Foundation Course in Managerial Economics
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Lecture - 28
Price Discrimination

Hello and welcome back to our discussion on monopoly outcomes. We discussed in the last class that monopoly outcome is inefficient for the market. It does not maximize welfare in the market and we discussed that perfectly competitive outcome is always much better than a monopoly outcome because in the case of a competitive outcome, the output is much more than the monopoly output and the price is much less than the monopoly price and both productive efficiency and allocative efficiency are achieved in the case of a perfectly competitive outcome.

So today but throughout this discussion if you remember when we discussed in the first couple of lectures in monopoly when we discussed about profit maximization and when we discussed about the marginal revenue we made a very important assumption if you may remember and I did not go into too much details of the assumption so let me recapitulate that assumption right now.

I said that when we are discussing about marginal revenue and when we are talking about the output effect and the price effect there is a very important assumption we are making and that assumption is when the monopolist has to reduce the price because he is increasing the amount of output in the market he has to reduce the price for all the consumers. It does not happen that he gets to charge a higher price to the consumers who are high up on the demand curve. So let me explain.

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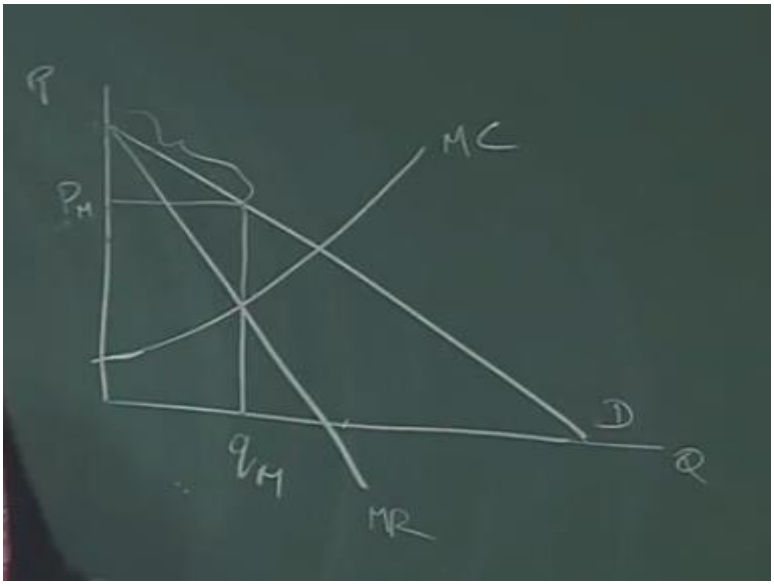

So if this is the demand curve and this is the marginal revenue curve and this is the demand curve. This is the marginal revenue curve and this is the marginal cost. This is the monopoly output and monopoly price. So here we discussed so this is the equilibrium, so this is the equilibrium for the monopolist but here the assumption is when he is producing output of q M he has to charge this price P M to all the consumers who are here.

So he so we know on the demand curve there are some consumers who are high up on the demand curve who are willing to pay a very high price for the product. They are willing to pay very high price for the same product. So when the monopolist is charging a price of P M these consumers over here who are getting to stay in the who are getting the product from the market they are having to pay a price which is less than their willingness to pay because P M is less than every consumer's willingness to pay except the last consumer whose willingness to pay is exactly equal to P M.

So that is the reason that this consumer surplus stays in the market and these buyers actually get a consumer surplus out of buying the product from the monopolist. So now what happens if we relax this assumption? What happens if we say that the since monopolist is the only single seller in the market, also we know that the monopolist knows what the demand curve is.

So now assume that the monopolist knows what is the what is there in every point of the demand curve he knows who all are the buyers who are willing to pay these prices on this demand curve. If that is possible, if that situation is possible and say the monopolist is able to charge a price that each of them is willing to pay. Since he is the only seller in the market so it is possible for him to

actually charge different prices to different buyers. So say he knows by the look on the face of the buyer that this person is willing to pay a higher price for the product that I am selling than his than the next person.

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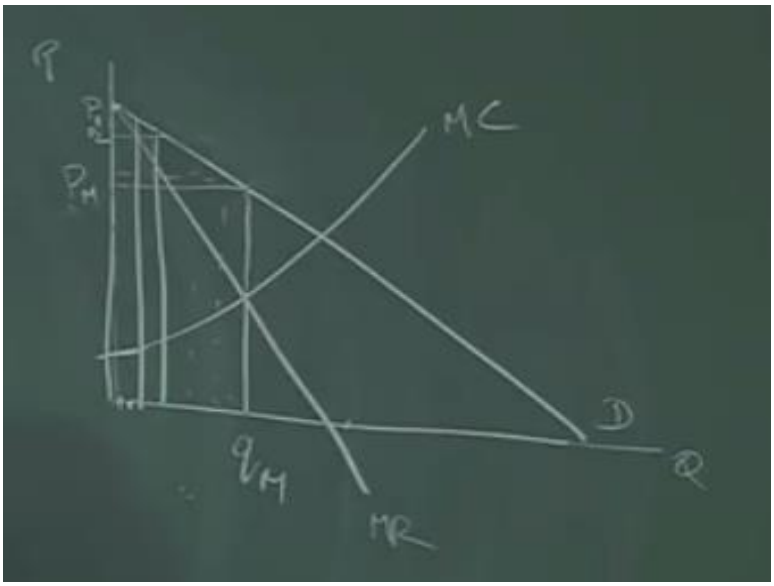

