Strategic Trade and protectionism - Theories and Empirics
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Lecture – 28
Welfare Effects of Tariffs

Welcome friends once again to the NPTEL module on Strategic Trade and protectionism Theories and Empirics. We have largely discussed many theories on identifying strategies for international trade. So, largely those vary from classical to neoclassical approach and those are you know based on various facts and figures. And this is our you know our 28 lecture and we have already arrived into the section called Tariffs or the most important aspects of protectionism.

So, this is week number 6 and myself Dr Pratap Mohanty. You know we have been covering this you know protection issues in various training centers, especially for the Indian revenue servants for their training and largely you know the tariffs and the non tariff barriers are discussed. And in this context let us understand since the last class we discussed types of barriers types of protectionism where we identify tariffs.

So, now we are trying to find out what are the effects? What kind of effects? I mean today I mean in these 2 lectures we are emphasizing on the kind of effects or the kind of protection we are going to do deal with. Especially the extent of affect the magnitude of effect is very very important to ponder on. So therefore, the title of that you know chapter the title of the presentation today is specified as welfare effect of tariffs.

So, what are exactly being covered or going to be cover are identify again protectionism, partial equilibrium analysis of tariff. This is the one we have also referred in our you know earlier lectures to some extent. Especially identifying the effect on small country versus large country, debates while we understood for you know offer curve analysis. Now we says that we are also I mean supposed to know the partial is against general equilibrium analysis of tariff.

Then small country and large country debates must have been also understood for a better clarity. And at the end of the two lectures we will for sure trying and trying I will be trying our best to clarify optimum tariff. In between there are other points like effective rate of protection just protection is not enough.

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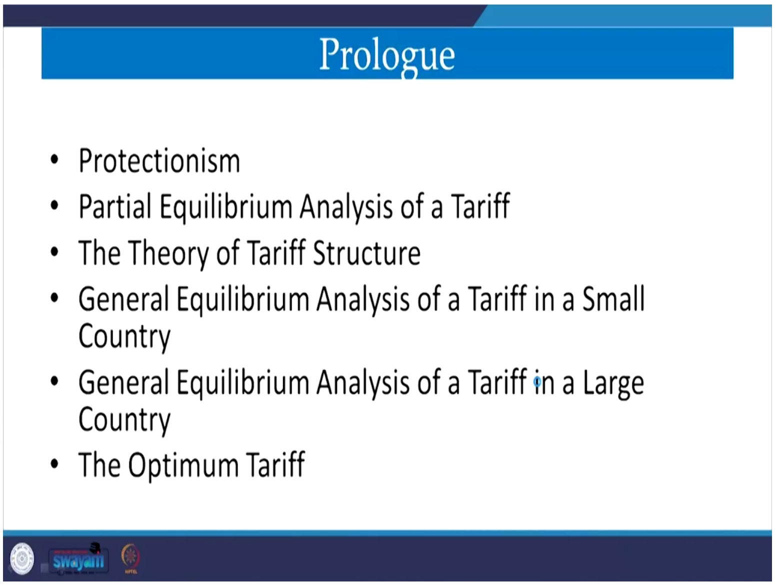

So, there are other kind of you know protection which are very very important and in practice many countries have been doing. So let us move on the you know the complete framework of the analysis which we have already shown these.

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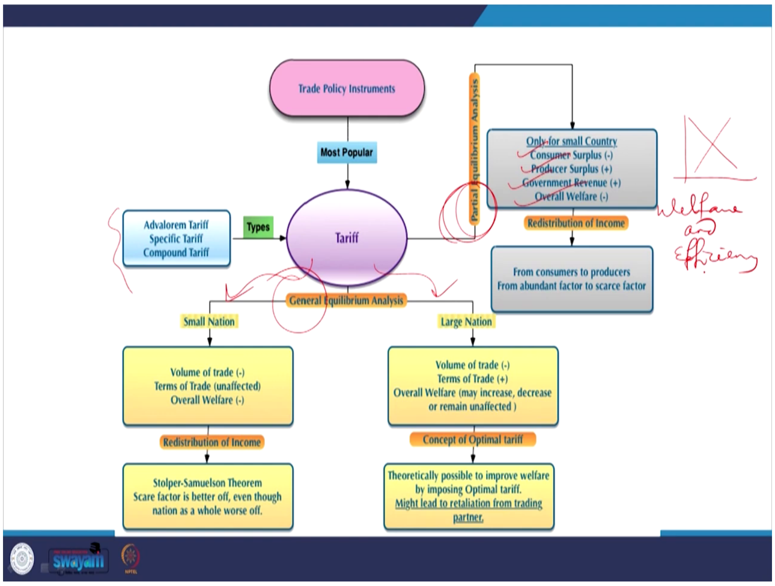

And so tariff you are discussed in the context of small country and in large country setups. So, small country and large country and we will be identifying through a general equilibrium perspective. Where all the markets are simultaneously dealt and the distribution of the income and how it you know impacts the determination of optimum tariff it is very important.

So, tariff types are discussed ad valorem specific and compound and here in the partial equilibrium setup also partial equilibrium setup as well. We will try to identify through the very you know structure of demand and supply diagram. So, we will identify consumer surplus, producer surplus government revenue or overall welfare to the country.

So, broadly we will identify welfare analysis and efficiency of certain segments in the country, especially for consumers as well as producers.

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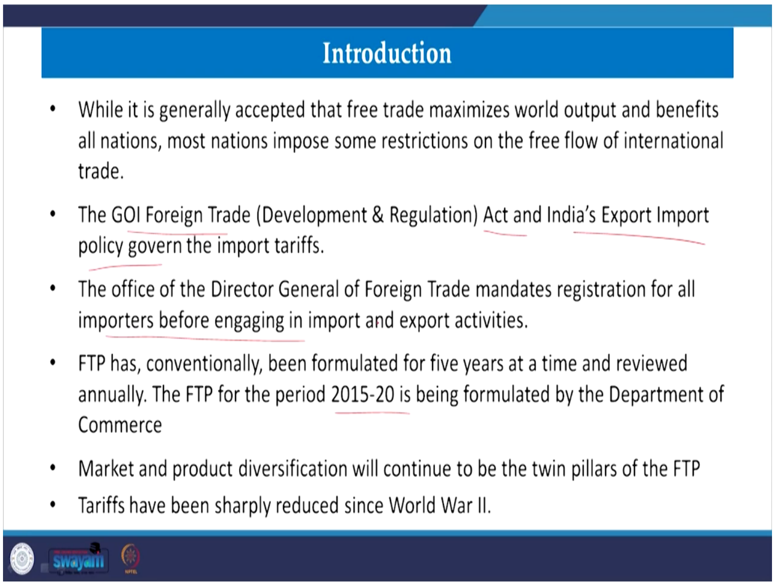

So, let me tune into the exit portion of the content. Now so we have already understood that or less the restriction I mean and it is good for the country, even if this is prescribed in many theory. But largely many countries have been in practice restricting the flows of other goods.

