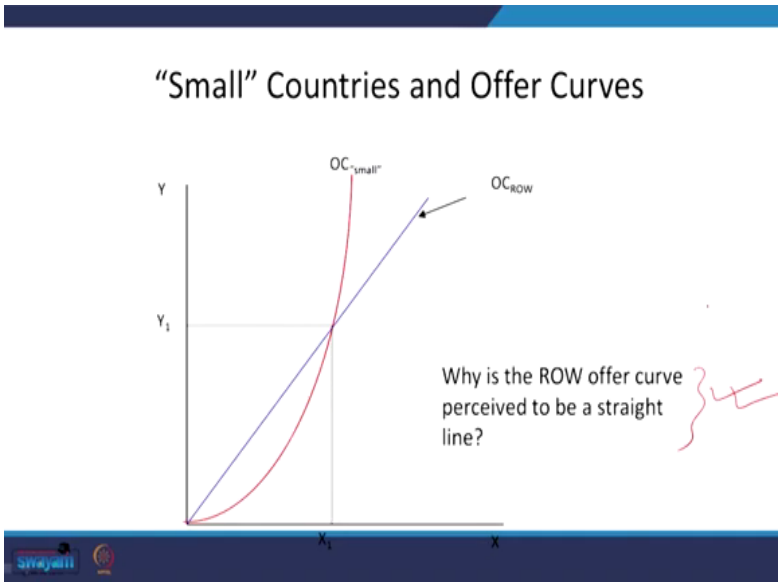

So, why is the rest of the world offer curve perceived to be a straight line? I mean; is one of the reasons behind it. So, now, quest there will be a number of questions maybe in the objective as well as in the descriptives is expected to be asked, if a country concern is a very small one and the country is imposing you know tariff on its imports now, what is going to be you know; what is the offer curve for the rest of the world offer curve of rest of the world?

Offer curve the rest of the world is not going to be changed, because the P X by P Y is not going to be changed and, this will be constant.

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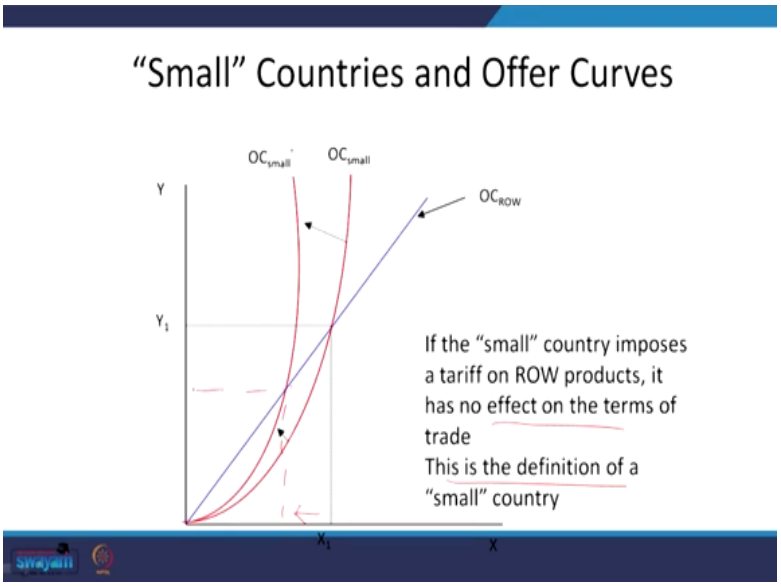

Now, if the small country if the small country imposes tariff on the rest of the world product it has no effect on the terms of trade. So, the terms of trade is not going to be changed as I already said. So, therefore, the offer curve for rest of the world is going to be constant. If the small country imposes a tariff on rest of the product it has no effect on the terms of trade this is the definition of a small country and precise the answer behind the questions we have raised.

Now, the small country and the offer curve context which have already you know unfolded questions are like this; what is the optimal tariff for a small country? This is one of the important question.

