Strategic Trade and protectionism Theories and Empirics

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Lecture – 22
Offer Curves in Trade Analysis

Welcome guys once again. For the trade module for NPTEL which is specifically on strategic trade and protectionism, theories and policies. We are now at the you know 22nd lecture and week 5 where we have been discussing the you know strategic trade which are defined through terms of trade you know how the terms of trade are actually differentiating the extent of trade in the world.

Now, on in this context you know to explain terms of trade correctly, we are supposed to know offer curves; because you know terms of trade are not just determined without understanding the equilibrium prices after trade. And, the equilibrium prices may be determined partially or any general equilibrium set off, but in a partial equilibrium setups as I already pointed out you know 2 weeks lecture back, where the simple relative demand you know of products and their relative prices determines the particular partial equilibrium setups. Whereas, in the general equilibrium setups we require offers curve or Edgeworth box diagram which you have already unfolded.

So, the in this lecture I am explaining offer curves. Offer curve is very useful to explain the general equilibrium analysis and the terms of trade accordingly. So, this is on Offer Curves in Trade Analysis, myself Doctor Pratap Chandra Mohanty, a faculty member in the Department of Humanities and Social Sciences IIT, Roorkee. So, let us unfold the you know nitty-gritty's inside.

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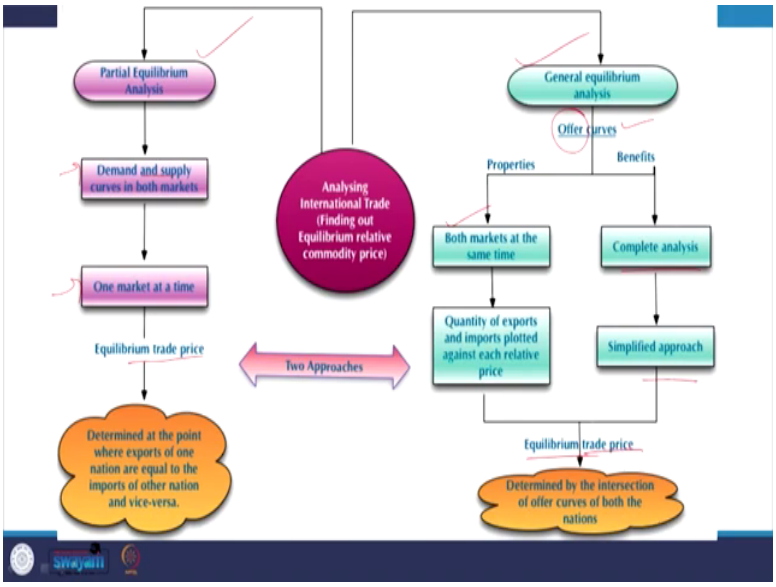

This is the flow chart, this is the structure we have already discussed; but since in the last week we have opened of this why not on discussing this again. So, as I told you there are two approaches to discuss – one is general equilibrium one is a partial equilibrium setup. Now, in the general equilibrium we have already pointed out demand and supply and only one market, and another determines a price. Whereas, in the general equilibrium analysis, we should take the help of offer curve. And, what is the use of offer curve will be explained.

So, we already explained the overview of offer curve and generally equilibrium analysis in the previous lecture, but still you know it is it is always required to clarify the step by step understanding offer curve we have the content for these lecture. The next lecture we will have applications of it and with examples for it. So, what is important both market at the same time? In the general equilibrium setup and it is a complete analysis and also a simplified

approach and determining the equilibrium trade prices which is going to be accepted by all the countries and participating countries.

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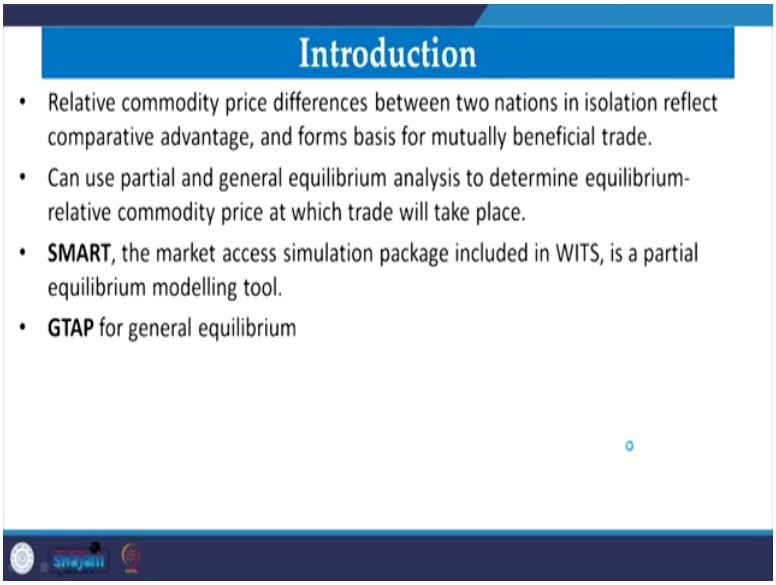

So, in the introduction, which I already said the relative price differences between two nations in isolation reflect comparative advantage and forms them mutual beneficial trade. So, in the these can be explained with partial equilibrium and general equilibrium setups and accordingly the trade takes place. As we have already pointed out that smart is the you know simulation package which include or which includes WITS which what in World Intellectual Trade Solution is a partial equilibrium modelling tool. Whereas GTAP is also you know another advance software for internal trade modelling highly useful for general equilibrium analysis.

So, then what are the offer curves which we are going to talk about? Offer curves that I told you not initially developed by Marshall and Edgeworth and the famous Edgeworth box

diagram is well known to the students of economics. Especially in the micro economics and the advance microeconomics analysis; we will discuss the Edgeworth box diagram by including all the sector simultaneously, be it exchange market, be it production market, be it supply side or the service sector so, that actually that actually very important in the discussion of general equilibrium setups.

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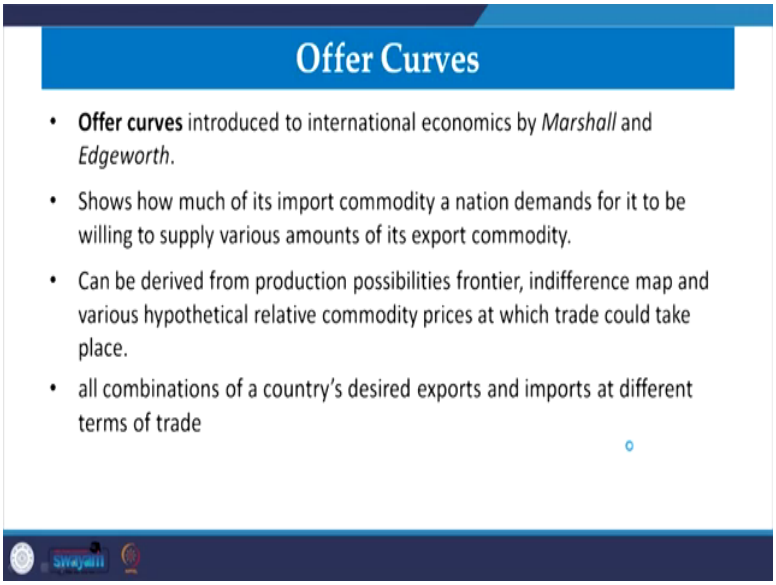

Now, what it means? It means that how much a country is willing to export in order to in order to demand its imports. How much of its import commodity a nation demands? Because generally we say you know you know nations demands are called import demand. And, so, how much a country actually demands for its imports for it to be willing to supply various amounts of its export commodity. That is your free size definition of offer curve.

So, can this can be derived with the help of production possibility frontier, indifference map and various hypothetical relative commodity prices and that usually takes place after trade and in the autarky situation you cannot determine all those changes. So, an extent of dynamism is attached, with applications of offer curve. So, basically this is a combinational countries expected or desired exports and imports and different terms of trade. So, we will be discussing terms of trade in detail.

This is also known as I mentioned in the last class also known as reciprocal demand curve. Initially may no included in the economic literature in the trade literature by John Stuart Mill where reciprocal demands curve are categorically explained. These also measures as I told you this also measures willingness to trade how much the participating countries are actually willing to trade each other in order to have you know their exports or import respectively.