Now, it is also been observed that the restriction is actually beneficial to the participating countries and the derive large derive you know extent of number of strategies to maximize their individual gain. Now had it been the fact that all the members countries are simultaneously cooperating and they derive the you know best out of it. The total welfare to each of the member country could have been much higher as mentioned in the theory.

So, now what is who is who has the responsibility the government of India has foreign trade act in India export import policy govern the import related tariffs. So therefore, FTP policy foreign you know trade policy and the latest document as we discuss into the available the drop report is available for the 15 20 which is prescribed number of new tariff lines.

So, the DGFT of India which is DGFT Director General of Foreign Trade mandates registration of all the importers before engaging in import and export activities. Now as we already said FTP stands for Foreign Trade Policy, which is usually one of you know made for in every 5 years time and reviewed annually and that was the responsibility of the department of commerce.

Now there are how to I mean what it does? It does basically in identifying market in product diversification and these are usually the twin pillars of WTO discussion as well as the foreign trade policy. So, tariff it has been also observed that tariff have been sharply reduced since World War II. And because of many suggestions through GATT or any other topmost financial you know organization institutional framework which is actually reduce the tariff lines.

Now let us understand the effects of tariff, the previous you know one some of the points we have already discussed in earlier lecture. So, let us not emphasize so much.

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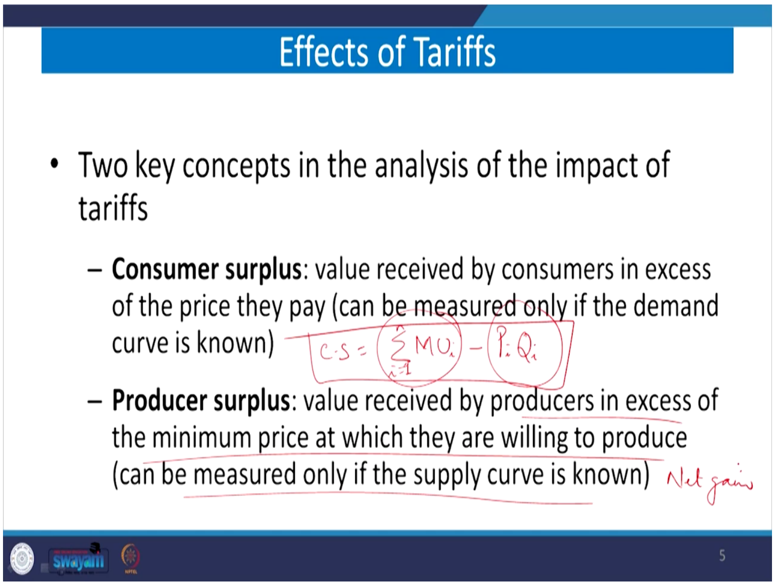

Coming to the effects of tariff broadly we will talk about consumer surplus and producer surplus. And consumer surplus we mean how the tariff imposition of tariff we actually creating some kind of you know extra pay or the burden on the consumers and how the consumer are actually receiving the burden and those can be measured with the demand curve.

And whereas suppose producer surplus received through the excess minimum, you know basically is defined as the producer in excess of the minimum price at which they are willing to produce.

Usually this is defined as what the consumer, I mean in case of consumer surplus we usually define what the consumer sum of marginal utility of the consumers derives from ivories from 1 to n th commodities minus the exact payment the consumer is actually paying to the i th commodity. So, this is nothing but called consumer surplus.

Now similarly we can define for producer surplus, basically this says in consumer surplus says the total utility minus total spending. So, the net is actually called consumer surplus. Similarly in the producer surplus what the producer are receiving minus the exact or the you know real cost of production or the opportunity cost of production. So, basically producer surplus measures the net gain out of trade. Now here the context is for tariff how tariff is actually changes.

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Consumer surplus as well as producer surplus is the trivial aspect of understanding we must emphasize it. Now import so there are different types of tariff as we discuss in the last class you largely import verses and export tariff are compared. Usually you do not I mean countries hardly charge any tariffs imposing tariffs on exports because it de motivates exports. Whereas, country you know usually imposed tariff on the imported products.

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So, this is what we have said. So, I mean there are probably you know different types of tariff first categories of Ad valorem. It is basically the proportionate change in the value of the product and you know the tax value amount increases or decreases.

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The second one is specific no matter what is the value we are importing there will be a specific sum amount imposed.

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But the important direction in this regard is the compound tariff, where many of the tariff lines are actually channelized this through for compound interest, where it is compose of you know fixed as well as ad valorem. So, there are different kind of structures given in tariff. So, those three are broadly discussed in different theories of tariffs. As we discussed in the last class tariff is a tax on the obviously, on the imported goods.

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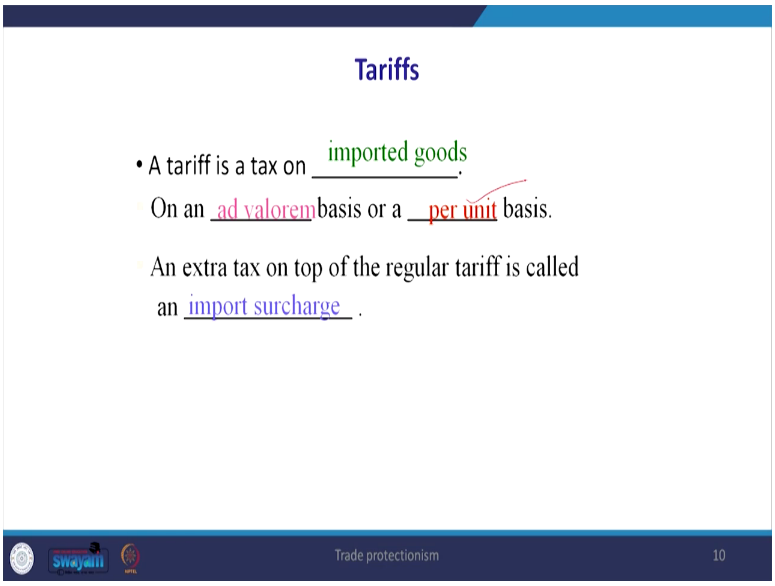

Now, on an ad valorem basis as we as I said or on a fixed or ad valorem or this is also called you know per unit basis. So, an extra tax on the top of the regular tariff is called surcharge or called import surcharge. Now what are the effects of a tariff on price output and consumption, we let us have some assumptions to evaluate it otherwise it is completely meaningless to talk about the impacts.

