Managerial Economics
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Lecture - 37
Game Theory Product Pricing

We will continue our discussion on the theory of game and particular its application on economic analysis. So, last class if you remember we discussed about different types of game. And, we will pick up specifically few types of game which is more which is more applicability in the case of the economic analysis. So, in the in that context the first discussion will be on the market entry game

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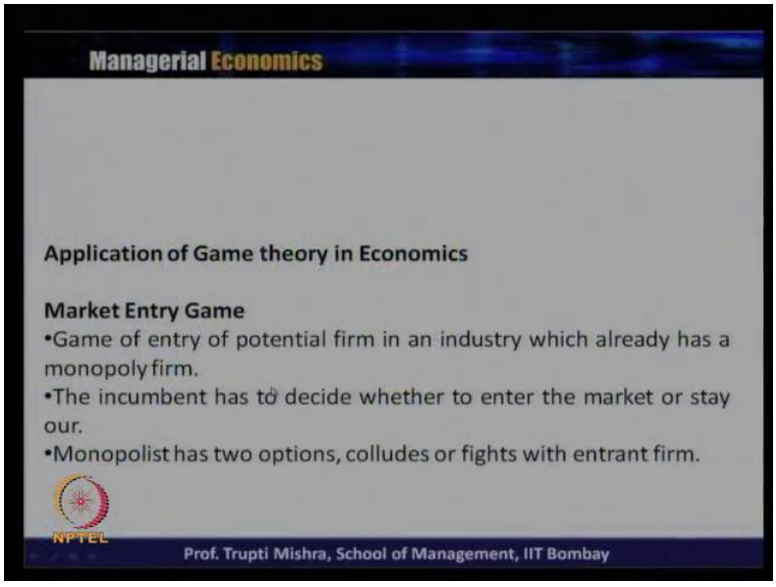

And, here we will analyze that how the when the firm plans to enter into the market. Generally how he uses the game theory and from the other points of view the existing firms who those who are there in the market. How they use game theory to create a barrier to or to if the firm is coming into the market. How they are going to maximize the profit.

So, game of entry of potential firm in industry which is already a monopoly firm. So, we will take a case where the existing industry setup is there is only one monopoly firm. And, there is potential firm who is entered try to enter into the market and compete with the monopolist firm to maximize the profit or get the market share. The incumbent has to

decide whether to enter the market or stay out. So, incumbent has 2 choices or the 2 options. At this point of time whether he has to enter the market or he will stay out he will not enter into the market. And, in the other hand the existing firm typically the monopolist firm has also 2 options whether to collude. If the firm is entering into the market, whether to collude with the entrant firm or whether to fight with the entrant firm.

So, there are 4 options. That is there with the taking to the incumbent firm of the existing firm. For the incumbent firm the options are whether to enter into the market or stay out. And to existing firm whether to, whether to fight or collude with the new entrant in the market. So, on that basis now we will try to do a pay off matrix for on the basis of the options available to the existing firm and also to the incumbent firm.

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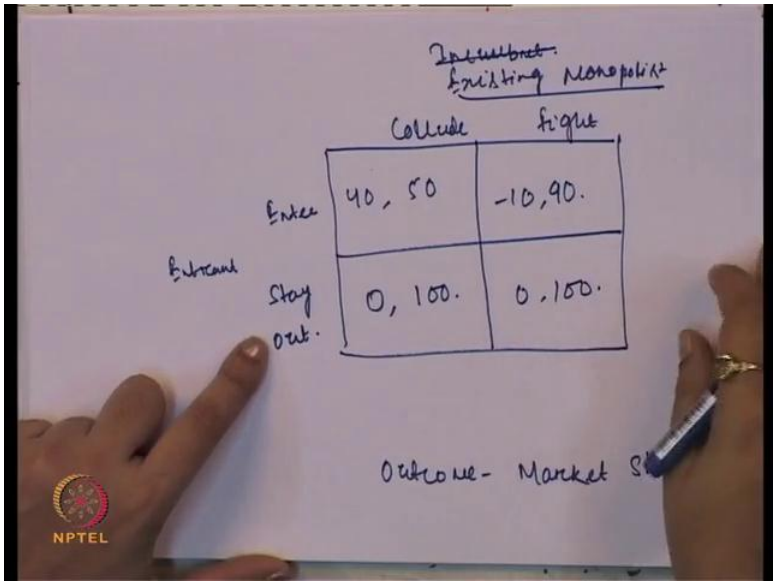

So, to draw this pay off matrix we need the pay off for the all this 4 options. So, here we will take this is the case of the entrant. And, the 2 options are either to enter or to stay out. This is for the incumbent and what is the option for them collude or fight. Now, the outcome is in term of market share. So, how we can construct the pay off matrix? Suppose the entrant is deciding to enter and the incumbent firm is collude. Once the new entrant come the pay off will be 40 and 50. The market share will be 40 for entrant and 50 for the monopolist firm. If the entrant decides to stay out obviously his outcome is 0. He is not going to any market share and the incumbent firm they are going to get the they are going to get 100.

Then, so let us change this is the existing monopolist (No Audio From 04:08 to 04:14). Now, if the entrant decides to fight and the existing monopolist or the entrant decides to enter in the existing monopoly decide to fight. In that case if you look at then we will take into a case where maybe we can get minus 10 for the pay off and 0 for the monopolist. Why it is minus 10 and why it is zero? Because if the entrant is entering in the existing monopolist is fighting may be no one is getting market share and it goes to, goes to (( )) we can do it may be 90.

Then if entrant is entering stay out and obviously there is no choice this fight. So, this comes again to 0 and 100. Now, the basic purpose of doing a pay off matrix is to evaluate the options when the firm is trying to enter into the market. Basically, he is evaluating options that if he is entering what will be the market share what will be the outcome? And, if he is not entering what will be the market share and what will be the outcome?

Similarly, the monopolist has 2 options. If the entrant is getting into the market what should be the, what should he do whether he should collude whether he should fight. So, one pay off will come if the entrant comes into market and he is going to fight. What should be the market share? And, if the entrant is he is entering to the market if he is going to collude. What should be the market share?

So, collude fight 2 options for monopolist enter into the market stay out from the market 2 options for the new firm. So, in this case we get 4 pay off in term of 4 market share. And, among them now they will decide that whether it is a dominant what should be the dominant strategy for both of them whether they are getting a Nash equilibrium or whether they are getting 2 Nash equilibrium. If there is an absence of the dominant strategy both this cases. Now, in this case what should be the strategy of the rational monopolist because we assume that the monopolist has to rational?

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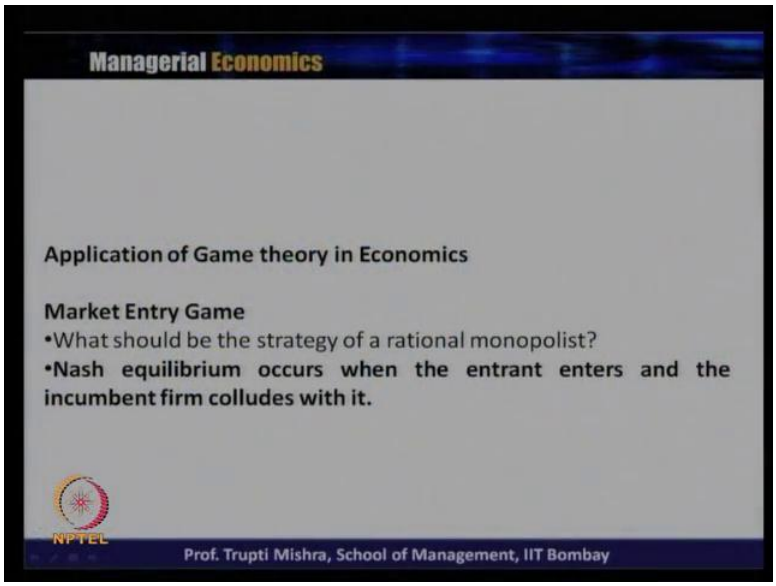

And what should be the strategy of the rational monopolist. And, where the Nash equilibrium generally occurs. So, Nash equilibrium occurs when entrants enter and incumbent firm collude with it. So, in this case if you remember your pay off matrix that is the case where both of them they are getting a market share. In all this 3 options either of them is getting a 0 or them getting a minus but in this case when if the new firm is entering into the market and existing firm colluding with it. Then that is whatever the market share is getting that is more preferable for both from the monopolist point of view and the new firm point of view; if they are acting rational. So, when it comes to Nash equilibrium. Nash equilibrium typically occurs when the entrants and the incumbent firm collude with it because this is the point actually where both of them they are getting some amount of the market share. So, before going to this. This is what? This is which this is also a types of game. And, we will see what is the game tree over here, because this is also a sequential game and in this case sequential game. How will see how the game tree looks like?

