Conservation Economics
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Module 7
Markets, Welfare and Conservation
Lecture 3
International trade

Namaste! We carry forward our discussion on Markets, Welfare and Conservation, and in this lecture we shall explore International Trade. So, what is international trade? International trade is the exchange of capital, goods, and services across international borders or territories.

The key terms are exchanged. In the case of international trade there is an exchange of things which can include capital, it can include goods, and it can include services, but the important thing is that it should occur across international borders or territories.

International trade is the exchange of capital, goods, and services across international borders or territories. And over time, what we have observed is that international trade is growing. If we look at the value of the global exports over time, and in this case we are taking a time series of the value of world exports at constant prices relative to 1913, that is, values corresponding to world global volumes indexed at 1913 is equal to 100.

What we are saying here is that, if 1913 values are taken to be 100, what are the current values and what have been the values over a long period of history. So, this is what we are trying to look at in this particular graph. So, we can observe that in the year 1800 the international trade was very miniscule, but over time it has been growing and currently we are at a level that is around 50 times that of 1913. Which means that in a span of around a 100 years, we have increased in the global trade values or global export values by as much as 50 times.

And the other thing to note from this curve is that earlier the growth was very less, but these days it has been growing at a very fast pace, especially since the end of the Second World War. So, after the Second World War the value of global exports just skyrocketed and today it is a very large value.

If we look at the actual value of exported goods and services, then currently we are around 25 trillion dollars worth of goods and services are being exported every year. And, this export is occurring for a number of different things. The most important things or the lion’s share are things like cars or electronic micro circuits or medicaments or gold. So, these are things that are occupying a very large portion of the goods trade.

And these goods are exported from several countries. The biggest exporting country is China and as much as 15 percent of the world's imports are occurring from goods and services that are being exported from China.

The second largest exporter is the United States with a share of 9.2 percent, followed by Germany at 8 percent. So, these are three largest exporters of goods. And the goods are exported to a number of different destinations. Now, if you look at destinations, the United States is importing around 14 percent of the global imports. So, this is the largest export destination. So, a large number of or a large quantity of goods and services are exported to the United States, and the United States is importing these.

The second number is China at 9 percent followed by Germany at 6.2 percent. So, what we are observing here is that, the countries that are the largest export origins are also the biggest export destinations. Which means that, on the world stage there are certain countries that are the biggest exporters as well as the biggest importers.

And, this large volume of trade is now having implications for conservation. And of late we have been becoming more and more aware of these conservation implications, as shown by these articles. We show that free trade increases world pollution. So, the more the amount of free trade the more is the world pollution.

There are a number of externalities that are involved. China's international trade and air pollution in the United States. Then we have international trade that undermines national emission reduction targets. So, every country these days has certain national emission control targets, which means that every country is trying to cap the amount of greenhouse gases that it is emitting.

But then international trade is undermining that effort because there are certain countries that are producing greenhouse gases to such a large extent that now these national targets are not being fulfilled.

What is happening is that, suppose a country in Europe states that we are going to reduce our carbon dioxide emissions by 20 percent by the year 2020. So, what they are saying is that, we will emit only 80 percent of the carbon dioxide that we were emitting in the year 1990, but then this is not being completely met because they are still getting more of the produce, but they are getting it from certain other countries, such as China.

What happens in that case, is that the country in Europe would be able to show that, yes we have reduced our greenhouse gas emissions, but then that is that has been more than compensated by the excessive release of carbon dioxide in China. And in this case not only will carbon dioxide emissions be there during the process of manufacturing of the goods, but there will also be a large amount of carbon dioxide emission during the transportation of the goods.

When the things were being made locally, in that case the amount of carbon dioxide emissions were less, because things had to be transported to lesser distances, but now things are moving across continents and that is also leading to an increase in the total amount of, the net amount of greenhouse gas emissions across the world. So, this is another major environmental implication of international trade.