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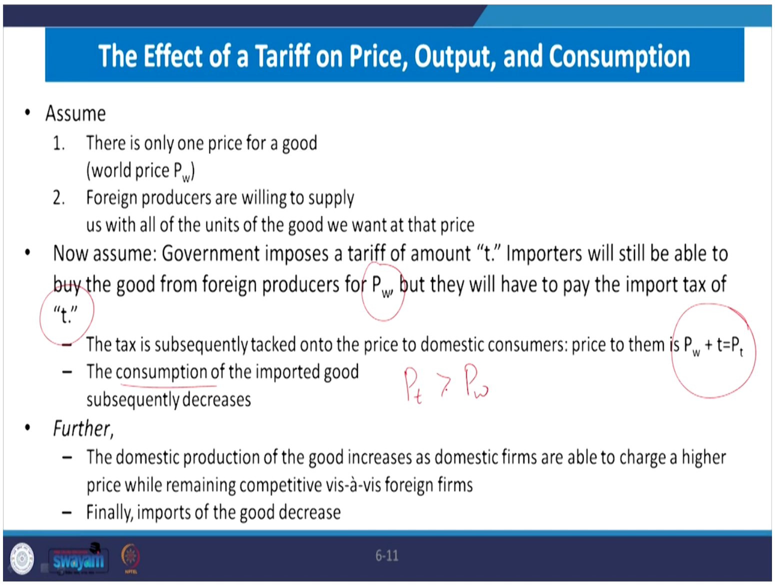

So, the first assumption is there is only one price for a good, then only we can talk about you know imposition of tariff by a country and it is impact on the world prices. But if the price is different then tariff probably is not going to be evaluated. So, foreign producers are willing to supply us with all the units of the goods we want at that price.

Now, this is an assumption because if different foreign producers are reluctant to export the product at a given price. So, the exact impact of tariff imposition probably is not understood or evaluated. So therefore, you know this is very important. Now we also assume that government imposes tariff among t let it be t and importers will still able to you know buy the good from foreign producers that at a price Pw and they will have to Pw as I just said.

They will have to pay the import tax of amount t, let it be this is defined in t. So, the new price after taxes by the government the new price (Refer Time: 12:31) sounds to be Pw plus t that is equal to Pt. So, Pt stands for the price after tariff. So, conception I mean basically this is one consumption of imported goods, subsequently decreases consumption decreases why because the price t is greater than that of P or Pw.

So, since you know the after price you know is higher, after tariff the price is higher the consumption of those goods actually falls. So, you know to add further to our discussion the domestic production of the goods increases as domestic firms are able to charge a higher price. While remaining you know remaining our competitive vis a vis foreign firms. So finally, imported goods actually decreases we just said.

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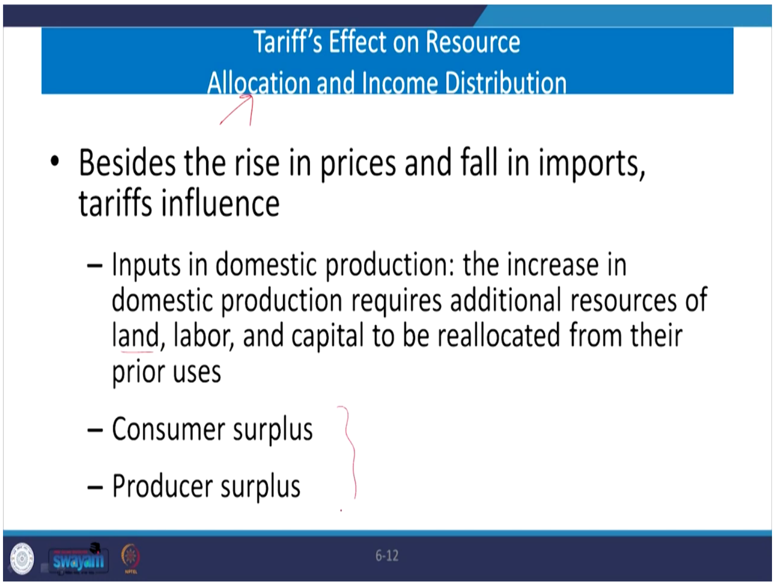

Now, based on this understanding we may move into the under discussion of you know resource allocation. How resources is actually allocated due to tariff. So, besides the rise in prices, there has been a fall in imports and due to the tariff in influence.

So, now how it affects allocation, because of the fact that inputs in domestic production is getting changed. So, there is an increase in the domestic you know production, I mean in order to increase the domestic production which requires original resource like land labor capital to be reallocated from prior uses.

So, basically here we wanted to emphasized the allocation effects, since the domestic cost of production increased after tariff on certain segments. So, the domestic reallocation takes place. If labor and land is expensive or land related products are expensive, then land may be used little less. So, those reallocations also evaluated in terms of consumer surplus and producer surplus we will evaluate in our you know in our you know diagram.