So if such a situation is possible then he gets to charge prices, so if that is possible, for the first unit he is going to charge this person very high P 1 say. The next unit the next person is or say the next few people they are willing to pay P 2. So the next person is for next few people are willing to pay say P 3. So he gets to he say for example he is a single seller in the market. He knows the market and his consumers through and through and he knows how much each one is willing to pay and he charges those prices to each of these buyers. In that case what is his revenue? In that case what he gets is he gets P 1.

So basically what he gets his revenue in that case is this entire amount he gets. Then the P 2 q 2, then say P 3 q 3. So this way he is going to get the entire revenue is his. So he gets to charge each and every person so the entire amount that is entire revenue in the market is this entire area. Now the next question is, so the last person so nothing changes for the last person because he was willing to pay P M and he is having to pay P M so 2 things are happening here.

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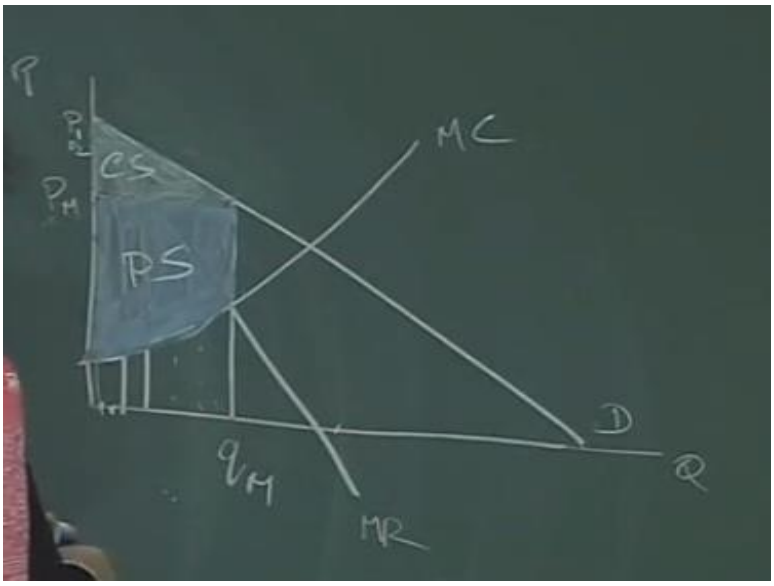

So the first question is what is happening to the consumer surplus that we drew in the previous class, this was the consumer surplus. In the previous class we drew that this is the consumer surplus in case of a monopoly outcome and we said that, I do not remember what colours I used but let me draw a new one, and we said that this area is the was the producer surplus. So we said this was the producer surplus and this was the consumer surplus in the case where the monopolist has to charge the same price to all the consumers.

But in case of a perfectly price discriminating monopolist or where the monopolist actually charges different price to different consumers that is the monopolist charges different prices to different consumers so in that case this entire amount he is being able to get where that will be his revenue and what happens to consumer surplus.

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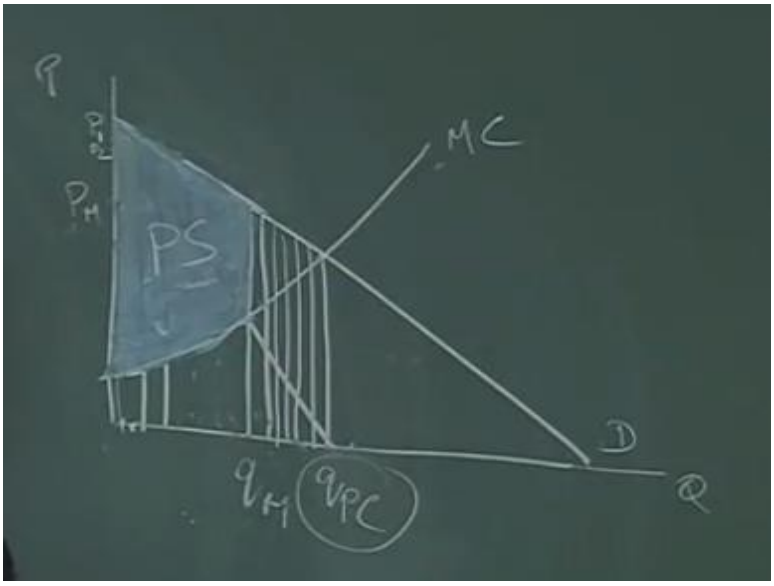

Now consumer surplus then gets wiped off. So the consumer surplus now gets wiped off because no one gets anything. So no consumer gets any surplus because every consumer is having to pay what he is willing to pay so hence this entire area becomes the producer surplus. So this entire area becomes the producer surplus and in case you are wondering what is this area. This is basically his cost, marginal cost. This is his marginal cost. So this part is what he is spending to produce the output. This is his expense. So the producer surplus is the blue area.