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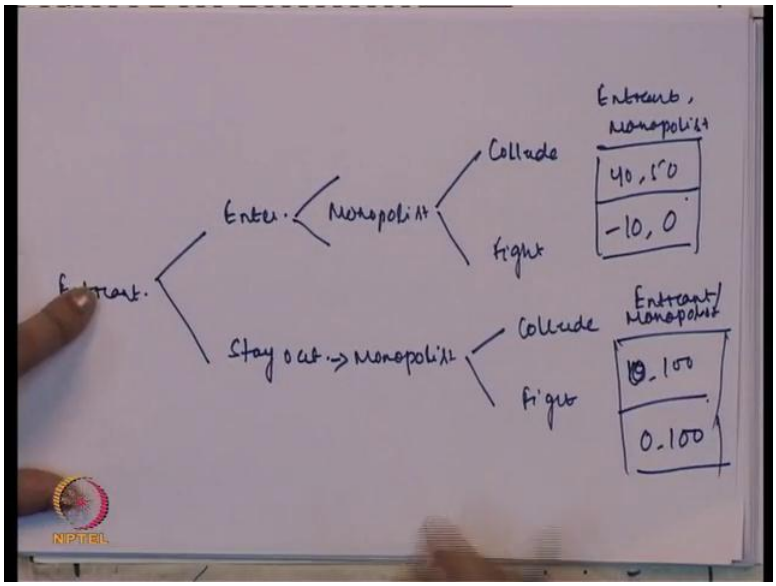

So, this is for the entrant. It has 2 options. One is enter another is stay out. If it is enter then the existing monopolist has 2 options. One is collude and another is fight. So, in that case we get 2 columns for monopoly both for the entrant and for the monopolist. So, in this case we get 40, 50. So, if entrant enter monopolist collude with it we get a market share we get a pay off matrix 40 50, where the share of entrant is 40, where the share of the monopolist is 50. If entrant enter monopolist fight then we get a share of minus 10 for entrant because he cannot compete with the monopolist. And, 0 for the monopolist because the market share is not going to you. If it is fighting with the existing market or same thing can be analyzed in a different version also because it is getting a market share of 90. Whereas the other entrant is getting the market share of 10.

Then, stay out what is the options for the monopolist. It is again collude; it is again fight. Again we will get a pay off matrix for both the entrant and the monopolist. And, here we get the pay off as 0 100 and 0 100 because if the entrant is staying out obviously the market share is 0.Whether and the 2 nd part is not at all relevant because if it is staying out. The question is not coming whether monopoly should collude or monopoly should fight. So, basically and the market share of entrant will be 0. And, whether and the all this cases the market share of the monopolist will be 100.

So, this is the case of a sequential game. Where the decision of one firm is always dependent on what is the decision of the other firms. And, in this case the decision is

followed from whatever the market share. What is the end outcome? Here the end outcome is to maximize the market share dependent on what is the outcome with respect to its decision points. And, also looking at to that what is the rival sections like if the entrant is trying to get into the market. Now, what should be the, what should be the decision point of the monopolist. So, the entrant will evaluate option in term of 2 things that whether the monopolist is going to collude or whether the monopolist is going to fight.

Similarly, the monopolist is going to take the options that what would be the market share. If he is going to fight and if he is going to collude. On those basis he will see decide what is the dominant strategy for him. So, typically in case of a market entry situation in case of a situation when the market is trying to enter into the market. Where there is a monopolist firm generally this game theory is relevant typically a sequential game theory. Where it give us the sequence that what should happen if if one firm behaves in this direction and the other firms behaves in the following action.

Then we will talk about the application of game theory in case of a Cournot model. So, if you remember we discussed this Cournot model in case of a non collusive oligopoly. And, Cournot model talks about a situation that where there are 2 firms they are sharing the market. And, they always assume that the whatever the previous output plan for the other firm that has to be followed in the revised period also. But practically it it leads to a situation where they reach to a sub optimal solution or we can say top part of the market is still altered by both of the duopoly firm. Because they always assume that the output plan whatever followed by the firm in the previous time period that has to that is going to be continued. So, the same thing we will see that how this game theory is applied to a Cournot model.

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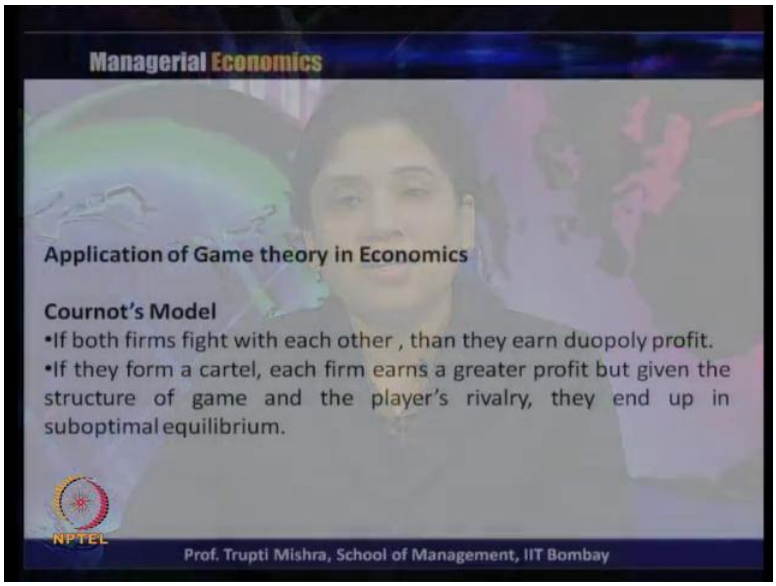

If both the firms they fight with each other. Then they earn the duopoly profit because they share the market and they earn a duopoly profit. But if they form a cartel, each firm has a greater profit but given the structure of the game and the player's rivalry, they end up in a sub optimal equilibrium. So, Cournot model if you look at always they feel. That the other one is going to take the half of the market. So, his decision point is on the basis of that the other firm is going to take half. So, let me take another half. And, in that process when the iteration takes place.

Finally, in the revised period revised period and in the nth period. If you look at the one third is only taken care of and rest if you look at rest of the rest rest of the market is not taken care of neither of this firm. But the other options is that it they form a cartel. If they cooperate with each other then they ideally they can decide on the basis of their productive capacity or on the basis of their cost function.

They can decide that who has to share how much of the market or who has to supply how much share of the market. And, on that basis they can trap the full market and they can reach to into a optimal equilibrium. But practically the structure of the game is such that Cournot model is such that there is a rivalry. And, they always believe that the output plan is not going to revise. Where the other player and that is why they go on consider the same output plan and they accordingly they devise they price and output

plan. And, that is why they lead to a sub optimal equilibrium rather than optimal equilibrium.

So, here how we can conclude? We can conclude that even if the cooperation is profitable still the firms they are not cooperating with each other rather they are competing with each other. And, going into a sub optimal equilibrium rather than a optimal equilibrium. Then we will see the stackelberg model. So, if you remember in case of stackelberg model it is a leader follower model. Generally one follow generally one takes a lead and the other one is followed.

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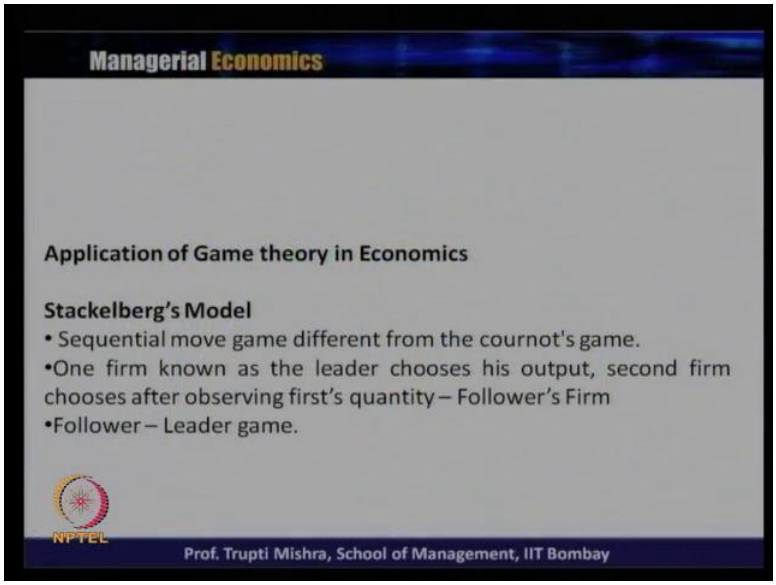

So, we will see that generally the sequential kind sequential type of game is used in case of the stackelberg model. So, sequential move game is different from the Cournot game. And, typically in case of there is also a difference in case of a Cournot model and stackelberg model. Even if stackelberg model is the extension of the Cournot model in case of Stackelberg model the significant feature is that one firm act as the leader and the other firms act as the follower. So, sequential move game is that is how it is different from the Cournot game. Here one firm known as the leader chooses his output, second firm chooses after observing the first quantity of the output.

So, one is as the leader firm. Second is the follower firm. One firm generally chooses this is the output I am going to produce. And, the second firm after looking at or after

observing that what is the output plan for the first firm generally the second firm decide his quantity. So, this is generally known as a follower leader game.