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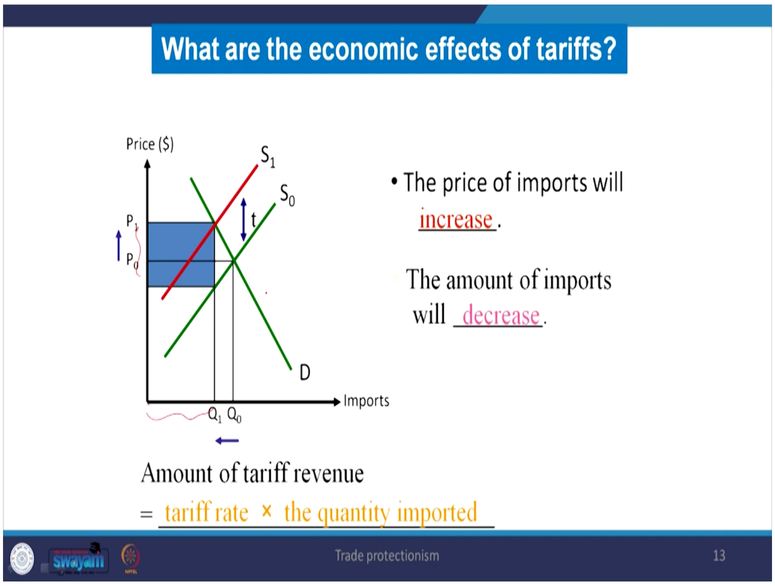

So, what are the economic effects of tariff as we already discussed, if tariff you know tariff is impose supply is retarded supply is disturbed. So, supply curve is actually shifted towards back. That says disincentive device so it is shifted to aspect which resulted in higher prices higher prices price will rise and quantity demanded will fall. In a simple you know partial equilibrium set of can easily understood ok. So amount of quantity import will decrease.

Now amount of tariff will be simply the extent of quantity tariff, I mean that amount of Q imported times the t. So, which nothing but tariff rate times the quantity imported. So now, this much is imported times t. So, this highlighted area is nothing but the revenue earn by the government if the tax is impose you know by the government.

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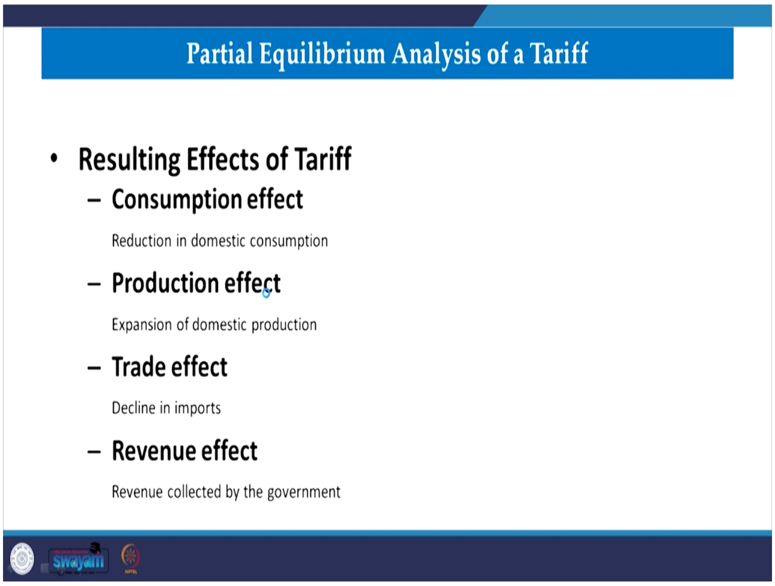

So, in the partial equilibrium setoff as I just said through the demand and supply analysis, which only captures a very limited information. So, there are probably 4 effects, we are going to discuss first is called consumption effect where tariff usually reduce domestic consumption.

And our production effect which is you know who is really which indeed fosters domestic production due to you know higher relative prices.

So, there are trade effects as well and trade effects where you know the decline in imports is observe, revenue effects where the extent of imports times the price, so government on revenue out of it. We will also try to compare this in our next lecture we will be discussing about I mean the revenue effect of this as against non-tariff barriers.

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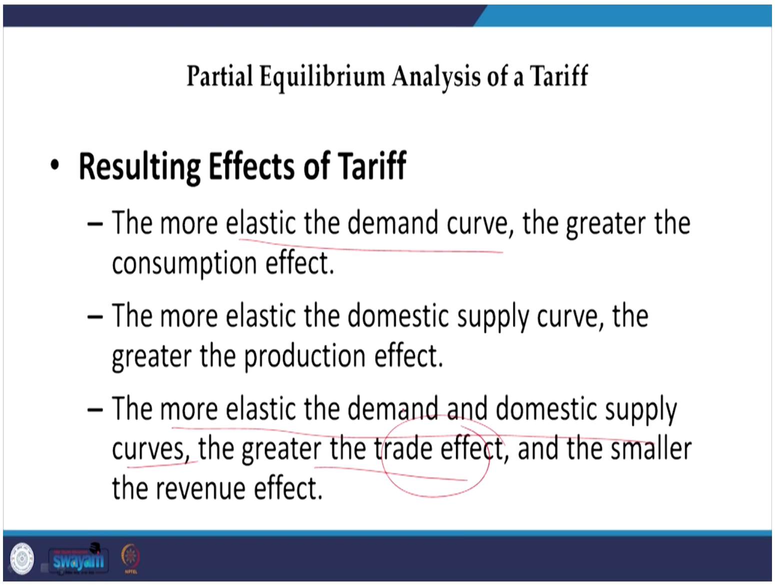

Those will be very interesting to observe. So now, what are the resulting effect we have partly discussed earlier. So, more the elastic the demand curve is we will observe through the diagram in a short while more the elastic. Now imagine the demand curve is more flatter and now more elastic the demand curve what do you mean by this it is very responsive to the you know to the change in the prices.

Now, since tariff is increasing the price level that the consumption effect will be very stronger. So, what is going to happen the revenue effect might fall, because you know it is not going to purchase you know I mean impact import will be restricted hugely ok.

So, greater the conception effect is I just said. So, more the elastic the supply curve supplies is more responsive, that means higher the tariff higher the supply the greater is the production effect.

So, those effect can be understood with the help of retail in a I mean detailed diagrammatic analysis. More elastic the demand curve and domestic supply curve when both are elastic greater the trade effect. So, jointly the trade effect will be more and smaller in the revenue effect, because both are very highly responsive. So, that will restrict the trade.