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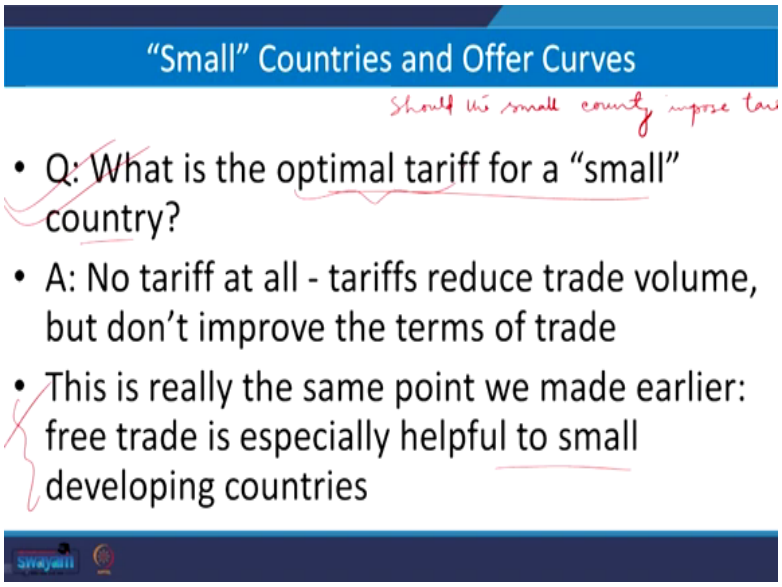

Now, first answer is no tariff at all at all terrific I mean; no tariff at all tariff reduce trade volumes, but do not improve the terms of trade. So, therefore, the small country should not actually impose tariff, because it reduces the trade volume, ok. If tariffs temporarily they term I mean; the trade volume reduces, but it is not improving the terms of trade. So, better this would not impose tariff.

So, this is also really the same point we made earlier. So, which is basically free trade is especially helpful to small and developing countries. So, therefore, the small country now, another question arises here very very important should the small country, should the small country impose tariff country impose tariff. The two reasons to believe one is it reduces you know volume of trade it also you know reduces their consumption market and it is not at only

improving their terms of trade. So, this is one of the very very important question, we must try to explain as detail as possible.

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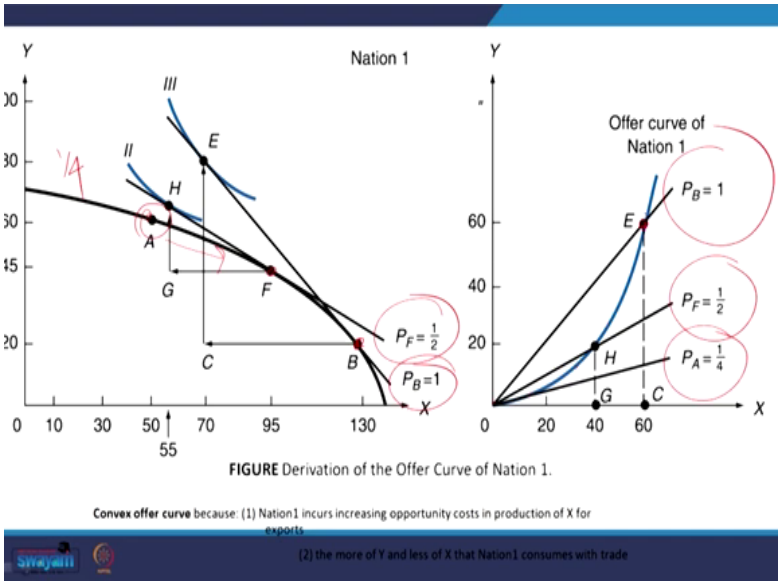

Now, the small country context can also be explained with the help of diagram, but now there are other approaches to talk about optimal tariff we may also discuss in the next class with certain other examples. So, optimal tariff is in the small country context is a tariff we are running with. Once any tariff is imposed their tariff must be continued within the same country there should not change any kind of further restrictions. If they do it might be problematic for them.