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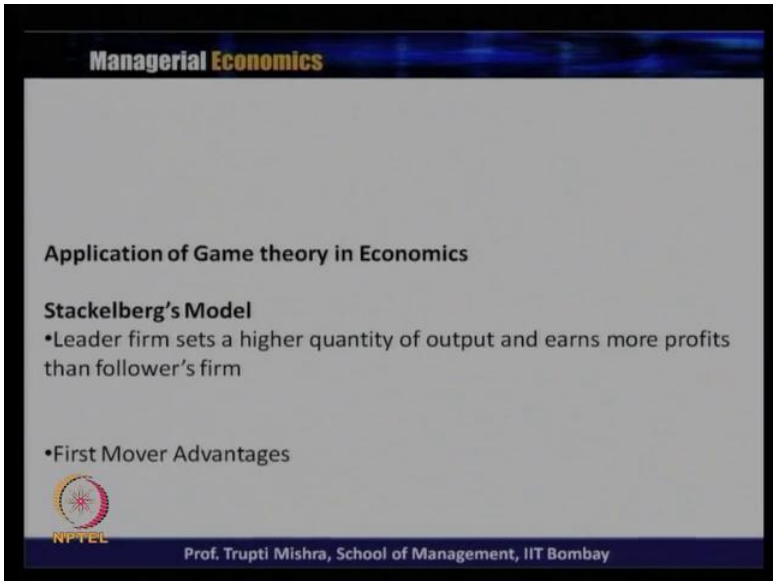

And, here the leader firm always sets a higher quantity of output and earns more profit than the follower firms. And, by doing or this they get because they have the first mover advantage. Since, they are the leader they are the first one to decide what should be the output. Generally, they get a greater advantage in term of the share in market share in term of the profit, because they are the first one to decide, what is the share of them? And, this is generally known as the first mover advantage. And always in case of a Stackelberg model the leader firm get a first mover advantage because they are the first one to choose the output. And, in that way they can maximize the market share and they can maximize the profit also. So, in case of stackelberg model the equilibrium is decided on the basis of the backward induction in the game theory.

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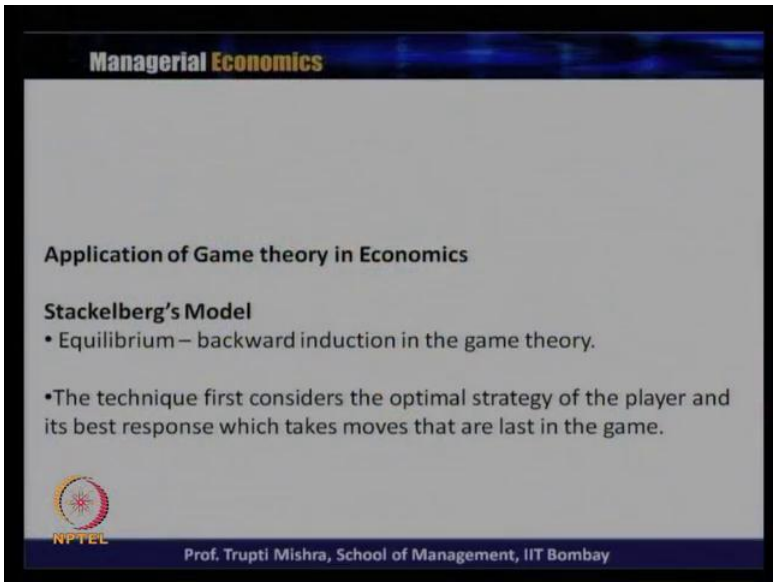

And, how we say this is the backward induction in the game theory. Because these techniques first consider the optimal strategy of the player. And, it is best response which takes the move that are last in the game. So, equilibrium whatever the method is followed generally known as the backward induction in the game theory. So, in the previous case also in the market entry. If you look at the decision of decision point is based on that what is the last decision point of the rivals or what is the last decision point of the opponent. So, this is the part of the backward induction in the game theory but the decision is dependent on what is the previous decision taken by the opponent. And, this technique first consider the optimal strategy of the player. And it is best response which it takes the move and that is the previous or previous time period that is the last in the game.

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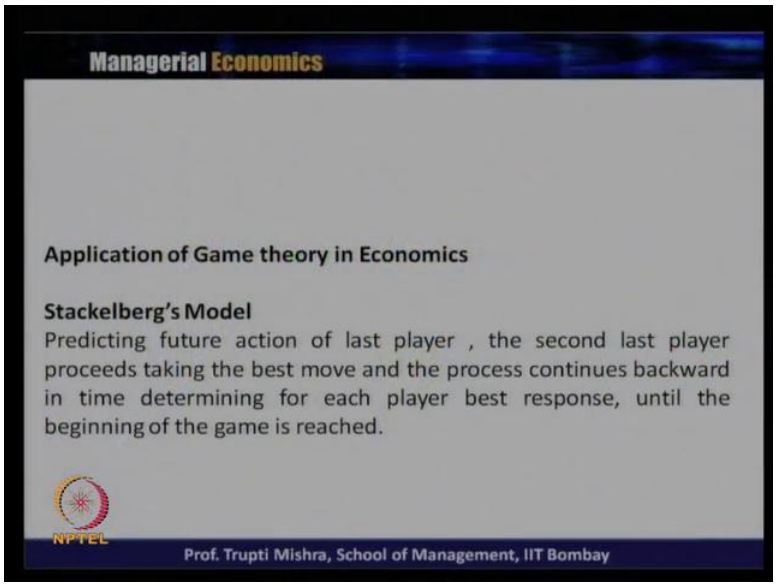

Here predicting the future action of the last player, the second last player proceeds taking the best move. So, when it commence to take a bit above the last player or the predicting about the future action. Here the 2 nd last player proceeds taking the best move. And, the process continues backward in time determining for each player the best response until the beginning of the game is reached. So, when we identify the best best what is the best option for each player. They go in a backward direction till the time they are reaching the the reaching the beginning of the game. Because that way they just go on evaluating what is the best response with respect to the previous time period or with respect to the action taken in the previous time period. And, in that way they decide the optimal strategy.

So, in the game theory typically to conclude the game theory we can say in the game theory; we discussed about the structure of the game. We discussed about what are the assumptions to be taken to use the game theory. And, then we talked about the types of game and how this game is being used in the case of the economic analysis. So, to sum up we can say that game theory is a tool which is used typically in the economic analysis to understand the group dynamics, to understand the group behavior specifically in case of a oligopoly market structure. Then we will start a new topic that is on product pricing.

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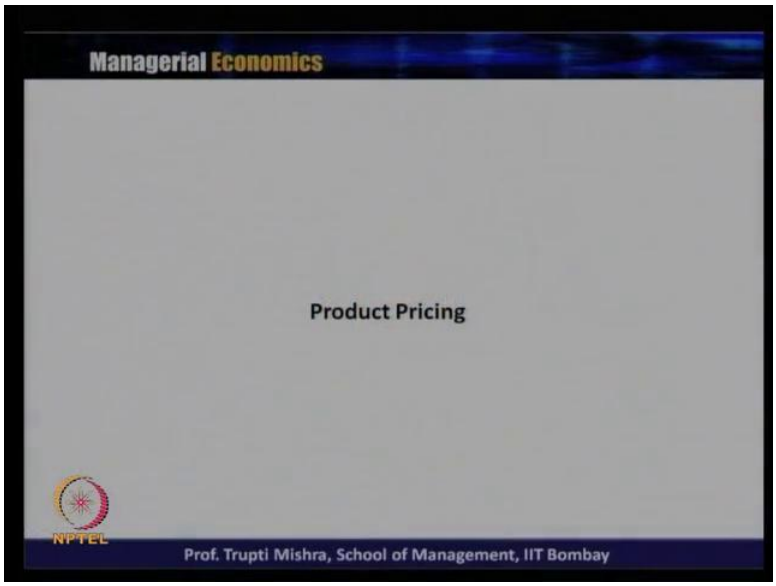

Because till now we have the understanding that price is decided on the basis of the demand and supply. But there are this is the main basis of demand and supply but there are many other consideration is taken when we decide the price of the product. So, our next topic will be on product pricing. And, before deciding the product pricing we will also talk about the kind of price discrimination. And, then we will go what is the type of product pricing and what is the basis of the product pricing. So, what is the meaning of price? If you look at this is the market price this is the value of the product but what price for the seller? What price for the buyer?

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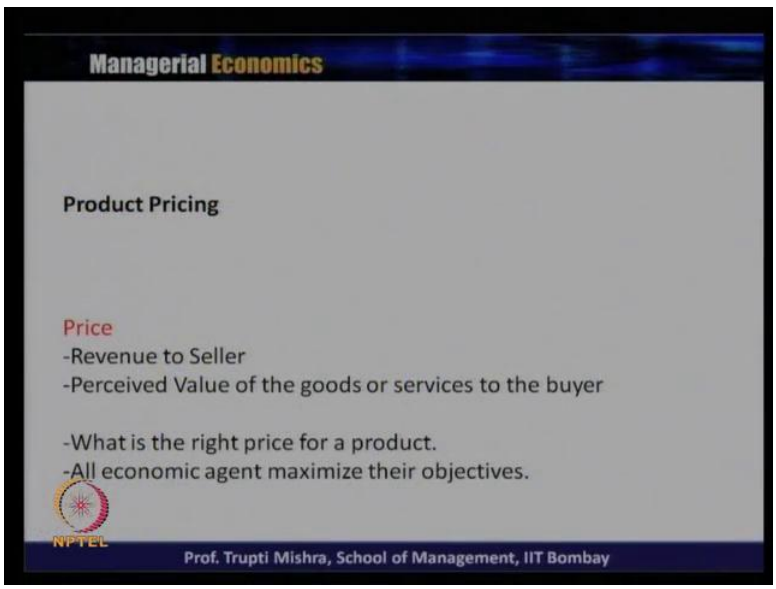

So, if you go in depth it is the price is basically the revenue to the seller because in the end it leads to the revenue to them. And, for the buyer it is the perceived value of goods and services to them. So, the question here is that what is the right price for a product? So, since price leads different meaning to different kind of different economic agent like it is revenue to the seller and perceived value to the buyers. Now, what is the right price of the product? Right price of the product is 1 where all economic agents maximize their objectives.