Now my next question is so in case of a price discriminating monopolist we understand that the monopolist is basically eating away the entire consumer surplus but my question here is, is he then going to produce q M? Is he going to stop his production at q M like we saw in the case of profit maximization MR is equal to MC? So does he keep does he stop at q M or is there any chance that he is going to produce more?

So what goes on in the mind of the monopolist? What is the logic there? The logic is since he is able to charge what the firm what the buyer is willing to pay it makes sense for him to keep on producing because if he produces the next unit of output and price falls he does not have to reduce the price for all the buyers preceding this output. He does not have to reduce the price for all the buyers.

So it makes sense he knows that he has already sold q M to all these buyers who paid him a much higher price but to sell it to the next buyer he has to reduce the price and the next buyer is going to pay a smaller price and buy some additional output but that does not change anything for the preceding buyers.

So he is going to sell the next unit of output and he keeps on selling. It makes sense for to him to keep on selling till he reaches the point where marginal cost intersects the price line. So what is this equilibrium? So what is this point? This point is the same as the perfectly competitive equilibrium and the output that he produces here which is the perfectly competitive output.

So the output that he produces here is the perfectly competitive output and so this is the competitive perfectly competitive output and he charges the so price is prices are different for different consumers but the output that is getting produced here is the same as the q PC.

Now what happens? Is he going to sell the next unit of output as well? No. That is that he is not going to do because beyond this q PC his marginal cost of producing the output is more than the price that he is going to get out of it. So he is not going to produce beyond q PC amount of output. So here monopoly output is also equal to q PC. So let us look at the slides now before I move on with the diagram.

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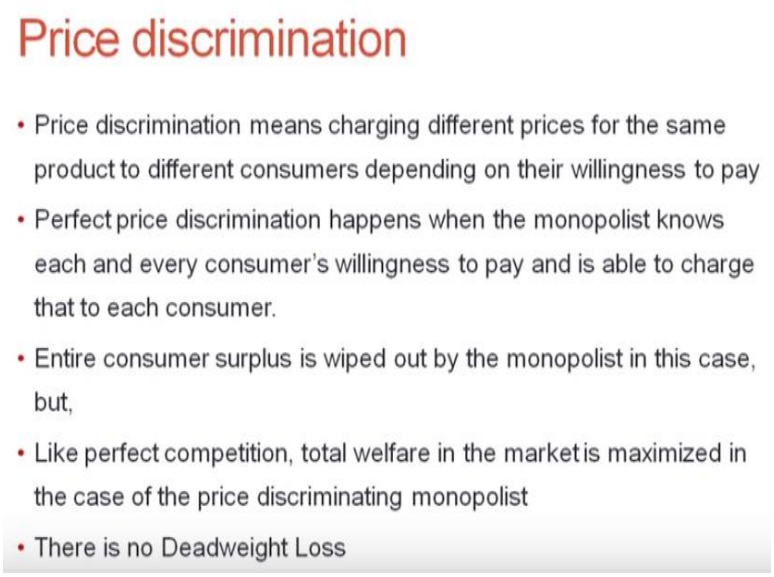

Now, so price discrimination, price discrimination means charging different prices for the same product to different consumers depending on their willingness to pay. Perfect price discrimination happens when the monopolist knows each and every consumer's willingness to pay and is able to charge that to the consumer. Now entire consumer surplus is wiped out by the monopolist in this case but like perfect competition total welfare in the market is maximized on the case of the price discriminating monopolist and there is no deadweight loss.