Now, look at the last country context; now, just the reverse in case of last country context if they impose tariff. What is going to happen? They can you know demotivate the imports. So, if they impose tariff so, the prices of in the world market imports falls so, the prices of you

know import reduces; however, P X by P Y actually increases. That will lead to I mean; or that will lead to shift in the; shift in the offer curve towards left. For the country context likewise we just discussed. If they are now last country OPEC itself now defined as a country. Here this is the one we discussed.

OPEC now is not no more a single I mean; like let it be South Arabia, Arabian you know all your Iraq, Iran those countries are not necessarily individually determining now, after the formation of OPEC now, they jointly take a stand and jointly impact the world prices. Now, here we are saying the imposed taxes on the imports by other countries or that impose you know or increase their prices of the products so, they are a P X actually increases. So, they can influence the world trade.

Similarly, just the reverse if the instead of OPEC if you are trying to explain any product, but the country is very large like; India and China especially in the hardware manufacturing sector, India is the largest importer whereas, the software segment where the exporter so, in if India imposes tariffs on the hardware and can able to demotivate impose in the world market and can reduce the prices. So, if the prices Y falls eventually after trade. So, I am P X by P Y actually as a whole increases.

So, this helps in helps largely to the large country to I mean; improve their terms of trade and thereby can control better equilibrium price in the world market. Therefore, it is beneficial for the bigger country and whereas, in the small country contrast it is not possible. I think it is quite clear from the diagram and from the arguments.

So, we have already discussed all those things small country context is just the reverse for the offer curve for the other countries is constant though for the small country the imposed tariffs so, thereby there will be shift initially, but actually they cannot I mean there will be shift of offer curve, because of they are you know movement towards restricting trade due to tax on that imports so, but actually, but actually you know they cannot change the world prices.

So, therefore, that though the import reduces I mean; export even you know export and import both falls. So, both way the small country is going to lose in the world market. So, then

what is important? We have already discussed here. So, what could be the optimal tariff for a small nation?.

Now, it had been a optimal tariff for an large nation will you know understand different, Now, this is what we have already explained, now if there is any kind of you know after trade or there is any tariff imposed, we will move from a (Refer Time: 23:44) point to other points after trade we will move to other points.

And, due to that initially the price is one fourth now, later on it is half then this becomes 1. One fourth half and one we arrive in to separate points and will reach at a point where the offer curve or the country one define we already explained earlier. Similarly, the reverse is true we need not to explain it.

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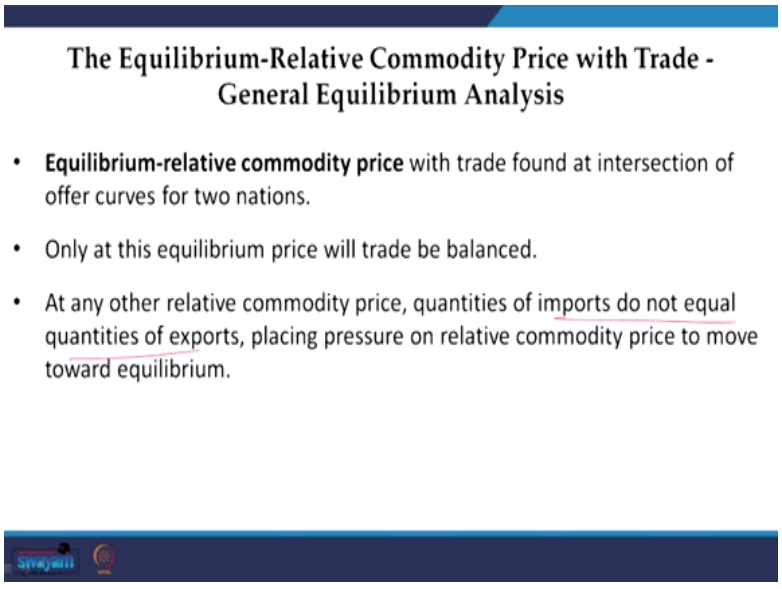