International trade linked with disease burden from airborne particulate pollution. Now, this article is stating that the pollution that is being released because of international trade is now leading to more and more diseases in a large number of people. Especially airborne diseases, because if there are pollutants that are released in any one country, then along with wind these pollutants can reach the other countries and they will start to have negative consequences on the people in the other countries as well.

We are starting to see an increase in the disease burden. Pollution from international trade killed 700000 people in one year, 700000 premature deaths worldwide in a single year. So, it is not just a theoretical construct, but what we are seeing is that this is actually happening.

International trade and air pollution; estimating the economic cost of air emissions from waterborne commerce vessels in the United States. Now, what is happening is that because of the air pollutants that are being emitted by certain countries that are involved in international trade, we are now seeing a large amount of disease burdens across the world, which means in other countries as well. Now, because there is a disease burden, these countries will have to spend more resources on health care. So, there is an economic fallout of international trade as well.

In total, what we are seeing is that international trade is having a large amount of environmental and disease related implications. But then the question is, if international trade is bad for us then why are we doing it? So, we cannot just say that international trade is good or international trade is bad, but when we know that international trade has an implication for the environment, has an implication for conservation, we need to understand international trade, so as to be able to better regulate it.

We need to know not just the negatives, but also the positives of international trade. So, we can find out a way in which the positives can be retained by reducing the negatives. Which is why this lecture is important. We need to know, not just that international trade is leading to an increase in confusion, but we need to understand what are the benefits of international trade because of which international trade is occurring, and is there a way in which we can have these benefits without the large amount of air pollution or other pollution.

The question is, why international trade? Well, international trade has several benefits. It increases the variety of goods that are being made available; this includes not just consumer goods, such as food or clothes, but also includes things such as technology or medicines. So, a country that is not making a particular medicine, but the people who need that medicine can import this medicine from a country that manufactures the medicine.

So, international trade increases the variety of goods that are made available to any particular country. Secondly, specialization permits economies of scale, which lowers prices.

What this means is that, if a country specializes in making something, say a country is specializing in making clothes, when that happens the country would get into the profession of making newer technologies available, it would put money into research on how to make clothes in a better manner or more cheaply, it would try to have a vertical integration of the different components of making clothes, and when all of these happen then it is doing a specialization into this activity of taking clothes. The net result would be that clothes of better quality will be made at cheaper prices.

So, specialization which is resulting because of international trade. Now, international trade in this case is important, because if international trade was not there then the domestic market would perhaps be a very small market and in that case it would not make much economic sense for the country to put in a large amount of money into research or into new technologies for making the clothes.

Because the domestic market is so small that the country would not be able to recuperate the cost. But with international trade the market would be so large that it would become economically incentivizing, economically feasible, for the country to put money and resources into specialization, and when that happens we will start getting closer at lower prices and with better quality. And that would benefit not just the people in that particular country, but also people all around the world.

So, international trade is important because it permits a specialization which further permits economies of scale and lowers the prices. Then increased competition reduces the market power of firms and consumers. What that is saying is we had looked at market power. Market power is the phenomenon, when a few producers or a few consumers are in a position to alter the market prices, and a very good example is the organization of petroleum exporting countries or the OPEC.

Now, if OPEC decides that they are going to raise the prices of petroleum and if the international trade was not there, if OPEC was the only consortium that was able to provide petroleum, in that case they would be having a very huge amount of market power. But, if international trade permits a number of other countries who are not members of OPEC to also extract petroleum and to sell petroleum, then that is the market power of OPEC will be much lowered. Because what will happen is that, if OPEC increases the prices then the other country could sell larger quantities of petroleum because they are selling it at a lower cost.

All the countries would want to purchase petroleum at lower cost, so essentially, the country that is not a member of OPEC would be able to supply a larger portion of the international market. And, they would be able to do that by lowering the prices, that is not increasing the prices to the level where OPEC is planning to sell. And, the benefits would be reaped not only by that country that is not a member of the OPEC, but the benefits will be read by the whole world, because everybody would be getting petroleum at cheaper prices.