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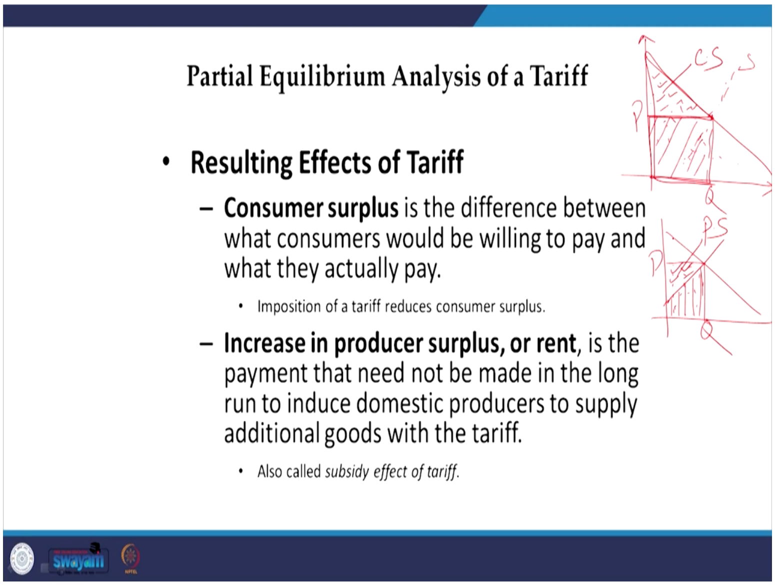

So, the revenue will be eventually reduced we will. Analyze that so resulting effect of tariff in terms of consumer surplus and producer surplus can be evaluated. So as I just said under a demand curve, I mean if you just draw a simple you know consumers surplus diagram from the microeconomics theory. Under the demand curve is basically all the utilities derived by the consumers.

So, given a price if the price is said somewhere here due to market equilibrium or so. So, if this is the supply curve the price is determined, so this much of quantities produced. Now consumer are supposed to pay this much of price to the this much of you know income to the seller.

So, consumers are not saving anything out of it. So, the total utility are on express under the you know demand curve till this quantity. Now this much is paid out of the total utility. So, what is left? So, this much is left, so these are actually the this triangle is actually representing consumers surplus.

So, we have you know understood earlier in microeconomic theory. So, this is simply a microeconomic analysis. Where is the producer surplus? So, it is simply the total revenue earn minus your total expenditure made to earn those revenue. So, basically the producers this is the P this is the Q.

So, the producers earn this much of revenue after selling and this much of the quantity is demanded by the consumers. So, based on that you know how much is the spending, these are the spending for each unit of production till this quantity. So, total revenue is that so whatever is left these are actually producer surplus PS ok. So, increase the producer surplus or rent is the payment that need to be made in the long run to induce domestic producer to supply additional goods with the tariff.

So, those may be you know utilized for you know for subsidies purposes to understand the effect of subsidy.

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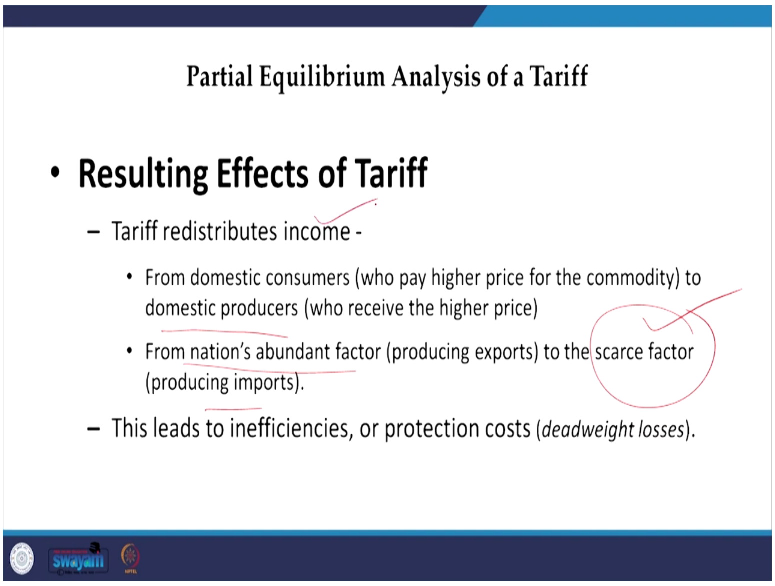

Now, so resulting effect of tariff redistribution of income. So, as we discussed domestic consumers to domestic producers and due to higher prices and from nation's abundant factors to nations scares factor as we discussed in earlier theory.

Because the abundant factors are usually producing higher prices, I mean usually exporting your products. Where as by exporting the products and in return you usually take you know import of the scarce factors which are usually imported. Now due to tariff, tariff is going to protect those industries. So, there are prices for those imported you know items where this scares factors are used will be receiving higher prices after tariff.

So therefore, scarce there will be redistribution of income. So, tariff really helps in identifying those things. So, this leads to in efficiencies or protection cost, so there are those can be explained with the help of deadweight losses in the diagram ok.

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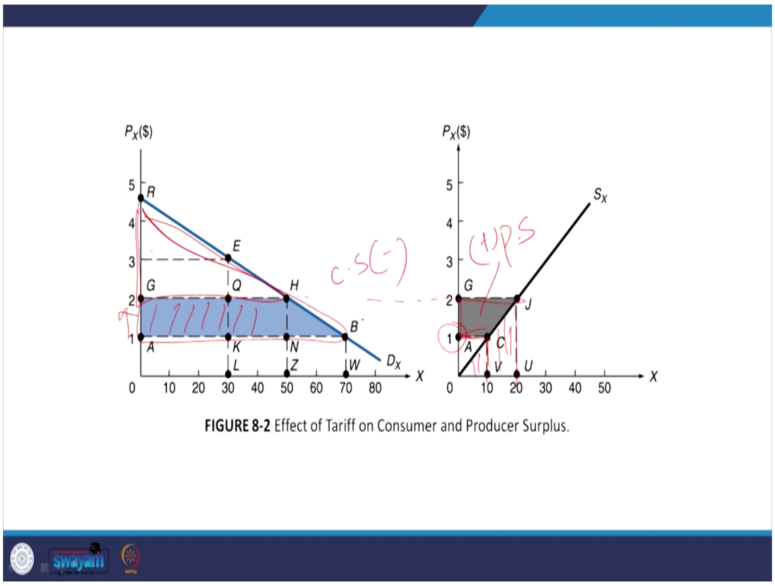

FIGURE 8-2 Effect of Tariff on Consumer and Producer Surplus.

So, what I mean so we have already explained this is if you know price increases, then the total area is consumer surplus now the net area this much is consumer surplus. So, this is the loss of consumer surplus. So, for consumer surplus is concerned and this is the revenue.

Now trade price 1 now trade the new price 2 revenue is now increased. So, the net gain in revenue is I mean these are under these are actually cost of production. So, the highlighted area is called net revenue to the producer these are called producer surplus, P S this is I mean gain of positive PS and CS which is negative. So, this is clearly identified the diagram.