Now, what is import in this context general relative community prices which trade found at any intersection point due to the offer curves of two nations and only the equilibrium price, only at the equilibrium price; price is expected to be it balanced and any other relative community prices quantities of impose do not equal with the quantities of exports, placing pressure on the either supply side or the demand side lead to this equilibrium situation and ultimately due to the countervailing you know pressures that will eventually equalize the prices.

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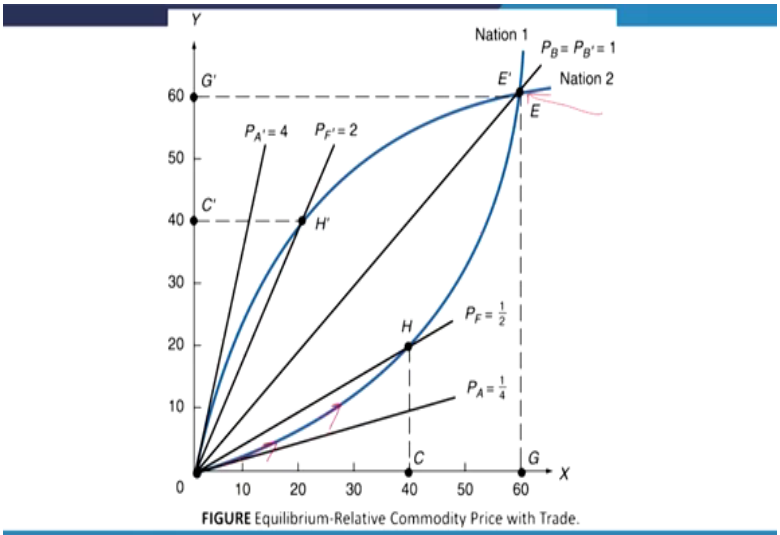

FIGURE Equilibrium-Relative Commodity Price with Trade.

Therefore, law of one price you know prevails and the relative prices will be you know will be equal and both the forces will be acting you know for a convergence in the relative prices. We already discuss.

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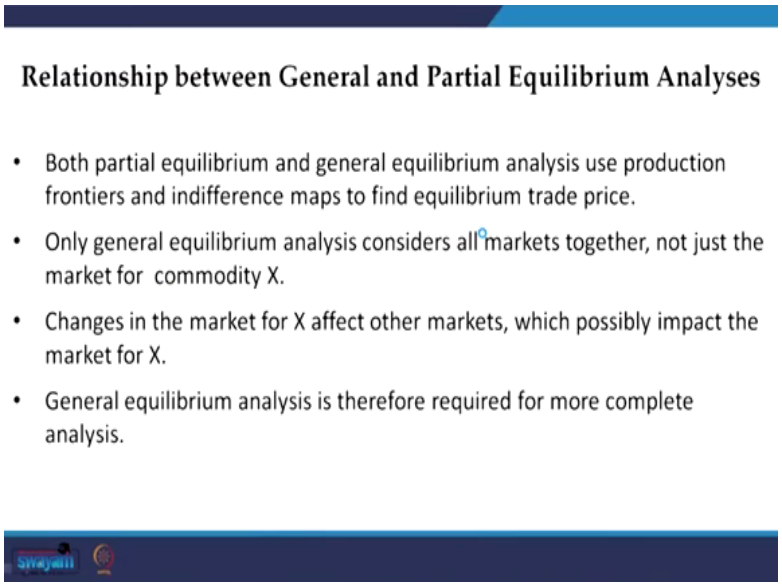

So, therefore, the both partial equilibrium and general equal analysis use production frontiers and indifference map to define the world equilibrium price, the only general equilibrium analysis considers all market together where as the another one does not changes in the market for X affect or the markets which possibly impact market for X.