Now, let us explain with the help of a diagram, how we actually derived the offer curve.

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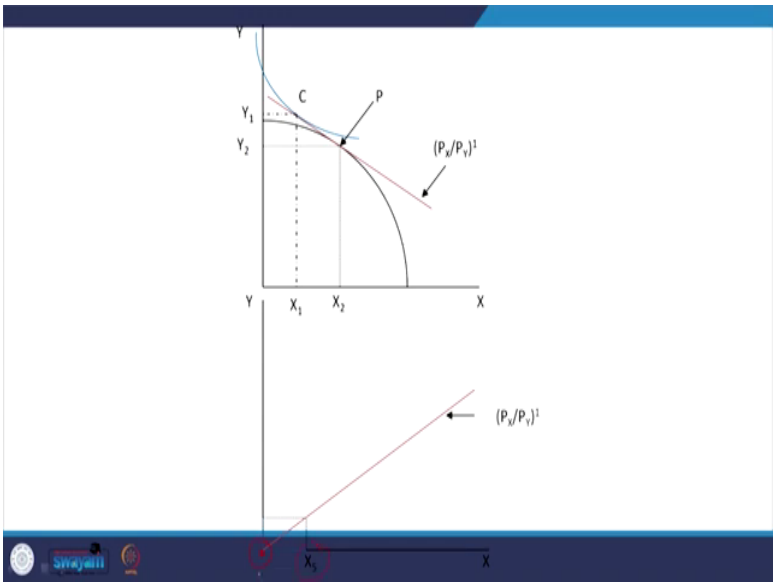

So, the diagram here presented is like this let this be the Y axis and X axis the stands for commodity X this a and Y commodity X and Y and this is the production possibility frontier in front of us PPF for the domestic country before a trade specially you are now explaining the autarky situation. And these let me they are at trade off between X and Y in terms of their prices in the market, they also called price line.

This is also called you know their P X by P Y the ratio is in terms of P X by P Y it is given here. And, now let this be the equilibrium point and this is before autarky before trade and this is also called autarky equilibrium we have already discussed. So, it is responsible for a particular equilibrium situation by which country can able to produce certain variety of commodity action Y.

Now, if we have a different map of indifference call that the that means, if you have a different structure of our consumption basket we are actually landed off somewhere here this is our point of equilibrium. So far as the willingness to consume or so far as the consumption point is concerned so, therefore, this is the production point is somewhere here where the you know consumption points situated at somewhere else. So, that means, we are demanding more of Y as compared to X. So, what will do? We will try our best to actually get those Y from other countries up to trade subject to the relative price differences.

Now, as with the consumption point C stands for point of consumption, P stands for production and accordingly we have the basket of or bundle of commodities those are consumed respectively for X and Y. Now, once there is a trade we usually expect the relative prices is of these things will change and therefore, the post equilibrium you know structure will be little different, is it not?

So, let us see the you know the expansion path curve. And here again on the another diagram we are explaining in terms of their raise, expansion path and this starts from the origin; origin is explained here, where this corner and this stands for P X by P Y after trade you know these points gets changed.

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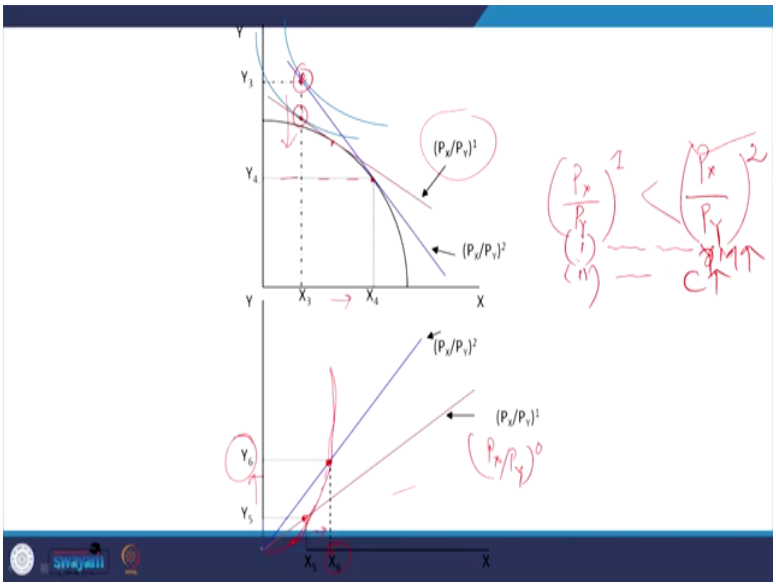

So, let us initially they are consuming X 5 and then this is Y 5 and due to trade. Now we are changing the situation due to trade we are arriving or we arrived into another point of equilibrium and this is the new production point. And, and accordingly we are getting we are we have different combinations. Since P X by P Y is now relatively lesser so, we will export it and in return we will get imports from other country.

So, now P X by P Y is since the ratio is higher now I mean it is the vertical this is now P X P X by P Y 1 is the slope is lesser. So, this is up to trade there is higher demand for X because now countries demanded countries X is demanded elsewhere. So, the country will be motivated country will be highly motivated to export X. So, therefore, they are producing more of these amount and will you they have the option to get more of they will you they have the options to import more of Y.

So, so, that you know their requirement of Y was there earlier; now due to trade they get higher income. So, this is higher income in terms of relative prices of x. So, they get higher incomes. So, those income there are two interpretation one is either those income gets distributed. So, there are distribution effect to their country. So, therefore, they get you know, but better options and choice they income increases in is a income in income increases. And second a point is they have higher substitutes available. So, the consumption patterns also increases.

So, therefore, they arrive in to your higher point instead of these point they arrive in to higher point due to rise in the relative prices. So, this is equilibrium point and this is P X P X 2 P X by P Y 2. So, they are in their terms of trade also improved due to higher trade. So, we will also explain in terms of trade and its differences with various terminologies, we are just suggested by various experts and if you do not understand terms of trade you know and its details, the strategy is derived by the member countries might very difficult. So, that is the reason where exploring all the you know discussions here.

Now, due to a higher trade I mean higher relative prices for the common country one we are concerned with our country A we are concerned with so, they are producing more of X and they are also they are getting more of Y. So, what is important here? We wanted to emphasize their the due to trade the level of satisfaction increases and then and they arrive into a higher indifference map. So, therefore, since terms of trade increases exports and import demand also increases.

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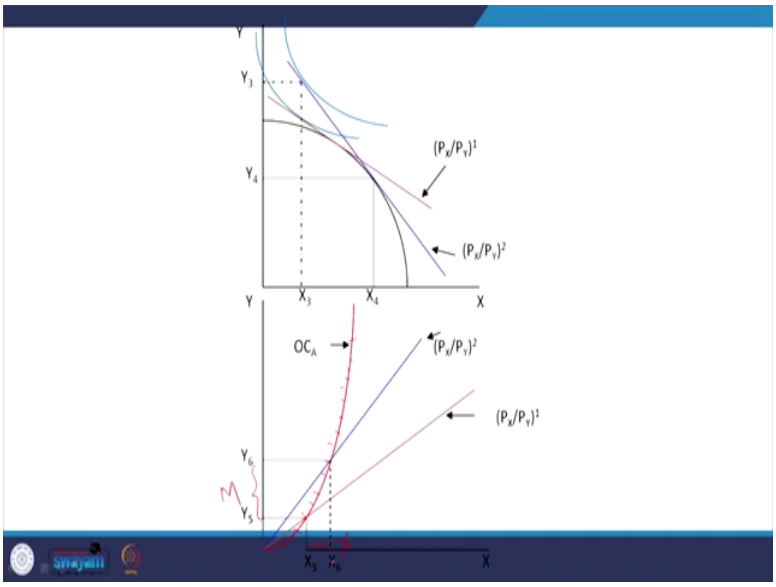

Now, what is important here? We wanted to derive the offer curve for the country A now what is the offer curve we say that this is the latest basket of commodities this is import demanded this is export supplied. So, demand and supply a matches at a point. There are two points to be connected there are if we it is track other you know P other possibilities even before we know the point there might be other points. So, other points can be connected. So, if you plot all those line these are called offer curves this is called offer curve for country A.