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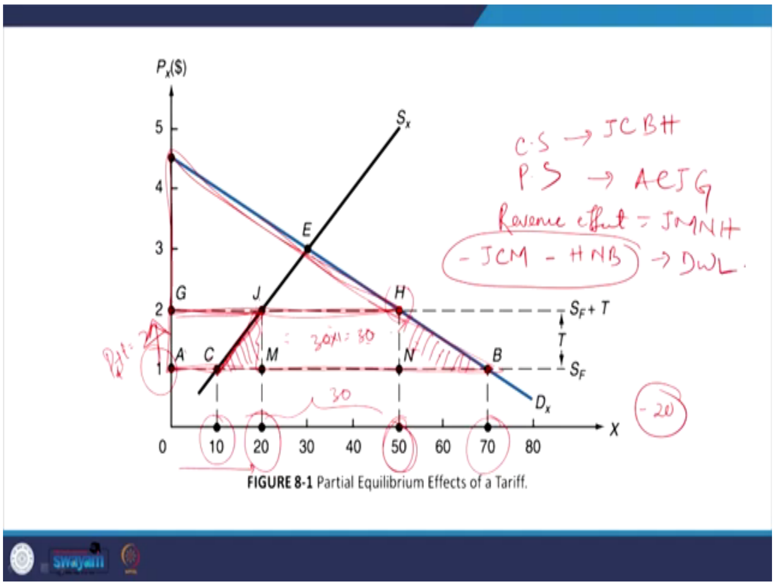

Now given the explanation as we just met the theory as we talked about, now if the price is one and 100 percent tariff is imposed on that. So now, if it is 1 rupees is added. So now, price is actually T plus i mean P plus t P plus T which is equal to 2. So, now, due to rise in the price, so now initial level of consumer surplus are like this whole area under the curve and now due to higher prices this is the consumer small you know triangle.

So, these are the whole area of you know loss of consumer surplus. Where as producers gain by this area trapezium area and the deadweight loss can be usually explained out this area this is the bigger trapezium area is you know J C B H is the you know loss of consumer surplus after deducting producer surplus, but they will gain the area.

So, I mean gain I will just talk about. Now due to this you know higher tariff what is going to happen producers are actually gaining, so there are some production effect. So, I mean producer are going to produce domestically they produce 10 units earlier due to higher prices rise in prices now they are producing 20. So, 10 to 20 is basically called production effect.

Where is consumption effect like you know initially consumer are for consuming 70 units. Now due to tariff, so they are the new consumption is 70, so 70 minus 50 minus I mean 20 is the consumption effect. So, basically the loss I mean basically there is less consumption. Now consumers if a consumer surplus and producer surplus can also be derived.

So, producer surplus is nothing A C J G area A C J G as we have already discussed. Whereas, consumer surplus are the is the area with J C B H. Now out of all those things how much is now imported 20 units are actually produced by the domestic you know producers. But 50 units are now still imported. So, the net import is again 50 minus 20 this is basically 30, 30 units times the tax is paid 1.

So, 30 into 1 equal to 30 dollar or 30 rupees whatever the denominator denominations can be identified. So, this is largely the revenue effect J revenue effect explained is J M N H. So, net loss to the society is this area this is highlighted in this one and this one, net losses to the society after you know after imposition of tariff.

Now what is more important in the discussion for us is to identify the redistribution of income, as well as to talk about some kind of you know net losses to the society as explained by deadweight loss. So, the J C M minus of this minus of H N B is called deadweight loss DW deadweight loss to the society. So, far as the efficiency measures are concerned.

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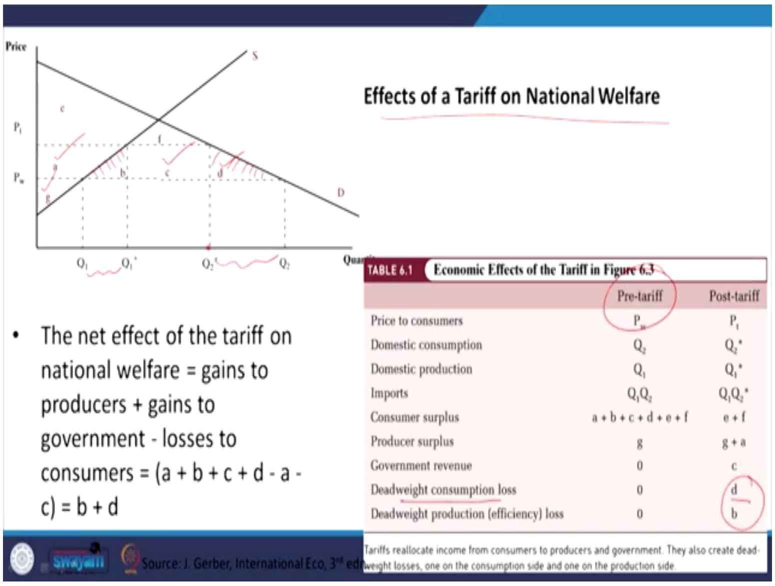

Now, what are the effects are again explained here, now we can find out from this diagram as well effects of tariff on net welfare losses. So, we have already seen b minus b and d it must have retained deadweight loss. Deadweight loss consumption loss deadweight loss only consumption is b d, deadweight loss of consumption is d because this much of consumption is forgone due to tariff, because only Q 2 is consumed in our last diagram already discussed here only 50 is consumed.

Now, so this is the lost d is the area a loss due to consumption effect and this much is extra gain to the producers. So, b is the area defined as the gain to the producers or what we wanted to say is the following. So, the gain actually to the producers are g and a and so that the total losses are broadly divided to b and here it is d b minus d.

So, these two are jointly defined as called you know deadweight loss. Now government revenue you can find out in the pre tariff position as compared to post tariff position, c is the; c is the area called you know government revenue.