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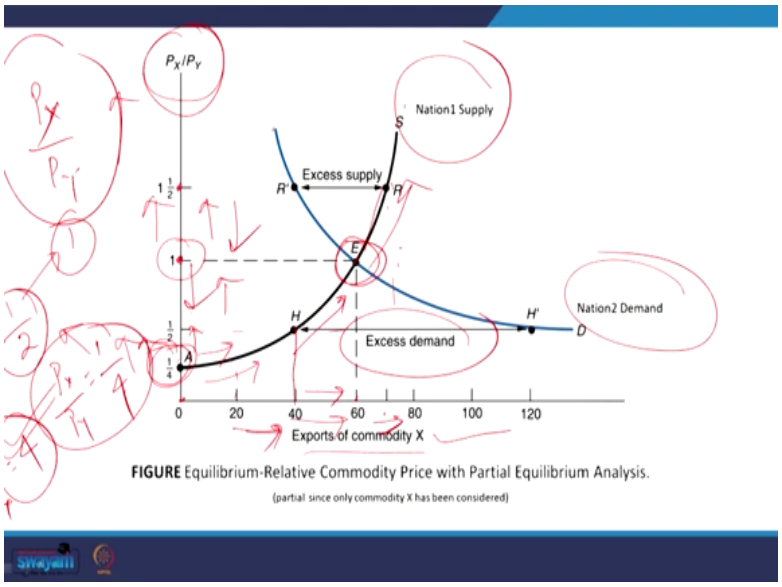

FIGURE Equilibrium-Relative Commodity Price with Partial Equilibrium Analysis.

(partial since only commodity X has been considered)

So, generally equilibrium analysis therefore, required for more complete analysis. Now, more precisely we can interpret the you know equilibrium relative price in a partial equilibrium set up with simple demand and supply. How we did explained earlier? So, let us explain it here. This is relative price of X to relative price of Y. Now, this is export of commodity X of nation 1 and nation 2. Now, as we have already said; if nation 1 I mean; relative price of X increases till certain time national 1 is going to export more.

So, therefore, nation 1 we already assume is at exporter and there is they supply they are endowments support higher production of X. So, they are higher the prices relative price of X higher the supply, ok. So, this is nation 1 supply curve a relative supply curve. Whereas nation 2 is just the reverse regarding demand curve when the relative price of X increases this declines higher the relative prices the demand for I mean; where for nation 2 let it with net

demander for commodity X. So, given that when one fourth we have already says P X by P Y is one fourth is equal to one fourth.

So, relative price of X is 4 times lower than that of the relative price of Y. Now, in this context when this is the one nation 1 is not exporting anything. Now higher the price when it is double so, one fourth to half we have already seen the previous diagram. So, nation 1 will be more motivated to export. So, initially it is somewhere one now, it is a double quantity at this price, double the quantity. Now, when it reaches at again double it reach to 1 so, it will be motivated to export, more given the demand from another side.

Now, when it reaches one this will be here, it is again which is more than that the export will be again differently. Similarly, at this price at these terms of trade for nation 1 terms of trade for nation 2 is P Y by P X it will be simply 4. So, at 4 the country 1 demands hugely no I mean; demands very less, because it is relative price of I mean X is I mean X is much higher.

So, what is going to happen due to trade X is in incentivize to trade you know, demand I mean X is no more incentivize to export more. Now, when the relative price of X actually you know increases still in country 1 whereas for relative prices of X falls in country 2, because it is just the reverse initially, it is 4 whereas; it is now, I mean becoming lesser and lesser; when relative prices actually increases I mean decreases for country 2 they will demand more, ok.