Now, who are the economic agent here; the buyers. Price is 1 where he maximizes his utility or may may be maximize his consumption. For the seller, when it is maximizing the sales revenue. For the supplier, it is the maximization of the output. And, for a firm it is the maximization of the profit because price to him is to maximize the profit. To the seller maximizing the sales revenue. To the producer maximizes the output; and to the buyer it is maximizing the utility. So, the right price is one which maximize the end objective of all economic agents in the market or the entire economic agent associated with the product.

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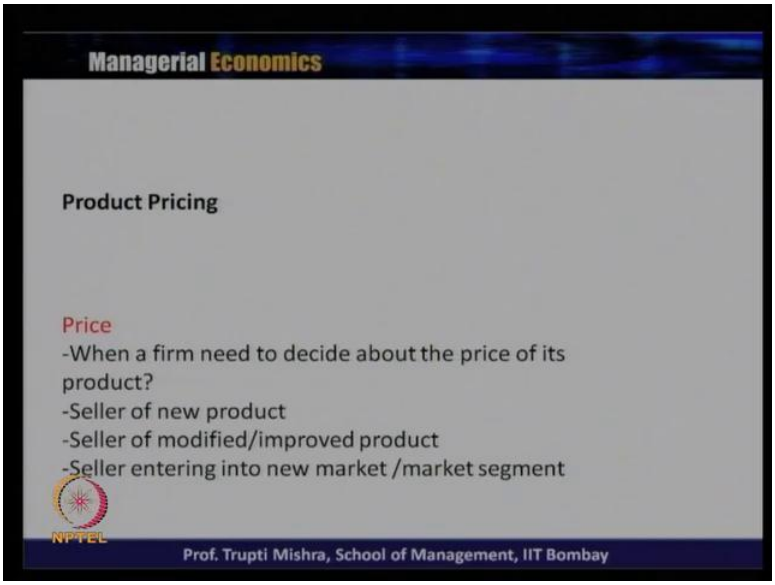

Now, when the firm they need to decide about the price of it is product. When it is not only when there is selling they are selling a new product. Also, they need to decide when they are selling the modified or the improved product or when the seller is entering into the new market or the new market in a typical market segment. So, may be the price has

to be decided when the seller is selling a new product or seller is doing some modification or improvement to the initial product or when the seller is entering to the new market or they are entering into the different segment of the existing market.

In all these cases there is a value addition to the product whether it is a new product, whether it is a improvement in the existing product or whether the product is entering into the new segment. Since, in this entire three scenario, there is a value addition to the product. In all these 3 cases the producer need to think or the seller needs to think what should be the right price for the product which will give some amount of the profit. Some amount of the benefit to the entire economic agent in in the line of their end objectives. So, what is the basic determinant of price? We know there are the main determinant of price is demand and supply.

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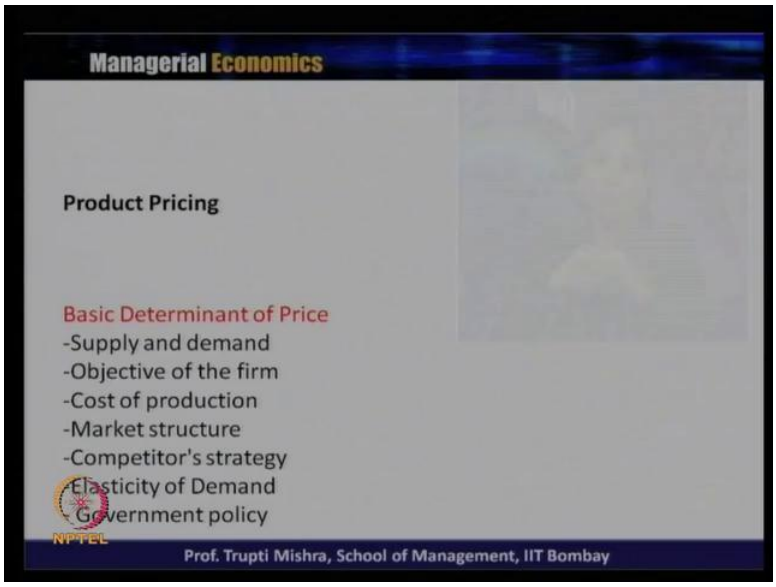

But apart from it it always link the price is always link. What is the objective of the firm? If the objective of the firm is to market increase the market share. Then they are not going to charge a high price they are going to charge a low price whether that they can trap the market. If the objective of the firm is to maximize the profit they will see at that scenario. Whether the high price or the low price which one will suit more for the profit maximization. What is the cost of production? Whether it is a high cost production; whether it is the low cost production. If it is high cost production then the price has to be high. If it is low cost production the price has to be low. Because in high cost production

if it is low price it is not going to it is not going to maximize the profit by charging that level of price. What should be; what is the market structure?

If the market structure then the entirely the price is decided by the demand and supply. But if the perfect competitive market structure. If it is monopoly then the monopolist decide because he is the price taker firm in the market. If it is monopolistic again or the oligopolistic again it depends what is the market power or what is the power of them to set the price; on that basis the price will set. What should be the competitor strategy? If the price is going to increase or the price is going to decrease. How the rivals or how the opposite, opposite or the how the opponent is going to react over here. That decides what should be the right kind of price.

Then elasticity of demand. More elastic is the market there is less flexibility in term of change in the price. Less elastic at least you can change the price because the quantity demanded is not going to change simultaneously in that proportion because it is the case of the inelastic demand. Similarly, government policy whether it is a regulated market whether it is a unregulated market. In case of regulated market any increase in the price or whenever the price is being set by the firm. They has to take the consent from the government but in case of unregulated at least it is decided by the agents whoever or it is the firm those who are operating what should be the price.

So, in that context we will discuss about two kind of pricing. One is multiproduct pricing and second is about the price discrimination. On the basis the different grounds we will discuss about two kind of pricing and then we will move into the different types of product pricing.

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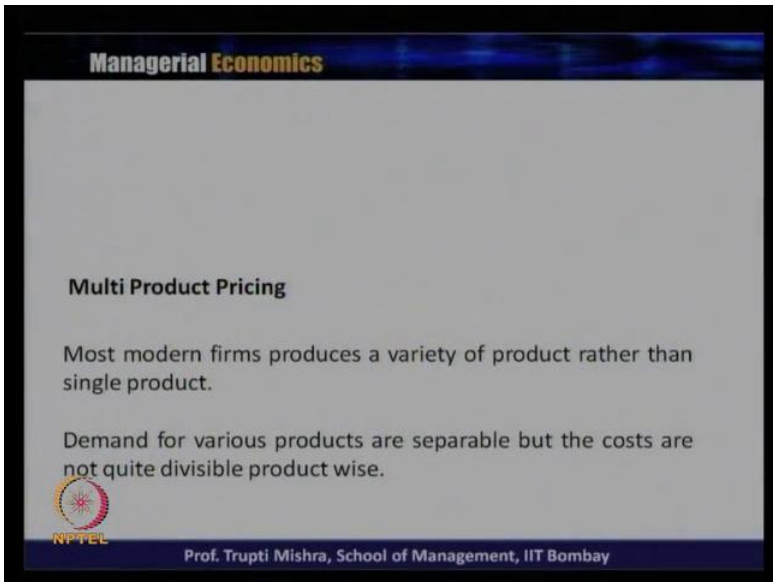

So, we will start with multiproduct pricing. And where multiproduct pricing is relevant. Multiproduct pricing is relevant because most modern firms they produce variety of product rather than single product. And, if you look at you take the case of your p and g proctor and gamble or you take the case of your Hindustan lever. Their product is not single they rather they produce a multiproduct. And in this case if it is a multiproduct how the pricing has to be done. And why the challenge is there for the pricing because demand for the various products are separable but cost are not quite divisible product wise like for the in one assembly line. If the intermediate good is one product and the final good is one product. Obviously it is difficult to make a division that what is the product what is the cost associated with the intermediate product and what is the cost associated with the final product.

And, that is why in case of a multiproduct pricing the demand is separable but the cost is not separable. So, the cost has to be or where the price has to be decided on the basis of the combined cost for both the products. So, in this case we get a separated demand function and there is only one cost function. So, profit maximizing price will be given by a point at which the combined marginal revenue for products equals to the marginal cost or we can say that the marginal revenue of each of this product equal to the combined marginal cost.