A benefit of international trade is that it increases competition and reduces the market power of firms and consumers. Similarly, if the number of consumers were less, in that case the consumers would be having market power. That is, if the consumer would say that we are not going to purchase above this price, then the producers would be at a loss. But with international trade what happens is that there are so many consumers, that if there is one consumer that is ready to buy things at a larger price then people will supply the goods to that particular consumer.

So, essentially, with a larger number of producers and larger number of consumers the market power of everybody reduces. Now, when market power reduces, it means that the market will be able to function in a much better manner in a much more natural manner, that is the market will become more and more competitive. And as we have observed before, a competitive market enhances the net surplus.

It optimizes for the maximum amount of surplus for the whole of the society. So, it is always good to have more producers and consumers so that the market power is reduced, because market power is an aberration that does not permit the market to work properly. So, this is another benefit of international trade.

Then there are enhanced flow of ideas, such as a computer revolution can begin by importing a few computers from abroad rather than making them domestically. What we are saying here is that with international trade it is possible for countries to leapfrog.

Leapfrogging; leapfrogging means that a country can move from a state of technology, say, state 1 to state C by overcoming state B. What we are saying here is that, in a normal course of action say a country would have begun with stage A, which is say telegraph, and from telegraph the countries move to a stage B which is say landline phones, and from stage B they move to stage C which is mobile phones.

Now, generally, if international trade was not there every country would move from a telegraph, to a landline, to a mobile because the level of technological progress in any country would be very less. But with deep frogging what happens is that the country who is in stage A can import the mobile phones from another country that is making those and it can directly move from stage A to stage C.

So, international trade by making available those items that you do not have to manufacture in your own country permits a country to leapfrog. So, to move from a primitive stage to a very advanced stage by removing the rungs of the ladder that were constraining the countries to move in the middle stage.

Similarly, if a country wants to move from a primitive economy into say a tertiary economy by having more of the service industry. So, the country might say that ok let us move into say the software industry.

Now, earlier if the international trade were not there then the country would have to first manufacture its own computers, which would mean that from a primary industry it would shift to a secondary industry of manufacturing and only when it would have a sufficient number of computers would it move to into a tertiary economy which is the making of the services such as software.

But with international trade it is possible that a country that is in our primary economy, that is it is more dependent on natural resources than on industries, it can directly import these machines the computers and say telecommunication equipment and it can directly move from a primary economy into a tertiary economy, that is the service industry, software industry.

International trade makes it possible for countries to move to a very advanced level of economy or to a very advanced level of development by permitting enhanced flow of ideas and technology. And with all of these, it leads to an enhanced surplus and welfare for the people, which is ultimately what we want. So, even when we are doing conservation, we are doing it for the people, because conservation provides benefits to people.

Similarly, international trade provides certain benefits to people, which is why we are doing international trade. Now, the point is how do we make a balance? How do we ensure that we are having an interaction trade in such a manner that we are also able to perform conservation? To understand that we now need to understand how international trade is able to enhance the surplus of people, how it is able to enhance the welfare of people.

To understand that we would have to get into the concept of world price. World price is defined as the price of a good that prevails in the world market for that good. It is the price of a good that prevails in the world market for that good. Essentially what we are saying is that when we are talking about international trade, there is a domestic price for things and there is an international price for things.

If we look at a thing such as a pen, now a pen when it is manufactured domestically when we have it sold in the market for a certain price and when the same pen is made available to the world market then it would perhaps be sold at a different price. So, what we are asking in the case of international trade is what is the world price.

Essentially what we are saying here is that we have observed that in the case of a market, we have the supply curve and the demand curve and here we have the price and here we have the quantity.

We have a supply curve, we have a demand curve and where both of these meet will give you the quantity and the price. But this is the demand and supply curve in the domestic market. But what happens is that, when we start to look at the international market, probably there are certain sellers who are able to supply things at a lower cost or probably there are certain consumers who want to purchase these items at a much higher price, because they have a much larger value to these products.