Because that becomes they are imports not exports, when the export prices decrease I mean; import prices for nation 2 declines they will demand more ok. So, for one they are exporting for two they are importing relatively. So, when it reaches at one they will actually, they will actually you know have an equilibrium point. And, that is defined as the price equalization and that is the; that is the point where you know offer curves are actually overlapping and, in one side demand supply increases in other supply demand decreases.

So, if now, look at if in one case it is below to this. What really happens? Below to these there is excess demand, because the relative price is a lesser. I mean if you simply look at P X by P Y P X by P Y instead of from country 2 perspective it is lesser. So, the country 2 will demand more and country 1 cannot export that much. So, therefore, higher the demand will raise the

prices till a point. And, the reverse is true when it is the relative price of X is higher country 1 is ready to export more whereas; since it is higher the country 2 is demanding less.

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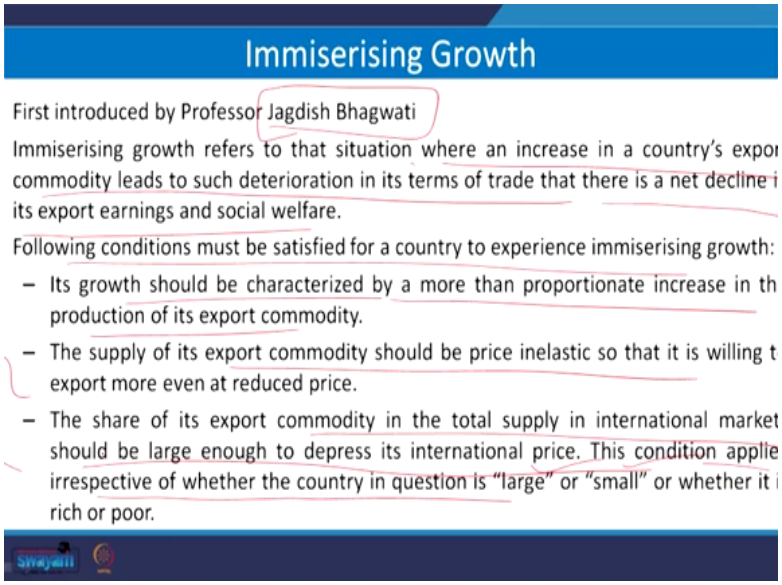

So, therefore, it will demotivate the prices and reaching at the equilibrium prices. So, these the equilibrium prices and this settles the relationship. The last case or last example to be explained with the help of immirserising growth rate: immirserising growth rate case we have already started in the earlier lecture, I have shown the slide what did not explain.

So, let us explain it was in the 50s, 57 explained by Jagdish Bhagwati in his one of his base paper where he says that immiserising growth refers to a situation, where an increase in the country's export commodity leads to such deterioration and its terms of trade and there is a net decline in the export earning and social welfare.

It says that; when we export more or produce more that lead to you know deterios in the you know terms of trade of export, because we have much higher exports or production of the same exported commodities. So, the internal price level supply exceeds demand so, price is I mean; export price is a lesser. So, deterios terms of trade and thereby export earning or lesser and consuming social welfare analysis.

So, it is paradoxical to our production. So, and largely India produces some you know low quality products and the international competitiveness for the product is very low in terms of prices. So, India loses in the instance of trade by context.

Following conditions must be satisfied for a country to experience immirserising growth rate. The first condition is the growth should be characterized by more than proportionally increase in the production of the export commodity and second one is supply of export commodity should be price inelastic, ok. So, that it is willing to export more even at a reduced price otherwise you know, if they are not willing to you know export more I mean, we can cannot define immiserising growth rate.

So, there are the conditions by which this is true I mean; to explain. Share of its export commodity in the total supply in the international basket should be large enough to depress the prices see export commodity prices should be large enough. You know this condition applies irrespective of whether the country is actually large or small in both the context see actually it is valid. But in other regions small or large country is more important.