So, this is what as I explained in this diagram. So, we have this X 6 and X no Y 6. So, offer curve is plotted accordingly. So, this is the point, this is our new offer curve. This is for country A, now what are the interpretations for it? Interpretation is how much? Country A is demanding the imports in order to be ready with export supply to country B.

So, the higher the P X by P Y higher the prices relative prices the high chances of demanding you know more of Y; because you know they have relative prices options I mean let we know export supply relate and end they have you know more income from other countries and since more opened off the country is higher demand is also expected.

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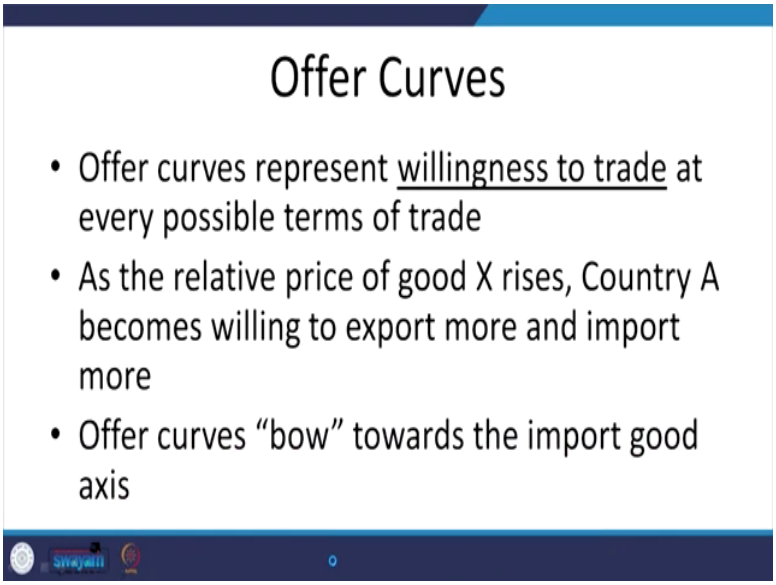

Now, let us interpret again. So, offer curve represents willingness to trade at every possible terms of trade every possible terms of trade. Therefore, it is not a not discrete points. We are connecting we are connecting all possible points which you know describe different extent of offers. Now, as the relative prices of government commodity exercises country A becomes or willing to export more and import also more because of other options available and our standard of living increases of consumption basket increases. So, therefore, their indifference map reaches at a higher level.

So, offer curve actually bow towards the import good axis. Why import good axis? We need to again check.

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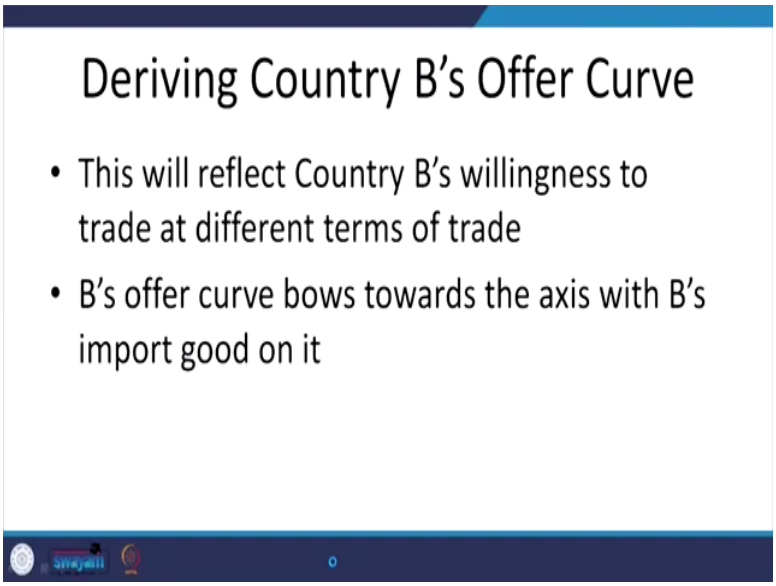

Similarly, country B's offer curve will be just the reverse because the terms of trade which are referring to country A will be reverse for the country B.

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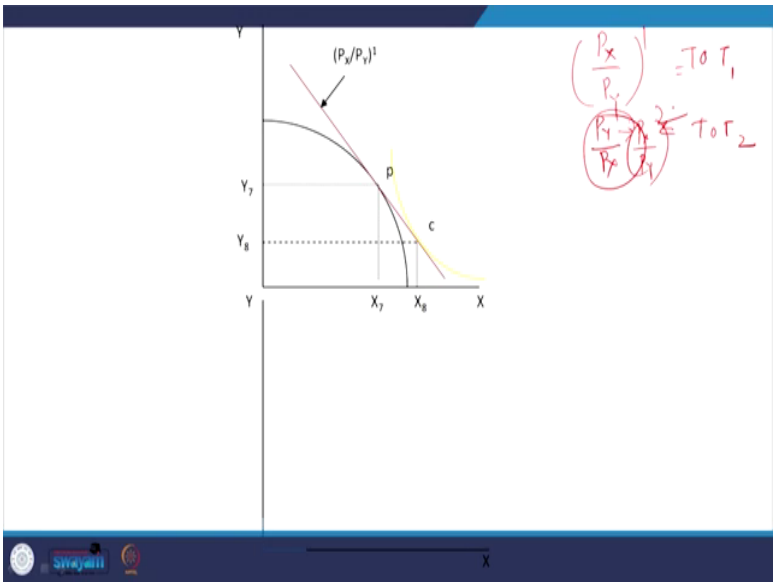

Now, there will be certain questions on it you know. If we are giving P X by P Y, P X by P Y for country X if it is 1. So, this is just simply for I meant on if these term T O T of country 1. So, T O T of country 2 in terms of trade will be just the reverse P Y by P X because now P Y is the P Y is nothing, but P X by P Y of country 2.

Now, so, there will be questions objective questions as well as some other you know detailed questions in your in your evaluation part. So, you may check it very carefully and then you might be given an options to derive the offer curve as an objective questions will make you confused with you know variety of questions from the diagram itself. There might be diagrammatic questions as well, but the options you need to filled up ok.

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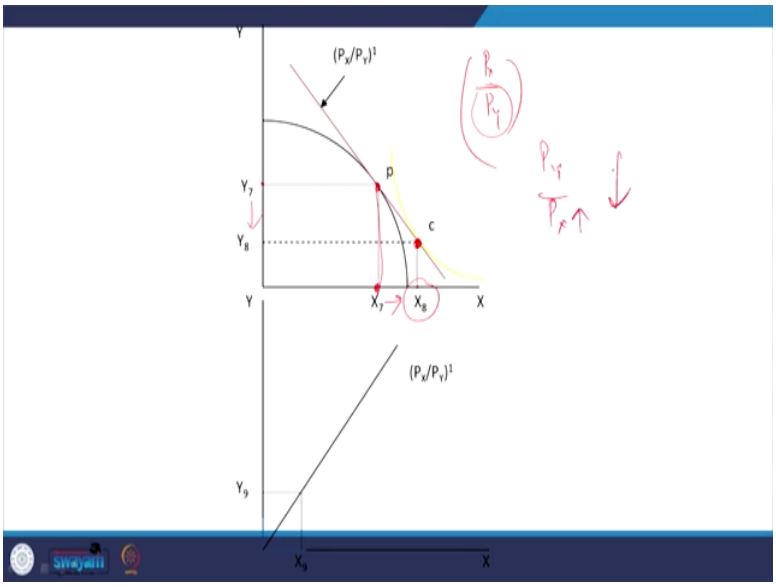

Now, in this particular example in a diagram what is visible? This is P production point let these be the consumption point before trade. Now, what really matters here? If just the reverse cases are observed within the country; now what is expected country X is demanding more than that of is domestic production. So, if it is the country A is demanding more now country A is going to import more of X instead of exporting which is actually counteracting the views of Heckscher-Ohlin model.