So, we will just take a graphical explanation to understand this identification or the deriving the profit maximizing price and output in case of a multiproduct pricing.

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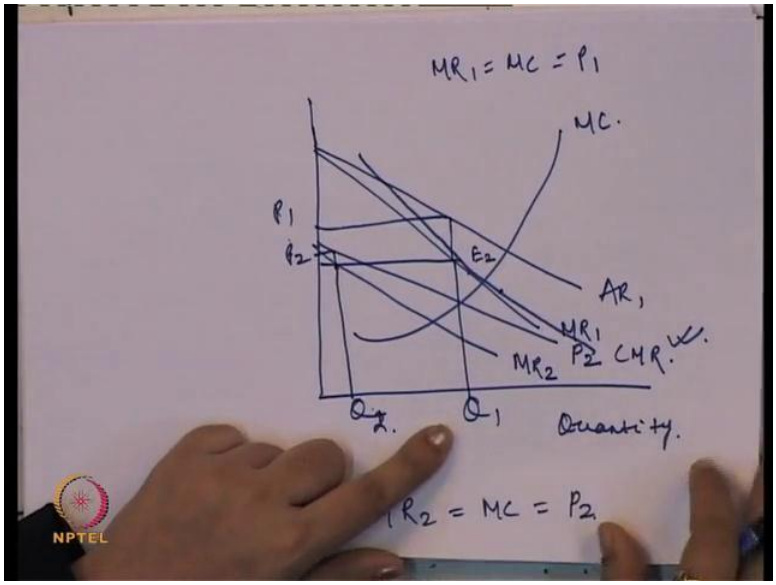

So, we have if it is 2 product then we have 2 demand function and corresponding marginal revenue function. Then we have P2 MR2 this is the marginal cost. Then we will get a combined marginal revenue curve that is MR1 and MR2. This is CMR and on that basis we will, we will look at the price; and suppose this price is E2. On this basis or this is the point E2; on this basis both the firm they are going to charge the price. So, this is for P2 that is Q2 this is P2. And similarly, MR1 this is price and this is the quantity.

So, in case of if you look at individually you can do it by making it with MR1 with MC and correspondingly we can get price 1 or MR2 is equal to MC and correspondingly we can get price 2. But since this is the case of a multiproduct pricing we have this combined marginal function. On that basis, we are getting 2 price that is the we are getting the point E2. On that basis the price is decided that is P2 for the firm 2 and producing the P2 is for the product 2 and producing Q2 level of output and P1is for product 1 producing Q1 level of output.

Then the 2 nd we will see the price discrimination. And, price discrimination if you look at this is a significant feature of the monopolist firm. And, why we call it discrimination? We calls it discrimination because the monopolist charges different prices to the different

consumer in different market in different time period exercising their discretion power. And, that is why this is known as the price discrimination by the monopolist.

Now, to put it in a definition what is price discrimination? It is the act of charging different prices to different consumer in order to capture the consumer surplus. So, the motivation is to capture the consumer surplus and they do this the they capture this consumer surplus by charging different prices to the different consumer. Now, what is the basis or what is the pre requisite for this price discrimination in which case monopolist can practice price discrimination.

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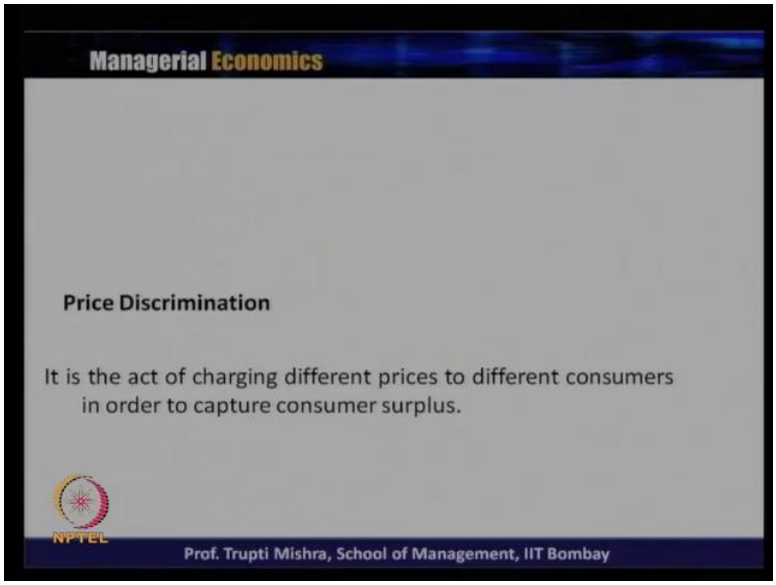

So, the motivation is to capture the consumer surplus and they do this they capture this consumer surplus by charging different prices to the different consumer. Now, what is the basis or what is the pre requisite for this price discrimination, in which case monopolist can practice price discrimination.

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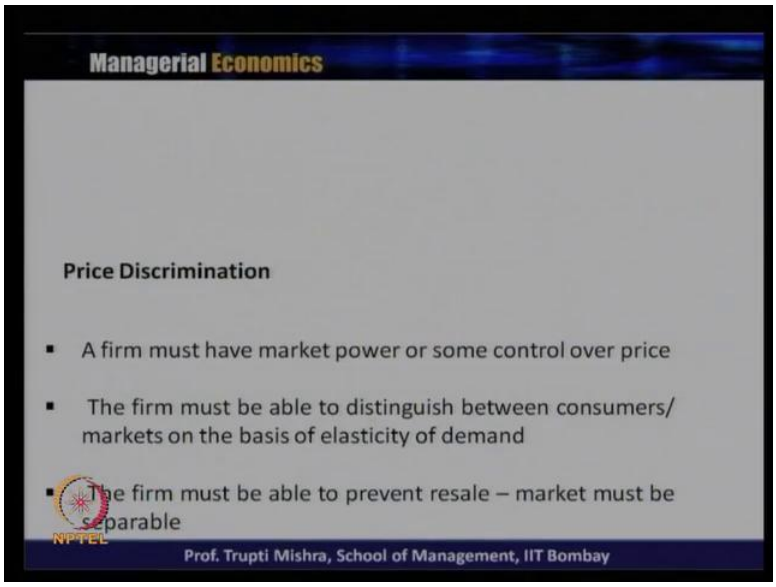

The firm must have the market power and some control over the price that is present in the monopolist market. And, that is why they practice the monopoly they practice the price discrimination. The firm must be able to distinguish between consumers market on the basis of the elasticity of demand. So, there should be division between the consumer. There should be division between the markets on the basis of the elasticity of demand. The firm must be able to prevent resell, market must be separable. It is not that you can buy in the market in you can buy in one market at the lower price and sell it in the other market. So, resell to be controlled otherwise it is not going to be profitable or they cannot practice the price discrimination. So, this price discrimination can be possible owing to consumer peculiarity.

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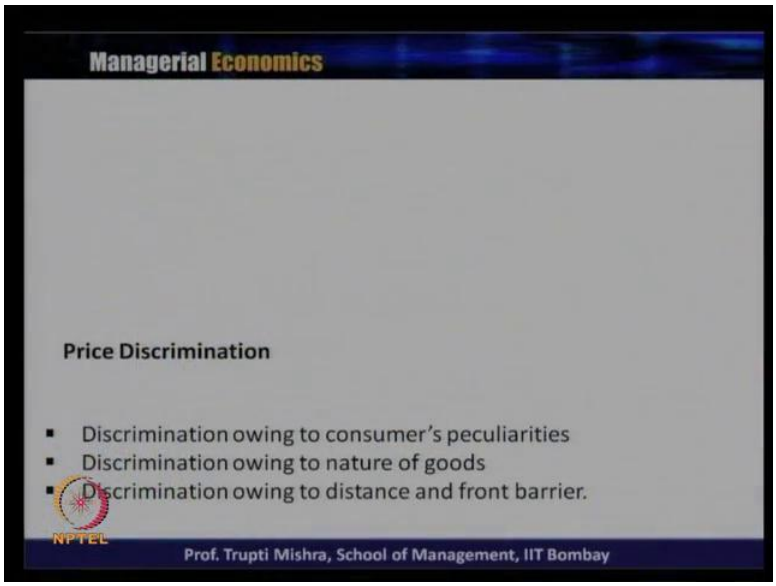

And, how these consumer peculiarities come here. Suppose, in any situation if consumer a is unaware of the fact that he is paying a higher price as compared to b or sometimes the price discrimination is so small it is, it is negligible. And, that is why the monopoly generally do a price discrimination because consumer is just indifferent about the small change in the price small change in the price between 2 market or 2 consumer. In the first case when consumer a is the unaware of the fact that consumer a is paying a lower price. So, on that basis we can discuss about 3 type of price discrimination.