Essentially, what we have observed is that the demand curve tells the value that people are putting, the value to consumers and the supply curve is an indication of the cost to the producer. Now, it is possible that in the international market the value to the consumer may be different and the cost to the producer may be different because we are talking now about a very large number of producers and consumers.

So, a thing that can be made at a higher price in our country, it is possible that it may be made at a much cheaper price in some other countries, or also the reverse. Some things that we are able to make at a cheaper price it is possible that the other countries are not able to make those things at that cheaper price.

Which would bring a difference in the domestic prices and the international prices and also the domestic quantities demanded, and supplied and the international quantities that are demanded and supplied.

Essentially what we are saying here is that, together with the domestic demand and supply we also have an international demand and supply. Let us say that this is the demand and supply internationally. So, now, we are talking about the international market. That is when all the countries are doing the trade. Now, in this case, we will be having a different price, let us say that this is P prime and a different quantity than in the domestic market, let us say that this is Q prime.

Now, P prime may be the same as P or it may be different from P, but this P prime will be called the world price. The price of a good that prevails in the world market for that good. It may be the same or different from the domestic price. The world price may be the same as the domestic price or it may be different from the domestic price, but world price becomes very important in the case of international trade. Why?

Because these prices are an indication of the cost of manufacturing to the producers. And in this case, if the domestic price is less than the world price, what does that mean? It means that our manufacturers or our producers are able to make things at a much cheaper cost than producers in other countries. Which means that we are making things much more efficiently.

If we are able to make things at a cheaper price and others are able to make things at a much greater price then that would mean that we have an advantage over the other countries. Now, in the case of trade we have observed that people or countries should be doing what is what they are. They have an advantage in doing, whether it is an absolute advantage or a comparative advantage. Because, when we have the advantage then we are able to make things at a cheaper price, which means that we are in a much better position to sell and to earn money.

It will be of benefit to our country, but then it will also be offer benefit to the other countries because their domestic industries are not able to make things that cheaply, but they will be able to import these things from our country and so their their citizens will also be able to get these things at a much lower cost than what their industries were providing.

If there is a difference between the domestic price and the international price, and if the international price is higher, then it makes sense for us to export because we are at an advantage and we will be earning the foreign exchange. At the same time, the other countries - it is in their advantage to import because they will be getting things at a cheaper price.

Similarly, if the world price is less than the domestic price, it means that for that particular good our industries are not that efficient. They are not able to make things at that lower cost than is available in the world market. In that case, if we imported those goods then we would be able to provide those goods at a much cheaper price to our citizens. We will be able to increase the benefit or the surplus of our citizens. In that case, international trade makes sense.

Let us now explore both of these situations. What are the gains for an exporting country and what are the gains for an importing country? So, when we are saying an exporting country then it means that the domestic price in this case is less than the world price.

So, let us now start from the domestic surplus. Now, in the domestic market these are the demand in the supply curves. And the point where both of these curves meet, it gives us the prevailing domestic price and the domestic quantity demanded or supplied. And we have observed before that this triangle which is between the demand curve and the price gives us the consumer surplus and this triangle which is between the supply curve and the price, it gives us the producer surplus.

This is the situation before international trade. We have the consumer surplus, we have producer surplus, and this total is giving us the total surplus of the country before international trade.

And this country is going to export if the international price is greater than the domestic price, which is what we are showing here. So, this line is showing us the international price. This is the international price and this line is the domestic price. So, this is the price before the international trade, given by the meeting of the supply and the demand curves and this is the international price which is also the price that will be there in the domestic market once you have the international trade.

Now, why is that so? Suppose you have a producer who can sell things at a higher price in the international market, because the international trade will occur when you open the economy. When you permit the manufacturers in your country to sell things abroad. Now, it is a prerogative of the government to stop it. The government might say that no there will not be any international trade; we will not permit the manufacturers to sell things outside.