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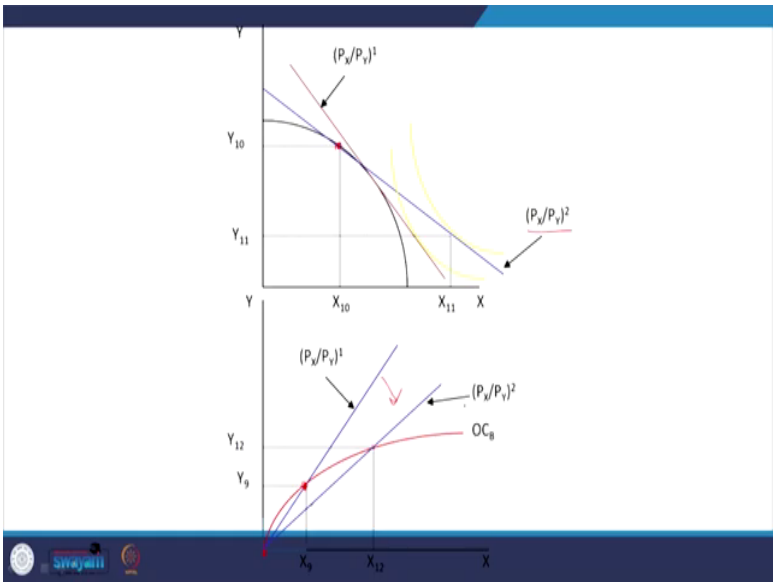

Now, in this situation look at this. This is going to reverse our you know I mean terms of trade. Now, initial terms of trade look at this; initial terms of trade is explained by P X by P Y. Now, due to is there I mean is there will there be trade? Yes, there be trade because they are demanding more of X. If they are demanding more of X then what really happens? You know I mean, the same country is demanding more of X. So, country might be no in a position to you know produce more or you can you know say it if by any region this I mean the slope look at the new of this one. So, slope declines.

Now, since there is no demand X I mean this is the domestic production now, the country because of their own consumption they are demanding more of X as against Y. So, what really happens? So, there are there are two interpretation – one is P X by P Y; even a international market demand for Y; if it is a large country context price of Y will fall because they are not demanding more whereas, where P of price of X will rise. So, that way it will be you know

against the you know against the countries terms of trade and so, therefore, you know that will be countervailing their extent of consumption.

Whereas, now we are saying suppose by any region their terms of trade actually declines and suppose the country produces more and their terms of trade decline just the reverse pattern we wanted to see or inversely wanted to emphasize for country 2 ok. Initially we said for country 1, here we are defining for country B; just a minute I will come back and explain it ok. If this is a scenario for country B, if the country B is having the situation like this, now country B is demanding more of X I mean just the reverse. This is just a reverse if country B is demanding more of X and less of Y then country B will be exporting it.

Now, when the country B is demanding more of X so, the relative price of X is actually increases and so, therefore, the terms of trade actually terms of trade actually declines. Why because the because of the fact that for country 2 they are terms of trades P Y by P X. This is simply P Y by P X since P X increases so, these as a whole falls. So, this is what is explained here.

Now, initially at this level they have certain consumption and their domestic production stands at these point X 7. Now, here we are saying these let be represented with this now due to fall in the relative prices the you know the axis from I mean the ray from the origin declines. Because P you know now for country 2 it is P X by P Y; I mean basically P X increases, we are emphasizing the you know P X by P Y falls for country 2 it to it falls. So, therefore, the ratio falls and we landed is the new equilibrium point.

Now, if all the points are just connected again it is just the reverse and will arrive into the offer curve for country B.

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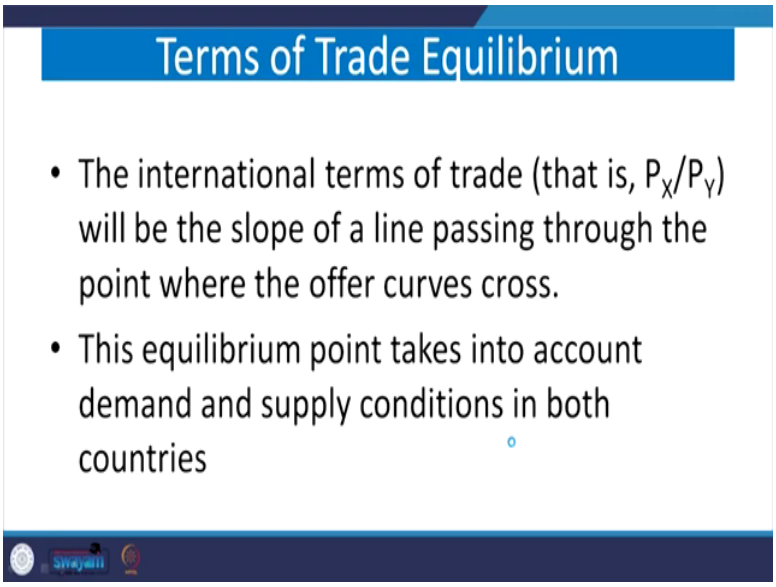

So, let us come back to the understanding of equilibrium then international terms of trade that is P X by P Y will be the slope of the slope of a line passing through the point where the offer curve cross.

So, the equilibrium point takes place between the demand and supply condition in both the countries because it not only counts the internal and external demand, it also counts the their domestic demand as well as domestic supply.

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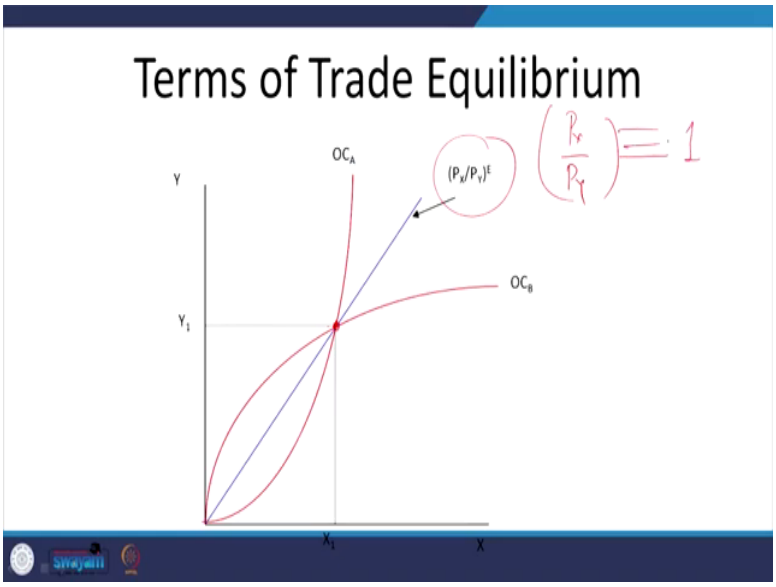

So, internal we mean you know, I mean not just internal demand and supply, it also accounts the external and external demand and supply both. Now, here we are saying one thing. Now, this is the point where both the offer curve actually intersects. So, it will be responsible for a certain price level where we are expecting equal equalization of terms of trade where P X by and P Y is generally expected to be equivalent to 1 ok.

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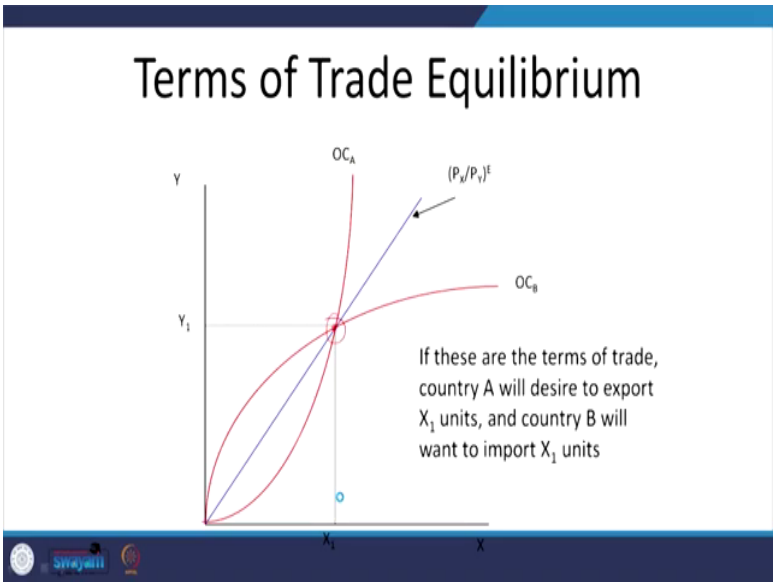

And, this is responsible for a certain level of terms of trade and there have been no diversion of equilibrium.