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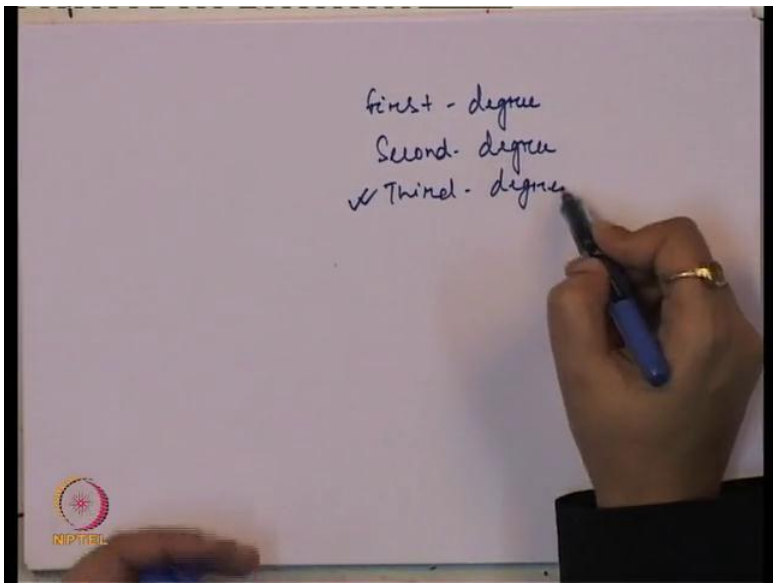

That is first degree, second degree and third degree. So, when we talk about consumer peculiarity. That is more significant in case of may be third degree. And, that is why this consumer peculiarity comes up under the part of the third degree price discrimination. but here one more consumer peculiarity comes here is. When one consumer typically if you remember your wave line effect in case of consumer behavior. When price increases people they think that the product quality has improved and that is why they paid. In this case also how this price discrimination is possible. When the even if the consumer knows that he is paying a higher price but if he feels that he is getting a product which is a higher quality of the other products still the price discrimination is possible.

So, price discrimination is possible when the consumer is not aware of the fact that the other one is paying a lower price or consumer feels that if he is paying a higher price there is a quality attached to it. And, in the third case the the price difference is so minute it is so negligible that generally consumer ignore this. Similarly, the discrimination also owing to the nature of the goods and sometimes the discrimination also owing to the distance and the front barrier. So, these are the pre requisite for the different type of price discrimination. And, as we discussed there are three types of price discrimination.

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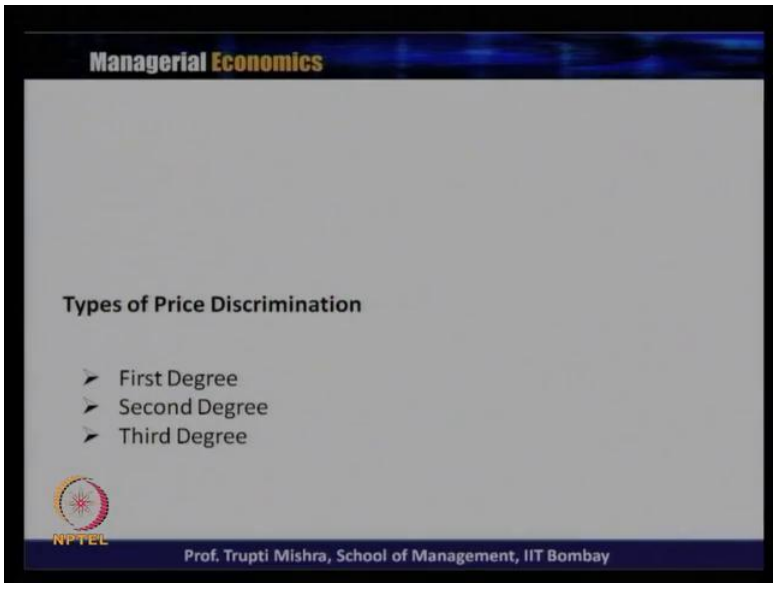

First degree price discrimination, second degree price discrimination and third degree price discrimination. We will start with the discussion with the first degree price discrimination.

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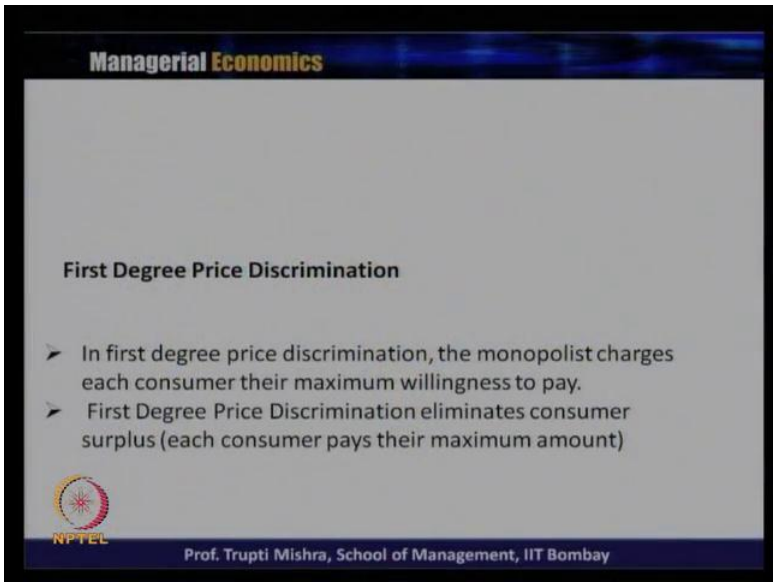

So, in the first degree price discrimination the monopolist charges each consumer their maximum willingness to pay. Whatever they are willing to pay it is they the monopoly generally charges the price which comes under the maximum. And, generally in the first degree price discrimination eliminates consumer surplus because each consumer pays the maximum amount whatever they are willing to pay.

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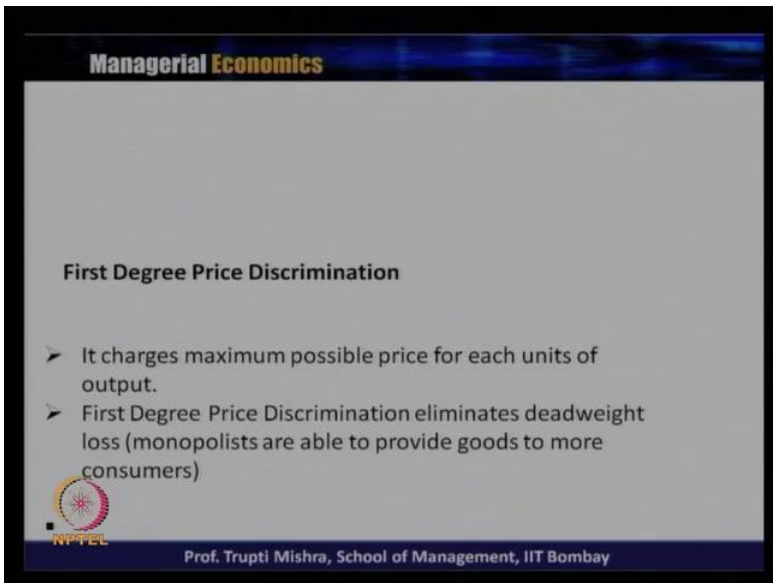

And, also it is charges the maximum possible price for each unit of output. So, first degree price discrimination generally eliminates the deadweight loss because monopolist

are able provide goods more to the consumer. So, we will just take the graphical examples to understand what is the how the generally monopolist by practicing the first degree price discrimination take outs all the consumer surplus and also even there is no deadweight loss. Because deadweight loss comes when the price increases and quantity decreases. But here at that price the producer is ready to supply whatever the goods come and that is why there is no deadweight loss. The entire consumer surplus goes into the account of the producer surplus.

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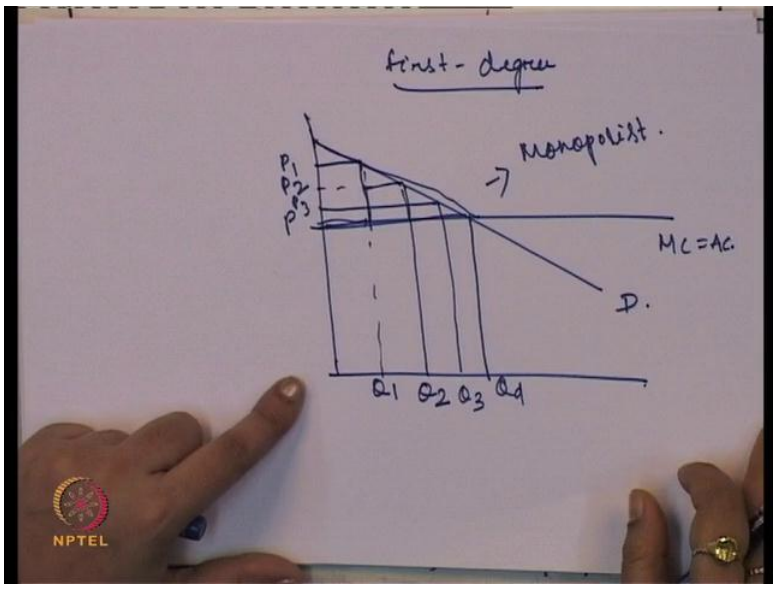

So, if we consider this as equal to MC is equal to Ac; this is our demand function. So, how we get the consumer surplus? This is the market price if for this one for Q 1 if the consumer is ready to pay this much, the monopolist will charge a price P1 because this is the maximum willingness of the consumer to pay for the amount Q 1. Similarly, if for Q 1if the consumer is ready to pay P2 the monopolist will charge a price P 2. Similarly, for this amount Q 3, if the monopoly if the consumer is ready to pay P 3 or the willingness to pay P 3 generally this is the market price.