If that happens, we will have this situation. So, there is no international trade. Now, if the government says that no, you can sell things to people outside, in that case we have observed that the producer surplus is the difference between the price at which the item is stored and the cost of making that item.

So, the manufacturer, to increase their producer surplus, what will they do? Is that they would want to sell things to those people who are going to pay them a higher price, larger price. Now, if I can sell this pen in my country for 10 rupees and if I can sell this same pen in the international market for 15 rupees, and I am a manufacturer, then in that case I will prefer to sell it for 15 rupees, because in that case my profit will be more.

If the people in the domestic market want to purchase these goods, they will also have to pay 15 rupees, otherwise I will not sell it to them, I will sell it at the international market. Which is why the international price becomes important because once you open the economy then the international price will be the price that you will have even domestically.

Now, the amount of supply earlier was given by this line. This is telling us the quantity that is demanded or supplied. This is the quantity demanded or supplied. Now, in the case of international trade, what will happen is that the domestic supply will be given by this point. This is the point where the demand curve is intersecting with the price curve.

Now, we have observed that once the market has been opened, the international price is the price that will prevail in the domestic market. Now the thing is how much is the quantity demanded or supplied at this price point? The quantity that is demanded at this price point will be given by the point where the price line cuts the demand line.

This is the point. And at this point the quantity that is demanded in the domestic market is given by this line. This is the domestic demand or supply, because the quantity that is demanded will also get supplied.

The total quantity that is supplied or by the producers is given by this point, where the supply curve this one intersects with the price curve. This point will tell us the total supply. Now, this is the total amount that is being supplied by the producers and this is the total amount that they are supplying to the domestic market. So, we have two things. We have a total supply and we have a domestic supply.

Essentially, if we say that domestically a seller is selling say 300 pens, but in total the seller is selling one thousand pens, so the difference between both of these is 700 pens, in this case we will say that they are getting exported out. Because the seller is supplying these pens but not to the domestic market. So, if the seller is not supplying it to the domestic market, who is he or she supplying it to? The answer is the international market.

The difference gives us the total amount that is being supplied outside or the total amount that is getting exported out. The difference between the total supply and the domestic supply gives us the amount of export.

Now, let us have a look at the surplus. Now, before international trade we were having the consumer surplus that is given by the yellow triangle, and let us say that it comprises this portion

A and this portion B. So, what we are saying here is that, this much portion is A and this much portion is B.

So, we are dividing the consumer surplus into these two parts A and B, and the producer surplus is given by this green triangle. This is the total producer surplus C. So, before the trade this was the situation.

Now, after the trade what is happening is that, now this is the prevailing price point. So, now, the total consumer surplus is given by the area between the demand curve and the price curve.

Now, this is the total consumer surplus. Because here we have the demand curve, this is the price line and so this area, this yellow coloured area that was that we had written as before, this is the new consumer surplus. Similarly, the producer surplus is the area between the supply curve and the price line, so the new producer surplus will be given by this larger triangle.

In this case, we can extend the supply curve till this point where it touches the price point and, so this big triangle is now the new producer surplus. Producer surplus now is B, this portion plus C, this triangle plus D, this is the new producer surplus.

If we look at the total surplus, before trade we were having a consumer surplus that was A plus B which is what we are writing here, so before trade consumer surplus was A plus B, before trade the producer surplus was C which is what we are writing here. So, the total surplus before trade was A plus B plus C.

After trade what is happening is that the new consumer surplus is A, which is what we are writing here. The new producer surplus is now B plus C plus D which is what we are writing here, and so the total surplus is A plus B plus C plus D which is what we are writing here.

If we look at the consumer surplus, before trade it was A plus B, after trade it is only A. There is a net change of minus B, which means that the consumer surplus reduces. So, the result of the international trade is a reduction in the consumer surplus, and this reduction is happening because the domestic price levels have gone up.