So, these are terms of trade and country A will desire to export commodity X 1 units and country B will want to import you know X 1 units. I mean whatever the country 1 is going to be demanding that will be demanded by another country; I mean demanding for import another will be ready to export and vice versa. So, this is what we are explaining.

So, now, if these are the terms of trade, country will desire to import to Y 1 and country will be happy to export Y 1. So, therefore, there will be no mismatch and this chance in equilibrium price.

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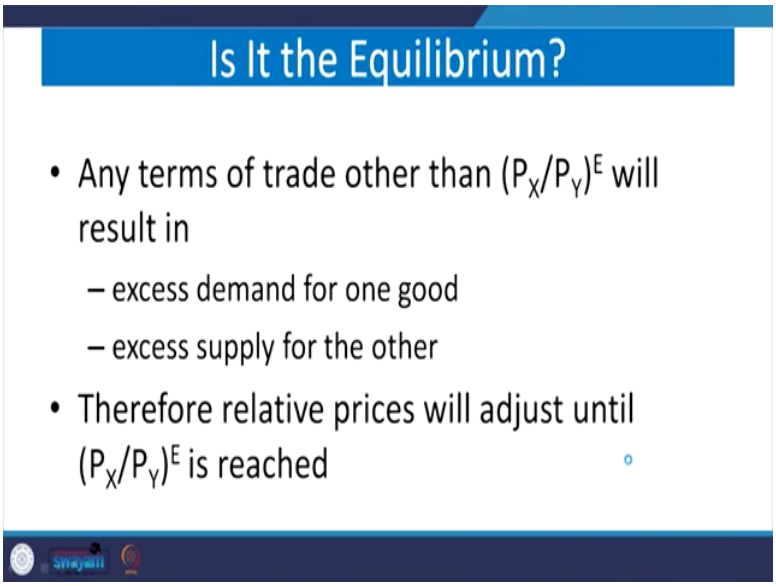

So, therefore, now question arises is this the equilibrium price? Yes, because of the fact that any terms of trade other than that will create some kind of excess demand for one good or excess supply for another.

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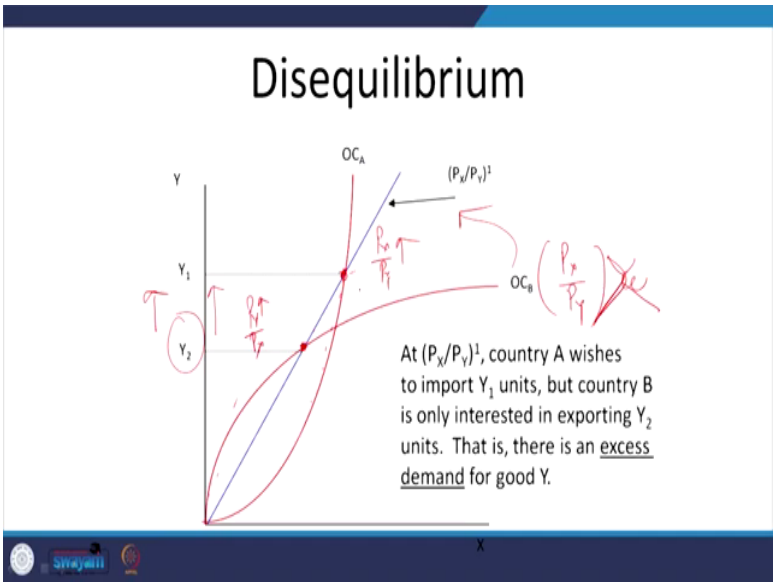

Now, so, therefore, the relative price will adjust until this is equalized or the ratio stands equal for both the countries. Now, look at these point disequilibrium situation we are expecting here to explain. There are two points to note.

Now, at this point now you can easily find out look at the relative prices for country I mean A and the country B it is the different ok. So, it is not equal. So, here the country A is willing to export you know and import differently. Now, you at P I mean given the P X by P Y at 1 country 1 we says 2 actually import Y 1 units is what is written. But, country B country B is ready to or country B is only interested to export Y 2 units.

Why it is so? You can look at the relative prices; I mean in the offer curve actually clearly points out the differences. Here country 1 is ready to I mean willing to take more whereas, country 2 is not ready to export that much. So, that has led to over demand, over demand of

price of good Y. So, over demand less to higher prices. So, higher prices I mean the P X by P Y here we are saying P X by P Y is actually lesser than that of this situation.

So, since there is higher demand so, P X by P Y is actually you know here it is at this point so, it is higher. So, when the relative prices increases now. So, it the I mean when there is a over demand I mean just the reverse when this is this is actually higher we are we can mention for country B. So, accordingly you can check. Now, from this argument we clearly find to the fact that the prices of Y will rise first sure. So, that will equalize.

Now, these points are achieved if and only if we can easily say if and only P X by P Y increases every time is it not? But, for another country it is just the reverse P Y by P X. So, here were saying P Y by P X P Y prices will rise ok. So, P Y by P Y by P X will rise. So, this will reach at this level. So, there will be a new offer curve and accordingly a single price is actually established and that will define the equilibrium price level.

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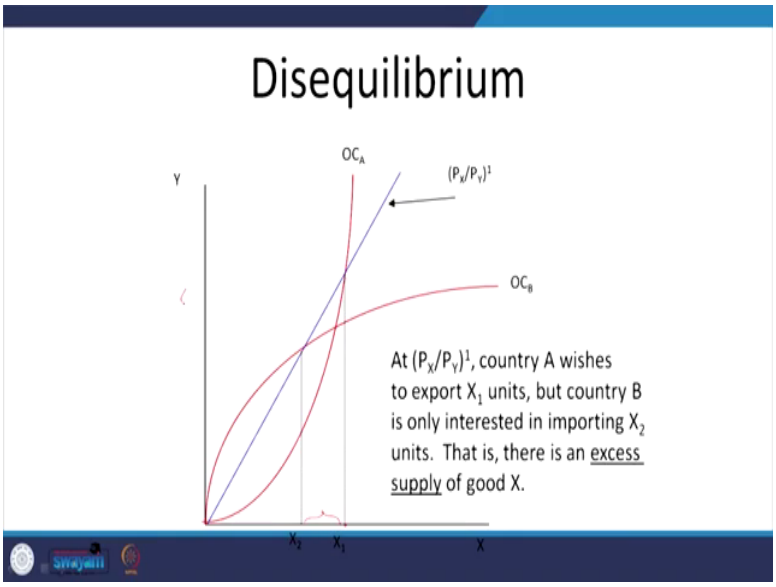

Similarly, if we count just the reverse point for explanation, if at point you know I mean a country wishes to export X 1 export suppose country 1 X wishes to export X 1 then what country B is only interested in importing X 2 ok. So, there will be mismatch actually. So, there would be excess supply. So, in a one case for countries perspective you know there were oversupply over supply now (Refer Time: 26:04) is excess supply of good X. So, that will lead to reduction in the prices.

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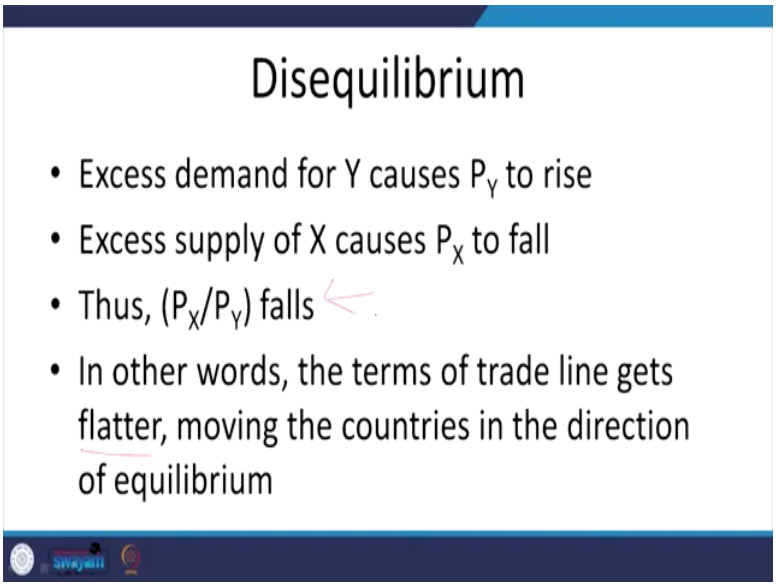

So, X is demand for Y causes P Y to rise for excess supply of X causes P X to 4. So, thus P X by P Y falls and it reaches an another equilibrium point, the trade line gets flatter. Now, in other words the terms of trade line gets flatter; because of the fact that we have get received you know different terms of trade some of in the country is the direction of equilibrium.