So, in this case ideally when the consumer is ready to P 1 but the market price is P 1 P this is the amount of consumer surplus it gets. If for Q 2 if the consumer is ready to P 2 but generally he pay only P, which is the market price this is the amount of the consumer surplus. And similarly for P 3, but in this case since the monopolist is charging on the basis of willingness to pay the entire consumer surplus is goes to the account of

monopolist. And, there is no consumer surplus for the there is no consumer surplus for the typically the consumers those who are buying this products.

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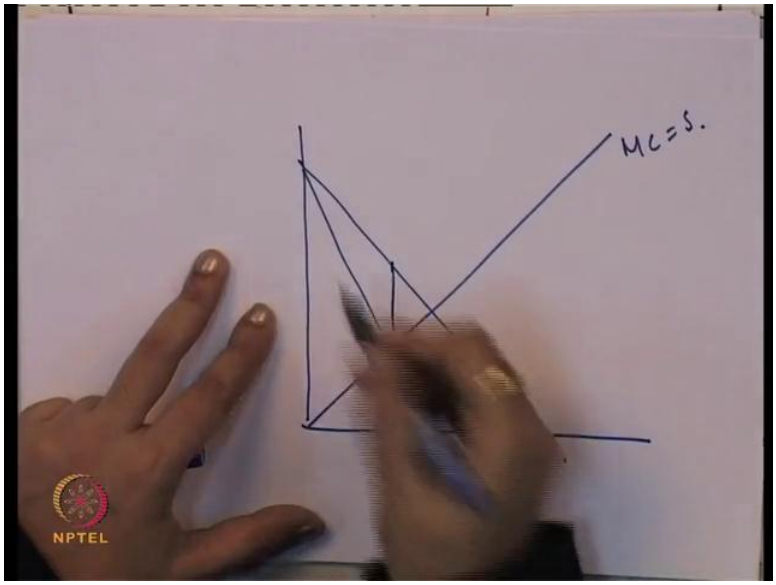

Next we will see so in one case we know that the there is the entire consumer surplus is taken by the monopolist. And, secondly we will see how there is no deadweight loss because the entire deadweight loss is also goes with the consumer surplus. So, in this case we will take this is marginal cost is equal to supply. And, here we get the demand curve. Here we get the marginal revenue curve. On the basis of the marginal revenue and marginal cost this is the price to be followed and this is the monopoly price. On the basis of the demand and supply we can say this is the competitive price. Here this is the competitive output; this is the monopoly output.

Now, what is the here we will say this area is A, this area is B, this area is D, this area is C and this area is E. Now, here if you look at what is the consumer surplus with the monopoly. In the normal market if the monopolist is not practicing the monopolist is not practicing price discrimination.

What is the consumer surplus with the monopoly? That is the area A this is the consumer surplus because the monopolist is not charging the price discrimination. But if and what is the producer surplus here. We are assuming the fact that there is no discrimination at this point of time. The monopolist is not doing the price discrimination. If monopolist is not doing the price discrimination this is the total consumer surplus. And what is the

producer surplus? Producer surplus is the area B plus D this is the total producer surplus. Now, consumer surplus is A, producer surplus is B plus D. What is the deadweight loss because if both consumer surplus is producer surplus is there. This is not the competitive price. This is the monopolist price. There is some amount of the deadweight loss. And, what is the deadweight loss? Deadweight loss is C plus E.

All these consumer surplus, producer surplus, deadweight loss assuming the fact that this is a monopoly market structure where the price discrimination is not being practiced. Now, if the first degree price discrimination is going to practiced. If the first degree price discrimination is going to practiced.

Now, we will see whether there is consumer surplus at all. If entire and second is whether there is a deadweight loss or not. So, looking at this now if you say, if there is discrimination now. Now what is the discrimination?

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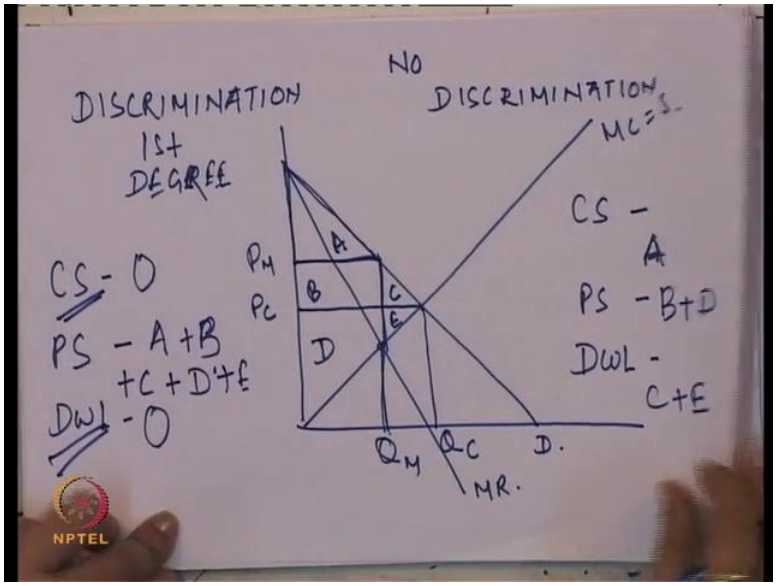

Discrimination is first degree. If the discrimination is first degree; we will see what is consumer surplus, what is producer surplus and what is deadweight loss. So, consumer surplus with first degree it has to be 0 because the monopoly will charge a price on the basis of the willingness to pay that is 0. And, what is the producer surplus, deadweight loss is also 0 because the entire amount.

Suppose there is this price is this much if they are going on going on charge the price which is a maximum willingness to pay. And, this is the PC on that basis QC has come. Now, this is the deadweight loss if the quantity demanded decreases because of increase in the price. But since monopoly has the capacity to produce the supply whatever may be the price this C plus E. What is deadweight loss? This also goes into the account of the producer surplus. And, that is why we get the producer surplus which is A plus B plus C plus D plus E there is no deadweight loss and there is no consumer surplus.

So, in case of first degree price discrimination the monopolist charge a price on the basis of the maximum willingness to pay for the maximum willingness to pay of the consumer and in that case they capture entire consumer surplus. And, even there is no deadweight loss because the entire surplus goes into the producer surplus. So, this is the highest kind of degree of price discrimination, but if you look at also in the practice it is difficult to follow because you need to know what is the willingness of the consumer of the different group in the different market. Then we will talk about the second degree price discrimination. And, what is the focus of the second degree price discrimination or what is the practice being followed in case of the second degree price discrimination.

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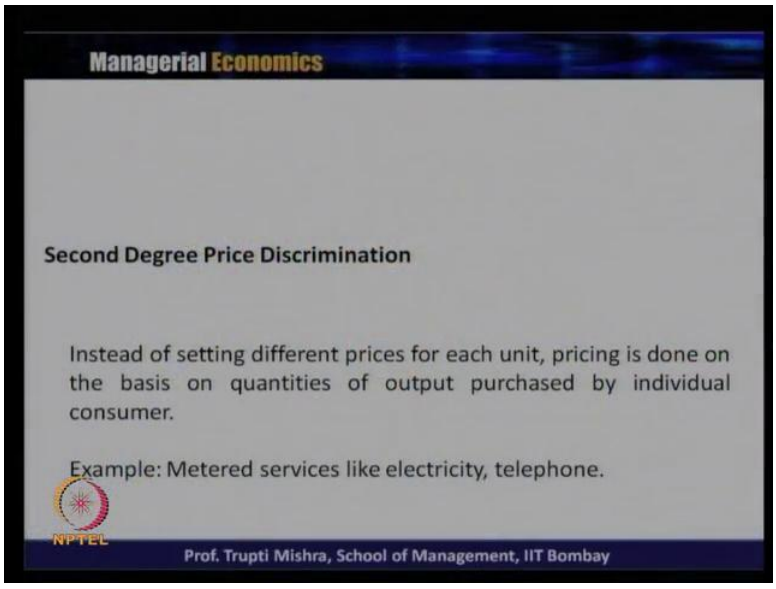

Here instead of setting the different prices for each unit, pricing is done on the basis of the quantities of output purchased by the individual consumer. So, here the discrimination is on not on the basis of the price rather it is on the basis of the quantity.

And, typical example of the second degree price discrimination is metered services like electricity and telephone because if you know the first few calls typically in a landline. If you look at the first few calls or even for the mobile services also you will find may be 200 minutes is free or 20 calls are free or at least 10 SMS are free that comes with the plan. And, if you go beyond then you charge a different; you get a you have to pay different price.