As we had seen before, the consumer surplus is the difference between the value that the consumer puts on the good and the price at which they are able to get it. If price increases then surplus reduces and that is what we are observing here, because this is an exporting country which means that the domestic prices were lower and the international prices were higher.

After the trade the domestic prices also increase, they become equal to the international prices and with the increase in the price there is a reduction in the consumer surplus.

The producer surplus earlier was C; the new one is B plus C plus D. So, there is a net change of plus B plus D which means that the producer surplus is increasing. Now, the producer surplus as we have seen before is the difference between the price that the producer will get and their cost of manufacturing of the cost of producing that particular good. Now, the cost of manufacturing will not change because of international trade, but the price that the producers get will actually increase.

Now, with the increase in price, then total profits will increase which means that their surplus will increase. And the increase in the surplus is given by plus B plus D, so there is an increase. So, the consumer surplus reduces the producer surplus increases.

What about the total surplus? Earlier it was A plus B plus C, but now it has become A plus B

plus C plus D, and so the change is plus B, so the total surplus increases.
Now, we had said before that the aim of the policy should be to increase the total surplus, because we cannot be favouring the producers or the consumers, and so, if we want to look at the welfare of the society we should keep a target of increasing the total surplus. And here, we are observing that for the exporting country the total surplus increases if they get into international trade.
The total surplus before the international trade was less, after the international trade it is more. So, it makes sense for the exporting country to get into international trade. So, international trade is beneficial for the exporting country. But what happens to the importing country?
As before, this is the domestic surplus before the import. We have the consumer surplus in yellow, we have the producer surplus in green. Now, because this is an importing country, now a country would import when the international prices are less than the domestic prices, which means that the country is able to get the things cheaply from abroad and it takes much more money to make it domestically in the country, only then a country would import.
In this case, the international prices are less than the domestic prices. And we are representing that here. If we look at the domestic demand and supply, the point where these two curves meet tells us the domestic price before the international trade. In this case, the domestic price is low and the international price is less which is why this country is going for the import. Here we are representing the international price or the world price by this red line.
Before the international trade, this would be the price, after the international trade begins we will have this price. And remember, that this is the price that we will get even in the domestic market. Why? Because once the country is opening up for imports, now, the consumers have an option whether to buy the domestic product or whether to buy the international product.
If quality remains the same, the consumers would want to purchase things at the lower price. So, they would go for the item that has been manufactured internationally because it is available at a cheaper price. And so, the domestic producers would have the option of either reducing the price to match the international price or going out of business. So, which is what we are observing here. So, we have this as the price after international trade even in the domestic market.
Now, the total quantity that is demanded in the market is given by the point where the demand curve intersects the price curve. This is the demand curve and it is cutting the price curve at this point. This is the total supply that is being demanded or this is the quantity that is being demanded and supplied in the domestic market.
For the domestic producers, the supply curve was this, and the point where the supply curve is cutting the international price is telling us the domestic supply. So, this is the quantity that the domestic producers are able to supply and this is the total quantity that is being supplied in the market.
What we are saying here is that, the total supply is 1000 pens as we have seen before; the domestic supply is 300 pens. Now, that is the difference in both of these cases, so total supply in the domestic market is 1000 pens out of which only 300 are being supplied by the domestic producers, so the rest of these 700 pens will be in this case imported.
This difference between Q and QD is telling us the amount of import in this particular.

Let us have a look at the change in the surplus. Before international trade we were having a consumer surplus and a producer surplus. Now, because we have this red international price line, we divide the producer surplus into B and C and this is the consumer surplus. So, the consumer surplus before trade was A and the producer surplus was B plus C.

Now, what happens to the surplus after international trade? Now, the producer surplus is given by the area between the supply curve and the price curve. So, this triangle is telling us producer surplus after international trade, because now the price point is this red line. The producer surplus in place of B plus C has now reduced to only C, and the consumer surplus is given by the area between the demand curve and the price.