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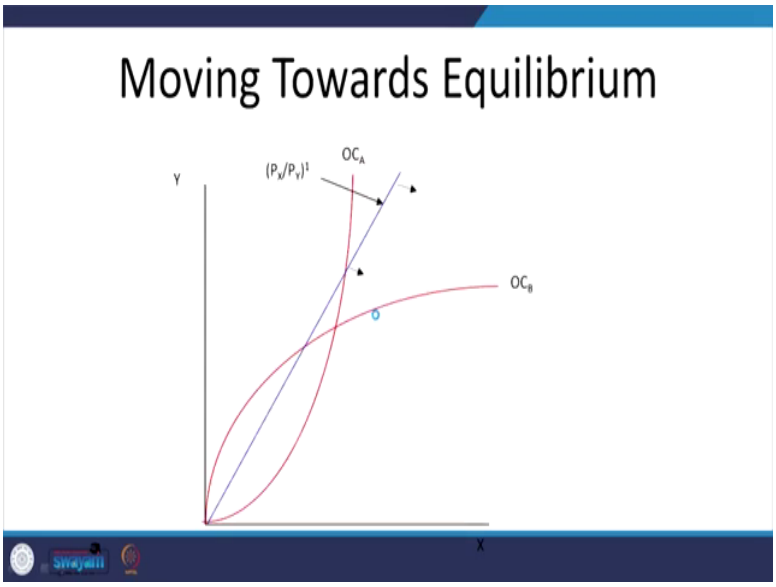

So, now you can find out this now from the disequilibrium situation. We will move towards the equilibrium point so, such that the terms of trade gets equalized and reaches is a maximum better point.

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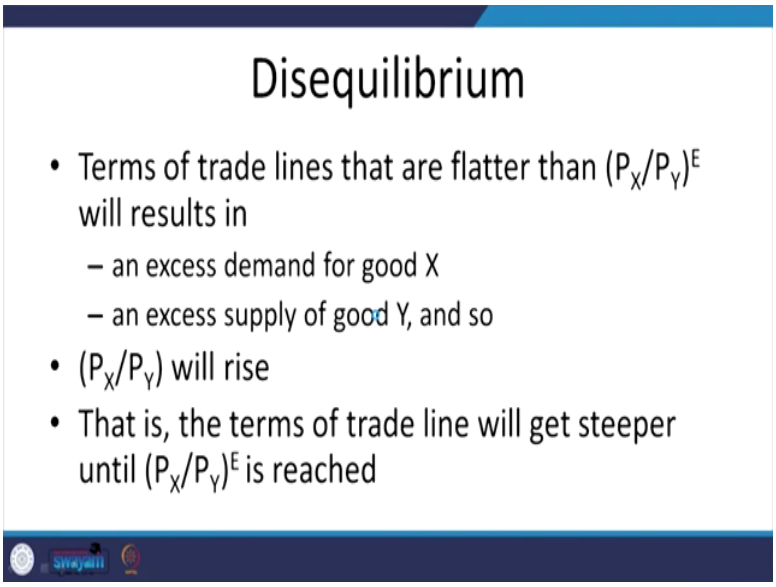

So, and accordingly, the prices actually gets changes, in the reverse case the in terms of trade will get steeper. In earlier case we said it terms against you know terms of trade get flatter now were saying it is a steeper and reach at the equilibrium point. Now, accordingly the you know equilibrium reach.

So, what are the interpretations? So, in short the country terms of trade are a the prices of the exposed divided the price of imports. So, a rising terms of trade is good is a good news for the concerned country.

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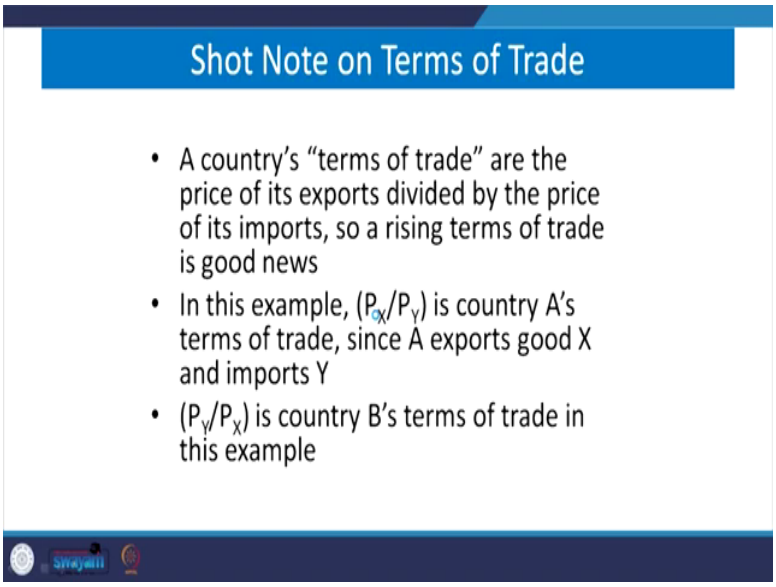

So, country's terms of trade you know as an example since country A export X and input Y and this is useful since we are emphasizing the community X to be exported.

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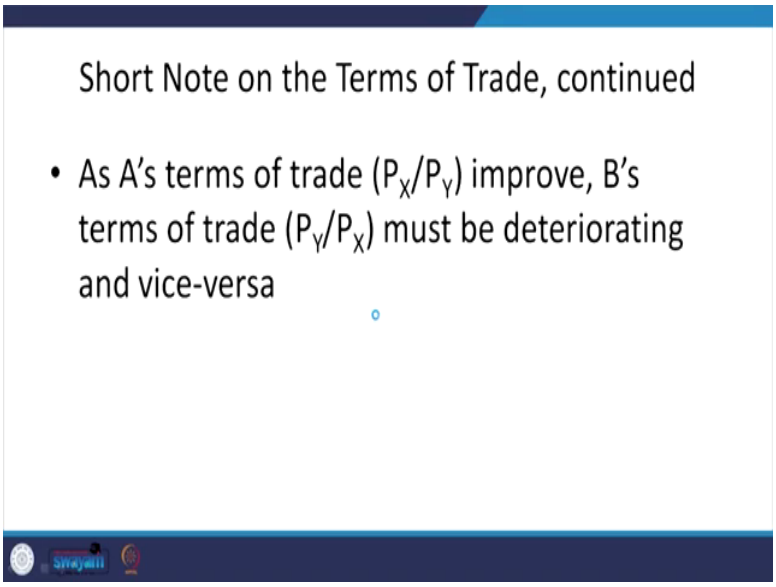

Now, look at if P Y by P X is country B terms of trade in this example just the reverse is true. As A's terms of trade improves terms of trade improve term of terms of trade improves B terms of trade must be deteriorating and vice versa which already explained.