This is one of the finest example behind explaining the plight of the developing countries especially Indian context.

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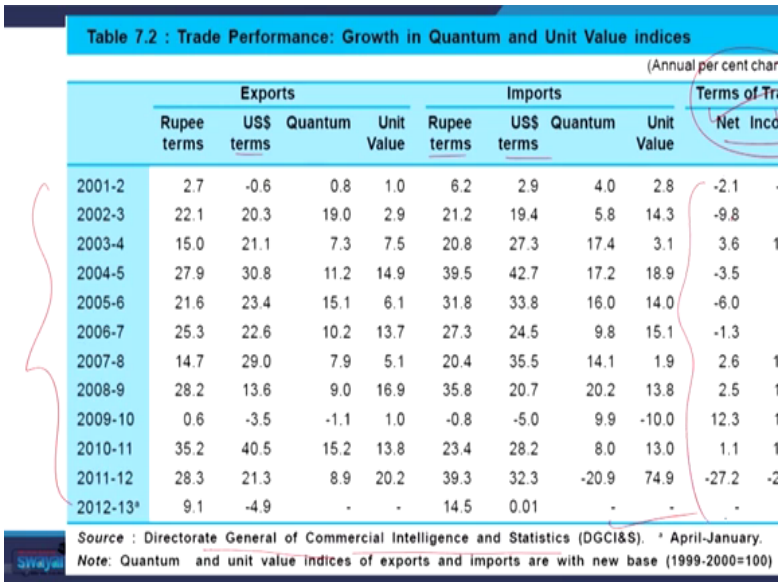

Table 7.2 : Trade Performance: Growth in Quantum and Unit Value indices

(Annual per cent char

	Exports				Imports				Terms of Tr	
	Rupee terms	US$ terms	Quantum	Unit Value	Rupee terms	US$ terms	Quantum	Unit Value	Net	Inco
2001-2	2.7	-0.6	0.8	1.0	6.2	2.9	4.0	2.8	-2.1	
2002-3	22.1	20.3	19.0	2.9	21.2	19.4	5.8	14.3	-9.8	
2003-4	15.0	21.1	7.3	7.5	20.8	27.3	17.4	3.1	3.6	1
2004-5	27.9	30.8	11.2	14.9	39.5	42.7	17.2	18.9	-3.5	
2005-6	21.6	23.4	15.1	6.1	31.8	33.8	16.0	14.0	-6.0	
2006-7	25.3	22.6	10.2	13.7	27.3	24.5	9.8	15.1	-1.3	
2007-8	14.7	29.0	7.9	5.1	20.4	35.5	14.1	1.9	2.6	1
2008-9	28.2	13.6	9.0	16.9	35.8	20.7	20.2	13.8	2.5	1
2009-10	0.6	-3.5	-1.1	1.0	-0.8	-5.0	9.9	-10.0	12.3	1
2010-11	35.2	40.5	15.2	13.8	23.4	28.2	8.0	13.0	1.1	1
2011-12	28.3	21.3	8.9	20.2	39.3	32.3	-20.9	74.9	-27.2	-2
2012-13[a]	9.1	-4.9	-	-	14.5	0.01	-	-	-	

Source : Directorate General of Commercial Intelligence and Statistics (DGCI&S). [a] April-January.

Note: Quantum and unit value indices of exports and imports are with new base (1999-2000=100)

So, this these are all the explanations so, far for understanding you know; export basket prices and import basket there are some of the facts from the director general foreign trade I mean; commercial in intelligence and statistic in DGCI and S is one of the authentic source you can follow our you know terms of trade. Export terms and import terms is clearly given. So, net income or terms of trade net terms of trade income terms of trade are explained we will discuss these things in detail in our next you know class.

So, you can see negativities attached to it, these are very very important to explain I think it is quite clear to understand you know, terms of trade with it we will explain the last one in this week with the terms of trade in the next class with this let me stop here.

Thank you.