Now we can extend it till this international price and this triangle is now telling us the consumer surplus. The consumer surplus now is A plus B plus D. If we make a table, before the trade we were having a consumer surplus of A which is what we have written here, and a producer surplus of B plus C which is what we have written here. Before the trade we were having A and B plus C.

After the imports are permitted, the consumer surplus now is A plus B plus D which is what we have written here A plus B plus D and the producer surplus is C, which is what we have written here C.

Now, in this case you can observe that before trade consumer surplus was less after the trade the consumer surplus has increased and the change is plus B plus D, which means that for the importing country the consumer surplus increases, which is because the consumers are now able to get the products at a reduced price and the consumer surplus tells us the difference between the value that the consumers put on the good and the price at which they are able to get it.

Because of the trade, the value will not change but the price has reduced and so the consumer surplus has increased. In the case of the producer surplus before it was B plus C, now it is only C. There is a net change - it is minus B. So, the producer surplus has gone down. And why has it gone down?

Again because, the producer surplus is the difference between the price that the producers get and their cost of making the things.

The cost of making the goods does not change, but the price that the producers will get it has gone down which would reduce the producer surplus. And the quantity is minus B. But when we are making the policy, we are more interested in the total surplus. Now, earlier the total surplus was A plus B plus C which is what we have written here, after the trade it has become A plus B plus C plus D. And so, there is a net change of plus D in the total surplus, so the total surplus increases. When the total surplus increases it means that the welfare of the society increases.

So, the welfare of the people who live in the country that is now importing the goods, has increased because the country has decided to import the goods. The total surplus increases not only for the exporting country but also for the importing country, and which is why international trade actually happens, because it increases the total surplus. But then we have the role of the government.

The government may say that let us give certain amount of protection to our manufacturers, because the producer surplus goes down whenever there is an import. So, the government may say that no, we are not only interested in the total surplus, we are also interested in the welfare of our manufacturers. We need to protect our manufacturers. And how does the government protect the manufacturers in the case of input? By putting in an excess charge on the imported goods.

This protection is done by, this was the earlier situation, but now the government says that we will add a tariff. Which means that any goods that are imported will not be imported at this price, but we will put a tariff which is now shown by this blue line.

This difference is the tariff and so any import will have to be made at this price. So any quantity of goods that is being imported, it will have an extra charge, which is the charge of tariff and this is the money that the government will keep to itself.

The government says that we are going to we are putting this tariff to produce our to protect our producers, and so if you import this pen from any other country and if this pen is available for 10 rupees we will put a tariff of 2 rupees, which means that if anybody wants to purchase this pen from outside this pen from the international market they will have to pay 12 rupees. And out of these 12 rupees the 10 rupees goes to the other country that has supplied this good and 2 rupees are now with the government.

Now, the benefit of the tariff is that, the disadvantage to the domestic producers is reduced. Because, earlier the domestic producers were manufacturing this pen for say 13 rupees and it is available in the international market for 10 rupees. So, everybody wanted to have this pen. But now with the tariff this international pen is available at 12 rupees and the domestic pen is available at 13 rupees. So, the amount of comparative disadvantage that the domestic producers were having has now been reduced from 3 rupees to just 1 rupee. So, it is now possible that they will be able to sell more pens.

This is the price after international trade and with the tariff. This is the price before international trade or the domestic price. With international trade the price came down, but with the tariff it increased again, but it is now between the domestic price and the international price.

In such a situation what happens? Earlier, we were observing that this much was the domestic supply. So, the domestic supply was given by the point of intersection of the domestic supply curve with the international price or the world price. Now, the price has increased because of the tariff. And so now, the domestic supply after the tariff is given by this point where the domestic supply curve is now intersecting the new price curve. And at this price point, now this much is the quantity that is supplied domestically.

What we are observing here is that, earlier the domestic suppliers were only supplying this amount, but now they are supplying this amount. The total amount that is being supplied by the domestic producers has gone up. Which was one of the aims of putting up a tariff to provide protection to our domestic manufacturers. So that they do not completely go out of business. That they also have certain amounts of goods that they can sell and now it is more than what they could have sold if there was just a free input of goods.