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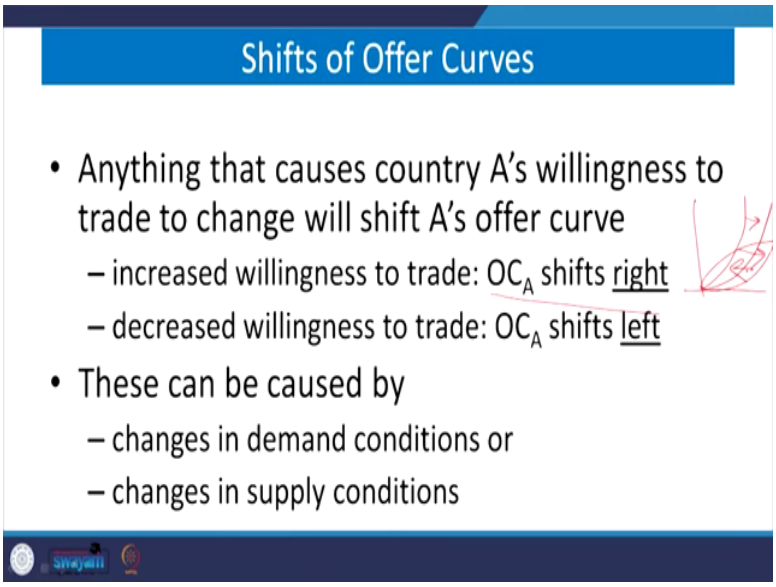

So, shift of terms of trade. So, defines like this anything that causes a country A's willingness to trade or to change will shift as offer curve. Increase willingness to trade so, I mean so, offer curve of a shift to a slight; decrease willingness to trade offer all shift was left. I mean the offer curve which we have just explained if it is like this, if it is in willingness to export more so, it will be shifted to a side; otherwise I mean for other regions it will be shifted left.

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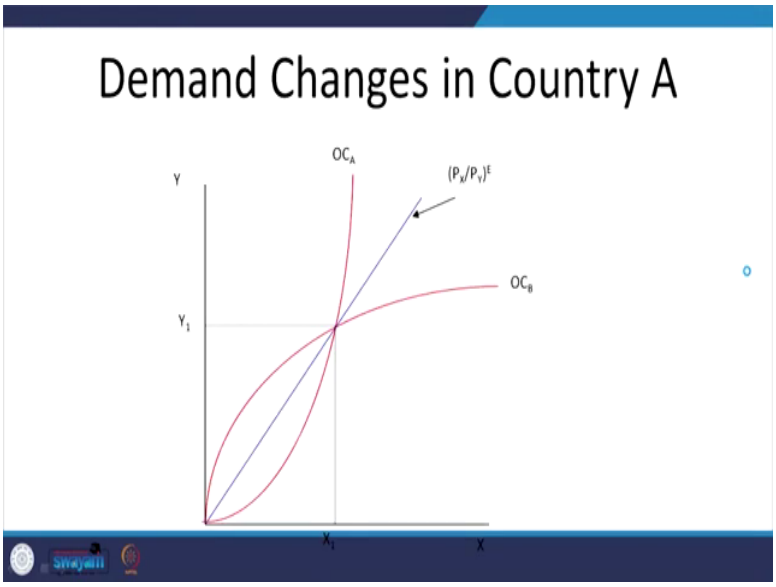

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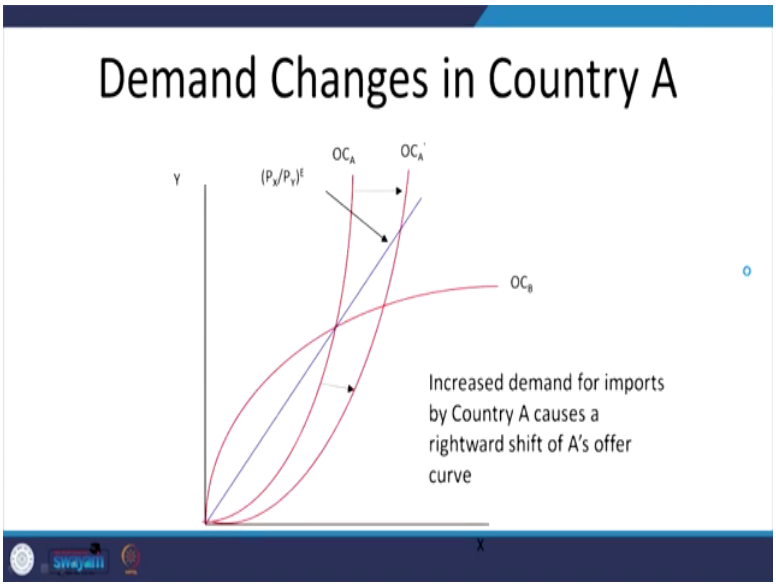

So, similarly, we can explain for country B as well and these can be caused by changes in demand and supply conditions as well.

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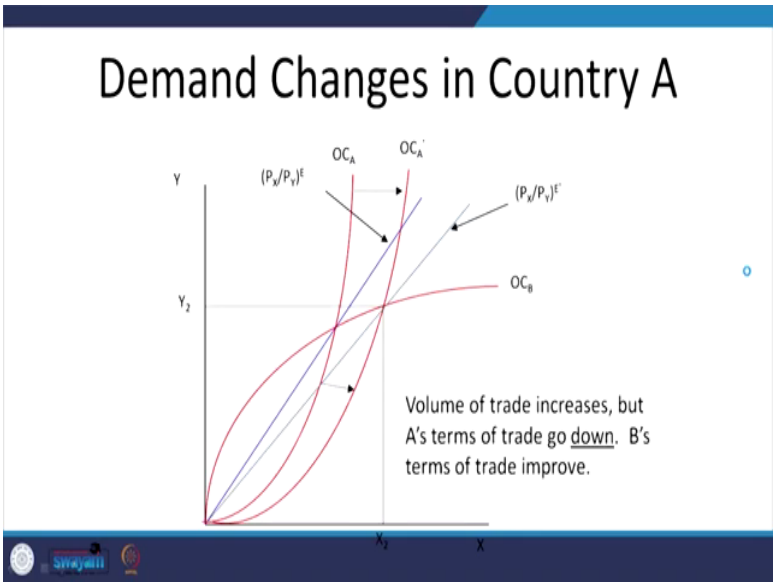

So, these are the shift where the offer curves moves towards right and why they are shift? Due to other reasons.

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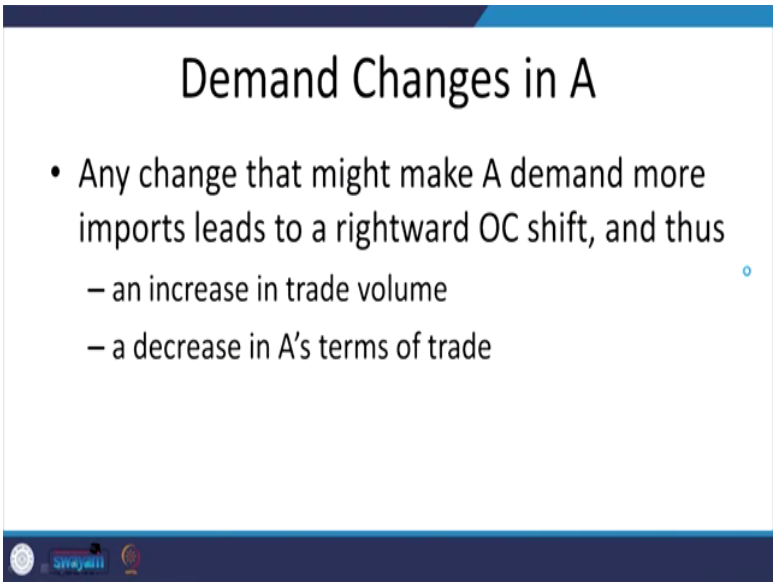

When demand gets changes, there are shift in the term terms of trade or as well as the offer curves.

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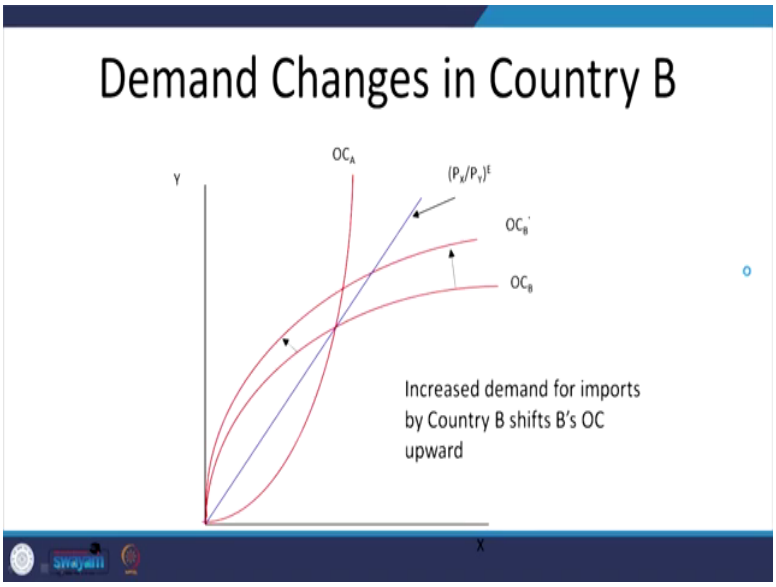

So, what is they ultimately or eventually reaching it an equilibrium point. Similarly, for country B increased demand for imports by country B shifts country B's offer curve towards left or upward.