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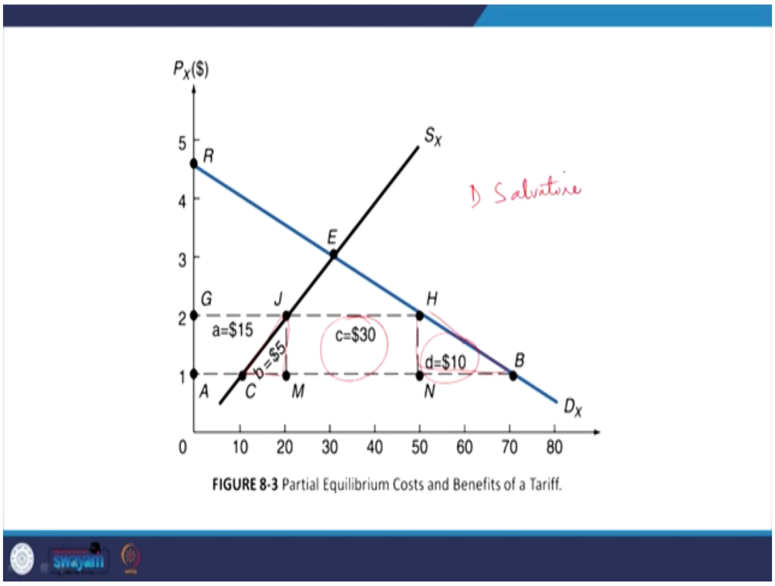

So, these are the way by which you can define the welfare changes to the society, which we already defined 30 as here this is 10 because it is you know. So, times one this is the; this is the one area defined like this, this is the area defined here. So, as for the examples given in the book you can refer the book by Domenic Salvatore you can clarify the exact figures from the book.

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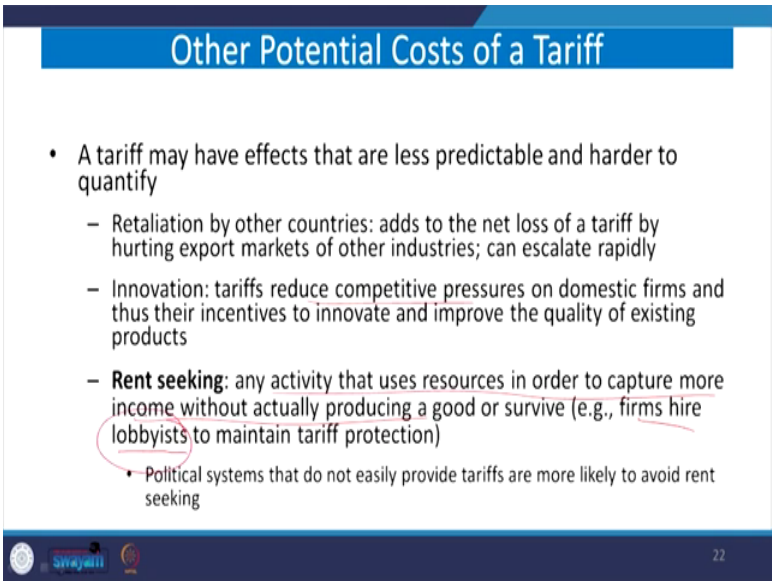

Now, let us understand certain other potential you know cost of tariffs, since you are you know emphasizing the welfare you know effects of tariffs. Tariff you know have effects that are less you know predictable and harder to quantify. Largely retaliation by other countries ask to the net loss of a tariff, because you know if someone country impose tariff another country will little yet by hearting export markets of other industries.

So therefore, the tariff rates are highly expected to be escalating. So, universal related impacts are there tariff reduce competitive pressures, because you know we restrict the movements. So, domestic firms and their incentives to innovate actually you know hampers.

So, there are rent seeking behavior observe rent seeking basically you know is uses any activity that uses in order to capture more income without actually producing good or survive or to survive. So, firm hire lobbyists to maintain tariff protection. Usually they the hire lobby strategist to you know maintain the tariff protection, even if they do not produce they earn you know income out of it.

So, there are lots of political you know gain attached to it, political system that do not easily provide tariffs are more likely to about range seeking behavior. Now so let us compare with some tariff rates over the time. Since the mid 90s you know tariff rates in most countries have been fallen, we have also discussed. Since you know IInd World War there has been you know fall in the tariff rates.

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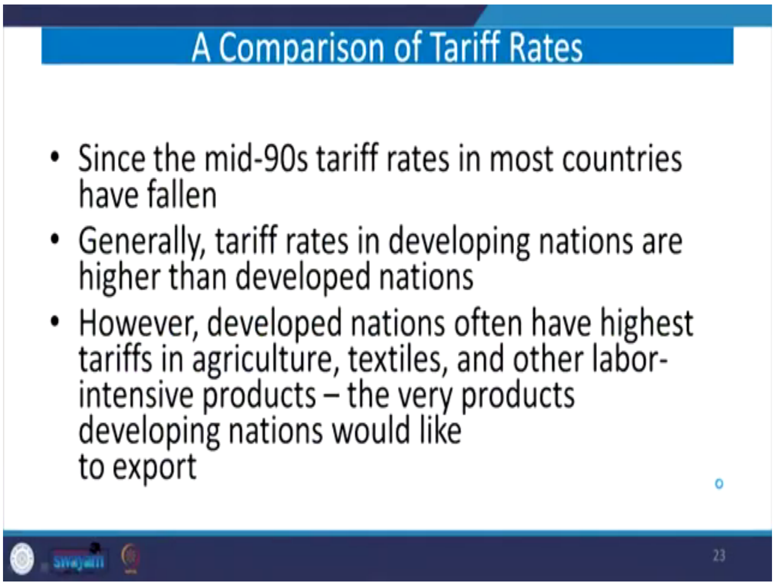

Tariff is in developing countries are relatively higher than that of developed countries, because of the fact that they need to protect their market. Developed nations often have highest tariffs in agriculture textiles in other labor intensive products and the very products of developing nations would like to exports.

So, basically developed country restricts the products which developed countries which is to export to them. So now, if we take from the book you know different book you will find certain you know tariff lines, over the time there have been in you know constant fall.