Now, earlier the total supply was this much, given by the domestic demand curve cutting the international price or the world price. Now, because the price has increased, so now, this is the point which will tell the total supply. This is the total supply after the tariff, the point where the demand curve is setting the new price curve. This is now the total supply. So, there is a decrease in the total supply, so earlier total supply was this much, now it is this much. And the difference between the domestic supply and the total supply will give us the amount of import.

Earlier the import was this much. The red arrow line and the new import is this much. What is happening is that the country has now reduced the total amount of imports. Now, a reduction in the total amount of imports would also mean that the domestic suppliers or the domestic producers, are able to supply more, but at the same time we are now using less amount of foreign exchange to pay for goods that are manufactured outside.

We are even saving on our foreign exchange. So, this is what is the situation after the tariff. Now, let us analyse if it increases or decreases the total surplus. Now, before the tariff we had a situation like this. So, the consumer surplus was A plus B plus D the producer surplus was C, which is what we have seen before. Now, with the tariff to analyse it, let us divide this portion B into B1 and B2 and this triangle D into D1 D2 D3 and D4.

We are not making any changes, but we are just saying that in case of writing D we will say that the consumer surplus is now D1 plus D2 plus D3 plus D4 and in place of writing B we are now writing it as B1 and B2. The consumer surplus remains the same. It is A plus B1 plus B2 plus D1 plus D2 plus D3 plus D4 and the producer surplus is C. So, this is the situation before the tariff.

What happens after the tariff is imposed? Now, the consumer surplus will be given by the triangle that is formed by the demand curve and the price curve. This is the new consumer surplus. The new consumer surplus is A plus B1 plus D1, which is what we are writing here, A plus B1 plus D1.

The new producer surplus is given by the domestic supply curve and the price curve. This is the new producer surplus, which is C plus B2 which is what we are writing here. And the amount of revenue that accrues to the government is given by this rectangle which is D3. Why? Because, this is the amount of input and this is the amount of tariff.

The government revenue is imports into the tariff. So, more the amount that is getting imported or more is the amount of tariff the government will earn more revenue. So, for each pen the government was charging 2 rupees of tariff. Now, if 10 pens are imported the government gets 20 rupees, if 100 pens get imported the government gets 200 rupees.

Similarly, it has got to do with the amount of tariff, if 10 pens were imported and the tariff was 2 rupees then the government gets 20 rupees, if the tariff increases to 3 rupees then the government gets 10 into 3 is 30 rupees. So, we are representing that by this rectangle D3. So this is the surplus after the tariff.

If you put it in the form of a table, before the tariff that is when you talk about this situation, the consumer surplus was A B1 B2 D1 D2 D3 D4, A B1 B2 D1 D2 D3 and D4 that was the old consumer surplus.

The old producer surplus was C which is what we have written here and the amount of government revenue was nil. After the tariff we have the consumer surplus as A plus B1 plus D1 here, the producer surplus is C plus B2 which is here, and a government revenue of D3 which is what we are writing here. What is the change? The consumer surplus it has reduced. This is the amount of reduction and the consumer surplus has reduced. Why? Because the tariff has increased the prices, and more the prices means less the consumer surplus.

The producer surplus has increased. Why? Because the tariff has increased the prices. More the prices, more is the producer surplus. The government's revenue has also increased, earlier it was 0 it is of some amount, but then what happens to the total surplus? The total surplus in this case has gone down. Which means that even though putting up the tariff is going to benefit the producers and the government, it is not going to benefit the society in total because the total surplus goes down with the tariff, and which is one of the reasons why tariffs are not that good for any society.

We can sum up by remembering that trade can make everyone better off. And this is why we are observing trade in today's world international trade because it is increasing the surplus for the exporting country, for the importing country, and any position of tariff may lead to a decrease in the total surplus.

That is all for today. Thank you for your attention. Jai Hind!