Similarly, in case of electricity also 0 to 200 there is one tariff rate. 200 rates to 500 rate there is one more tariff rate, 500 to 700 there is one more tariff rate. So, if you look at the charges are different on the charges are different on the basis of the different in the difference in the usage. So, if it is the usage is between this unit to this unit this has to be the price. So, here the discrimination is not on the basis of the price rather the discrimination on the basis of usage or the discrimination on the basis of the quantity

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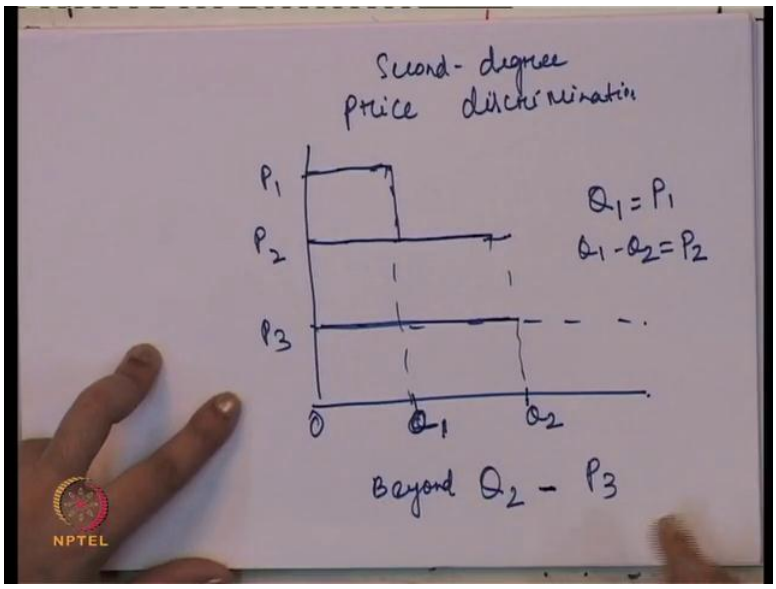

So, we will take the graphical explanation to the second degree price discrimination. So, suppose we take this as Q 1we take this as Q 2. So, here we get a price that is P 1 then we get a price P 2,then we get a price P 3. So, for here if you look at for Q 1 from 0 to Q 1 the price being followed is p 1.From Q 1to Q 2 the price being followed is P 2 and beyond this Q 2 any level of output beyond this beyond Q 2 we followed a price that is p 3. So, here it is not on the basis of P 1 we are identifying Q 1 or P 2. We are identifying Q 2 rather on the basis of up to 0 to Q 1 amount of output price has to be P 1 Q 1 to Q 2

price has to be P 2 and Q 2, beyond Q 2 price has to be P 3. So, the price discrimination here is on the basis of the here is on the basis of the quantity rather than the price. Then we will talk about the third degree price discrimination, which is more common and commonly practiced in the market structure.

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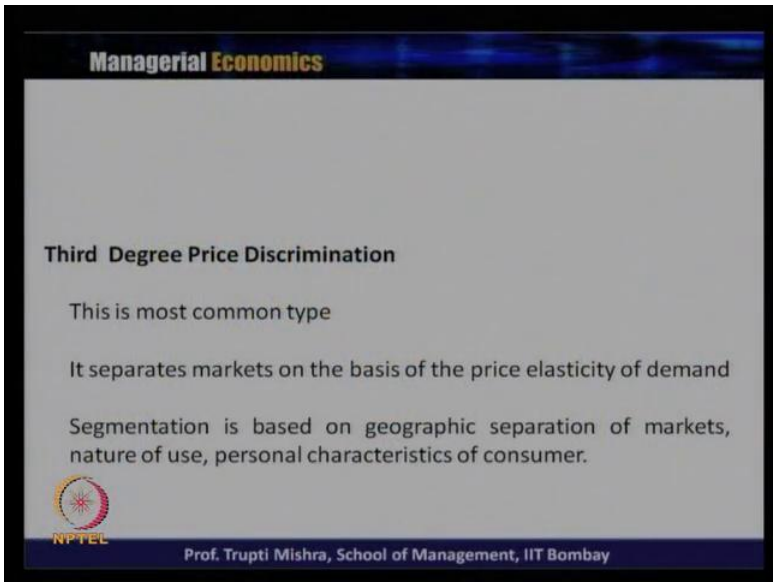

And, it separates the market on the basis of the price elasticity of demand. And here the segmentation is based on geographic separation of markets, nature of use and personal characteristic of the consumer. So the market is, market is divided on the basis of the elasticity of demand like less elastic market, more elastic market. And, on that basis price is generally being followed. And, secondly the segmentation is on the basis of the sometimes the geographic separation like if you look at the typically books it is Indian edition, foreign edition, international edition. What is the nature of use on the basis of the personal characteristic of also consumer.

So, on that basis if you look at the we will get 2 kind of market and in the 2kind of market the monopolist will charge a different price. And, how they will charge different prices because in the elastic market any small change in the price will lead to a greater change in the quantity demanded. So, they will always charge a lower price to get more change in the quantity demanded in the elastic market. And, there the profit maximization a policy is to less price more quantity demanded.

And, in case of the inelastic market they will charge a higher price because the consumer they are less responsive to change in the price. So, even if the monopolist is charging a higher price still there is no much decrease in the quantity demanded. So, they will always charge a higher price in case of the inelastic demand. And, lower price in case of a elastic demand to make this price discrimination is more effective or make more profitable. So, we will check this how this third degree price discrimination can be followed.

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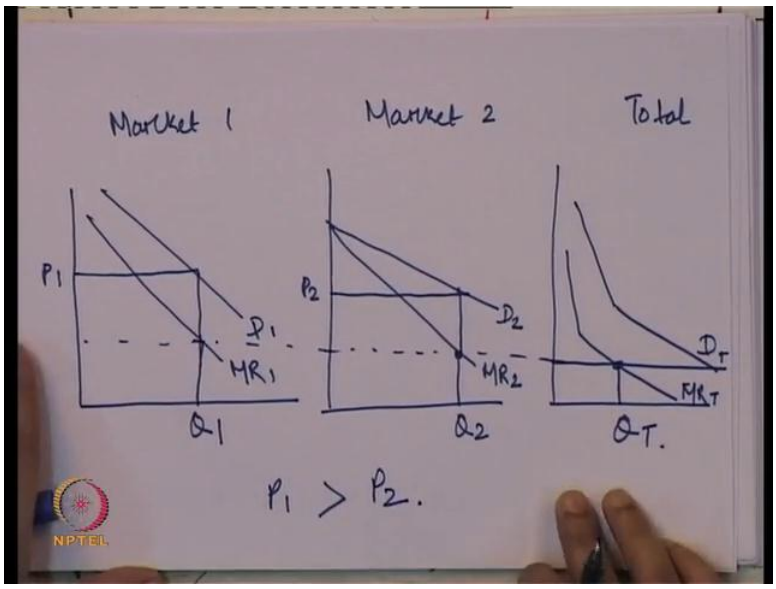

So, here this is market 1, so D 1 marginal revenue one. This is market 2; and this is the total market. Now, here it is the inelastic market. We can check this from the shape of the demand curve, taking together we get a demand curve and also get a marginal revenue curve. So, this is demand curve for t, this is marginal revenue of curve for t that is the total. And here this we get the as the on the basis of the marginal cost; we get this is the total output of the total sale or the total output of the market.

Now, how this has to be getting divided between both the markets? So, correspondingly we will take the marginal cost from here. Taking the marginal revenue and marginal cost, the price is decided in the second market that is P 2. And taking the same cost function, we will decide the price in case of the first market; that is P 1. So, by following this P 1 in the market 1 Q 1 has to be produced. And here Q 2 has to produced or to be sold. So, Q 1has to be sold in market 1. Q 2 has to be sold in the market 2. The price of 1

is higher than price of 2, because this is the case of the inelastic market; and this is the case of the elastic market.

So, in case of the third degree price discrimination the monopolist charges different prices on the different market. And, markets are segmented on the basis the elasticity of demand. So, if it is more elastic generally the firm charges a lower price. And, if it is high elastic then the firm charges a higher price. Then we will take a numerical to understand this price discrimination. How these prices are being discriminated? On the basis of the price were discriminated on the basis of the third degree price discrimination when market is differentiated on the basis of the elasticity of demand.

Now, what the monopolist they get out of this third degree price discrimination. In the first case they are capturing the consumer surplus in case of the first degree price discrimination. In the second case it is the meter service so on the basis of the usage they are trying to charge a higher price and on that basis they are getting the profit. In case of third degree then generally they are segregated on the basis of the elasticity of demand.

And, they knows that the when the market is elastic they can charge a lower price because the consumer they are more sensitive in the elastic market. And, that is why if you are charging a higher price there will be significant reduction in the quantity demanded. That is why they charge a lower price in case of an elastic market. And, they charge a higher price in the inelastic market because if they are charging a higher price still there is no much difference in the quantity demanded or no much decrease in the quantity demanded and by that they can maximize the profit.

So, we will continue discussion on price discrimination the typically the third degree price discrimination and international price discrimination in the next session. And, along with that also we will talk about the different types of pricing. How what is the basis of pricing and what are the different type of pricing product pricing in the next session.