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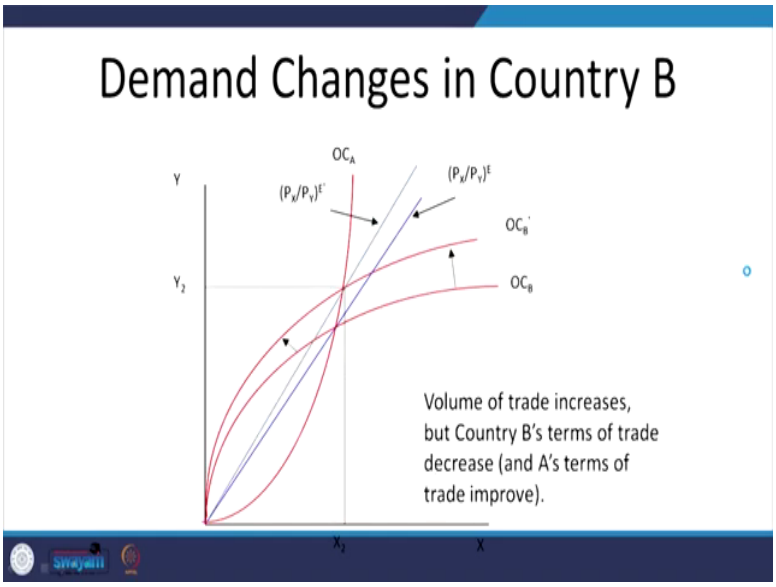

So, higher the import demand so, if once they are demanding more they are offer curve actually shifted towards up and vice versa. So, they will reach at the point

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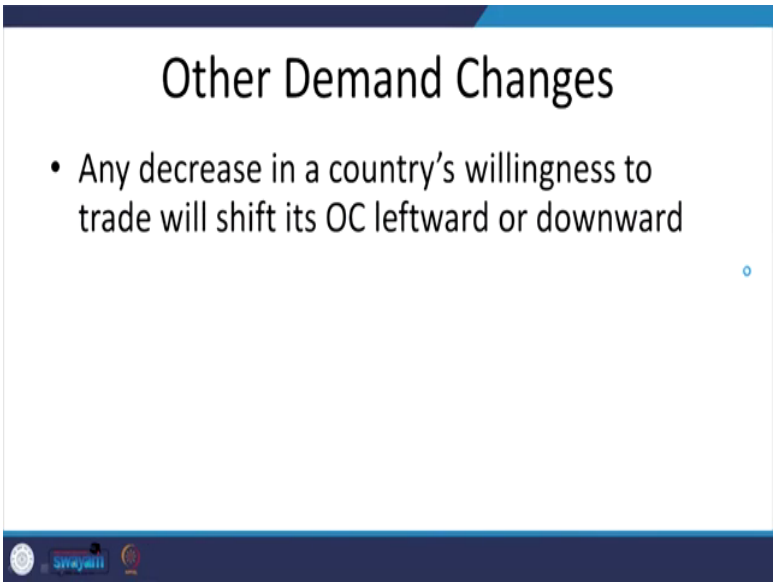

So, any decrease in a country's willingness to trade will shift the offer curve left or a downward. So, similarly other regions where I mean other you know patterns you have already discussed. So, ultimately or eventually they reach at an equilibrium point.

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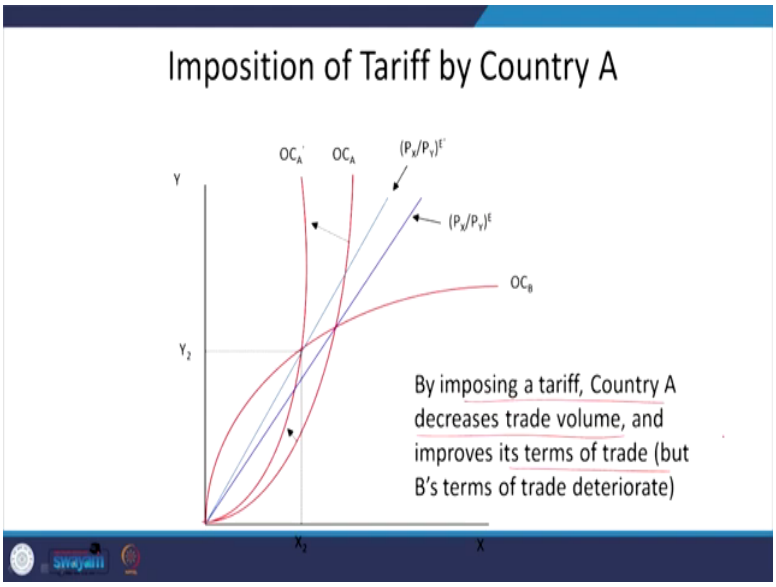

Now, let us examine a bit we will talk about all these details in the next class, but let us why the there is a shift? One of the reasons is actually tariff. To tariff imposition of tariff by country A; country A, on the imports of the trade you know volume of trade you know takes place imposing a tariff, country A decreases trade volume decreases trade volume and improves it terms of trade.

Why is it so? Because by imposing tariff imposing a tariff. So, that price of that product increases and then so, but B's terms of trade that I mean in any case by imposing a tariff country usually restrict their imports, import demand falls. So, there I mean when the denominator falls as a ratio actually I mean trade increases.

So, similarly I mean changes in the supply condition will also shift a countries offer curve around. For example, productivity changes, discovery of a new resource actually going to change the offer curve.

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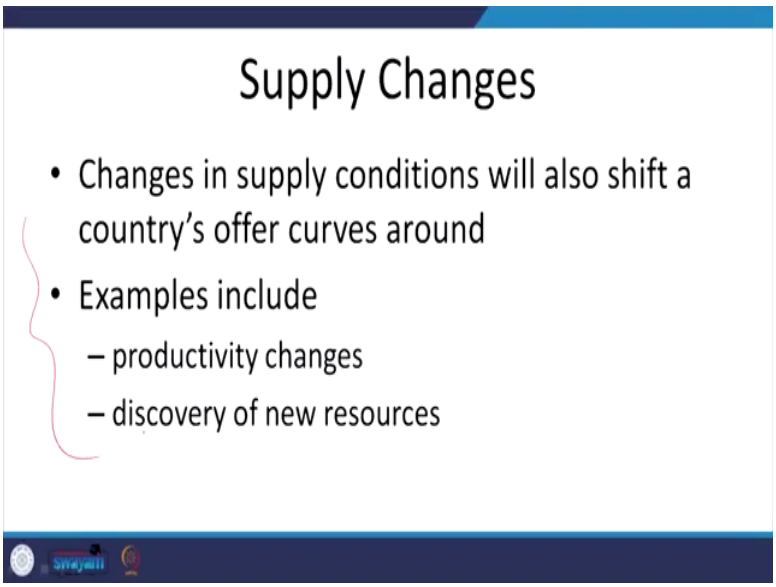

What we wanted to mention here just as well, the last slide last couple of slide we have already said demand patterns, they are domestic you know production and supply and accordingly I mean or tariffs or any kind of intervention lead to changes in the offer curve and its slope. And, the elasticity of for the changes also matter a lot in determining their the position of their offer curve whether it is steeper, flatter, the exact shapes can be derived.

So, those you know cases my examples can be unfolded can be discussed in the next class. I think you may reserve your questions, we will we will take it forward in the exit classes. So, with this let me stop here.

Thank you.