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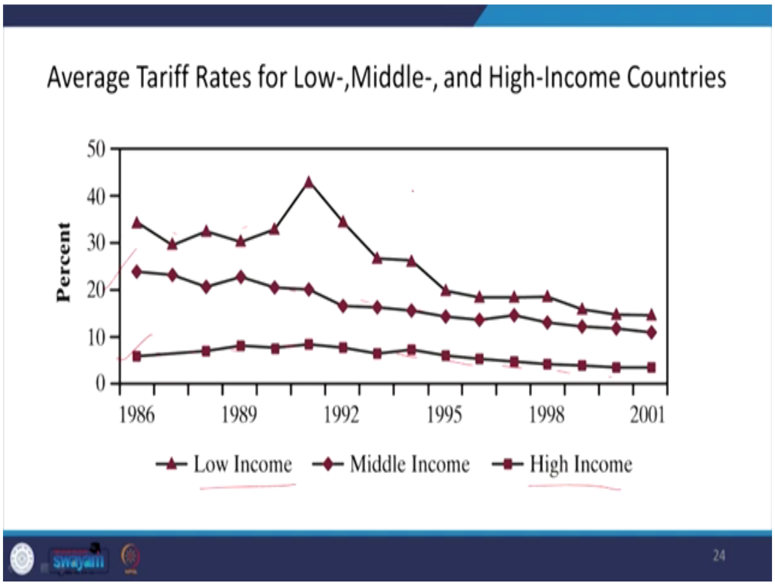

Now this is the triangle line is for low income countries this is high income countries, this is a lower one this is the higher income countries over that period. This middle one is called middle income countries in the tariff lines average tariff line low income countries. So, on the average low income countries has higher tariff lines then as compared to the and you know high income countries.

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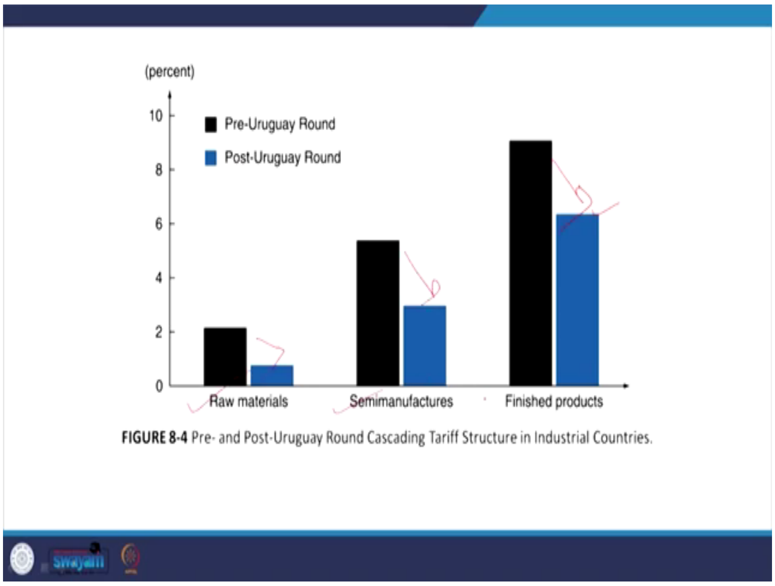

FIGURE 8-4 Pre- and Post-Uruguay Round Cascading Tariff Structure in Industrial Countries.

Now, another checks to understand the tariff structure in industrial countries. So, basically Pre Uruguay Round there are Uruguay Round in Uruguay there are WTO negotiations and the pre Uruguay Round the tariff lines are higher as compared to the post Uruguay Round there have been fall. As compared to this is even fall in the tariff line in every category, for raw materials semi manufacturing production finished products.

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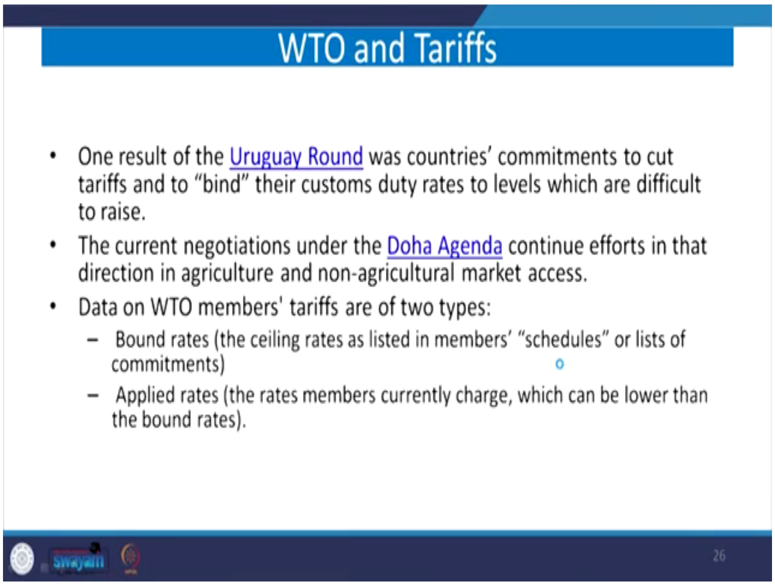

So, in order to understand you know the tariff structure we need to refer to you know various rounds of WTO and the implications are actually varying based on the you know bound rates imposed by tariffs. So especially in a Uruguay round the, you know there will be many you know binding contracts agreed by the member countries. We will actually discuss you know we will discuss tariff and WTO.

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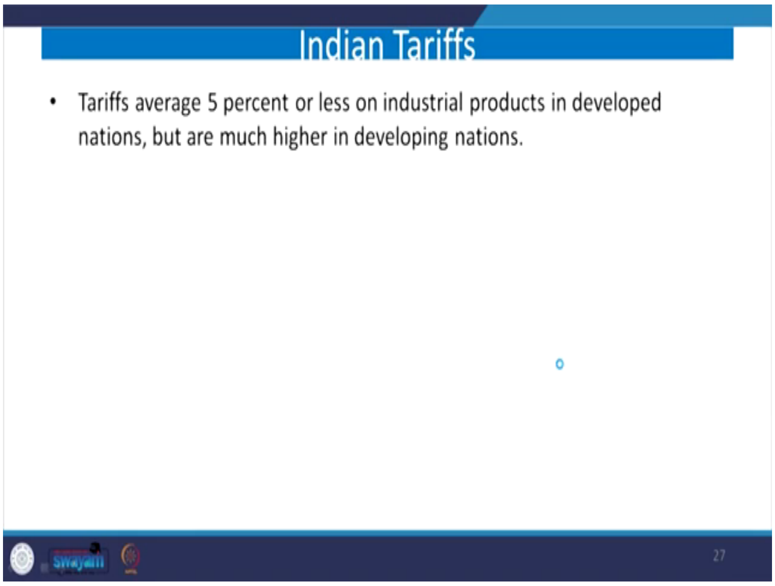

And it is role India and tariff in the next class in detail. I think you know this will be our next you know discussion we are also emphasizing the complete you know effective rate of protection in detail. So, with this I think I stopped here we will carry forward.

Thank you.