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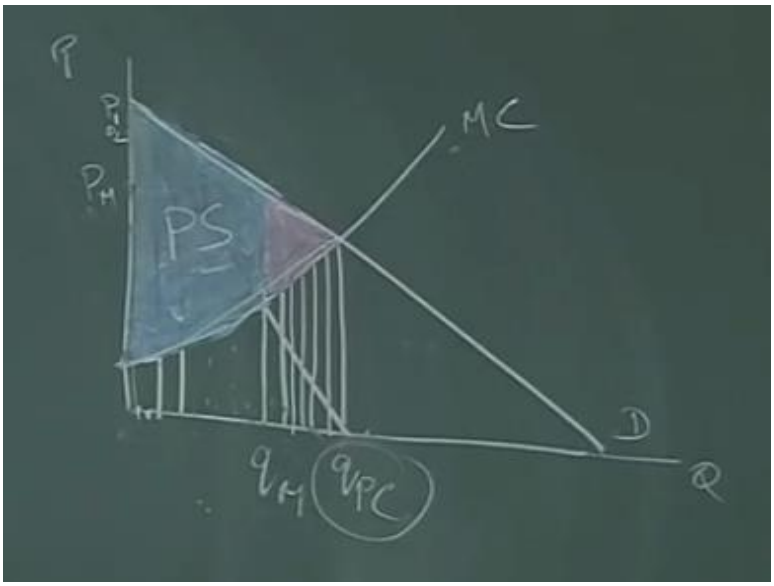

Now let me explain a little bit about the last 2 points that we have discussed here. If you remember the diagram that we drew in the earlier class our deadweight loss was this portion, our deadweight loss was this triangle but in case of a perfectly price discriminating monopolist there is no deadweight loss because he keeps on producing till q PC and the total welfare in the market is this entire triangle. So what is the difference in welfare between the competitive output and perfectly price discriminating monopolist output? So let us see.

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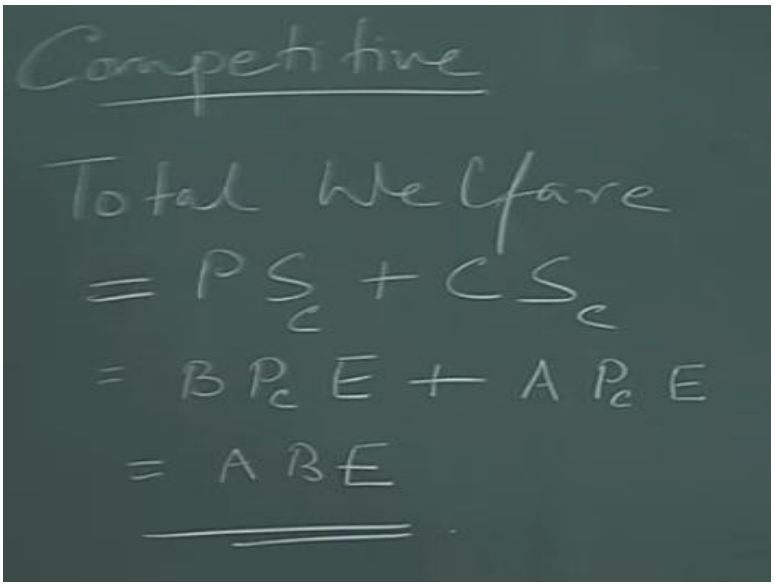

So in case of competitive output competitive in case of competitive market you have total welfare is equal to producer surplus plus consumer surplus, let me write here C for competition,

and this is price in case of competition and q let me call it q C. So in case of in a case of competitive output let me now name the triangles. Say this is E, this is A, B. So in case of total welfare in case of competitive output producer surplus is this triangle BPCE and consumer surplus is this triangle that is APCE. So total welfare is equal to ABE.

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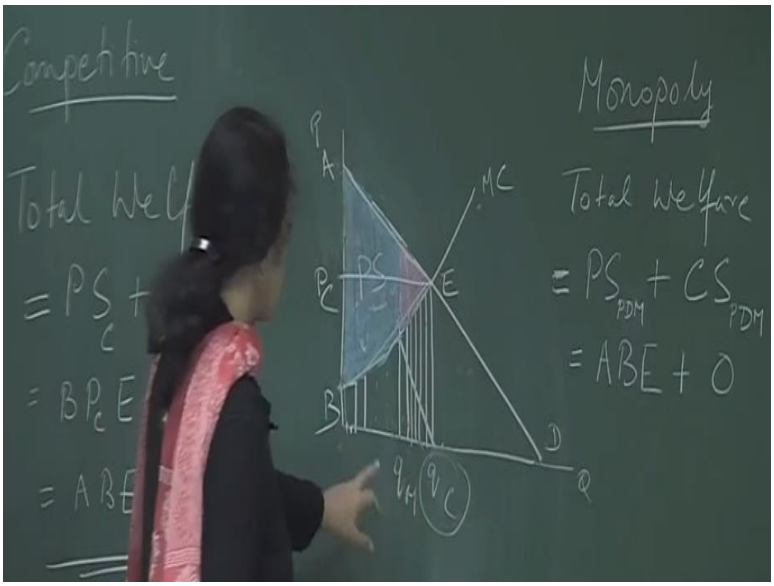

Now what happens in case of the monopolist? In case of monopoly total welfare is equal to producer surplus plus let me write producer surplus in case of monopolist. This is perfectly price discriminating monopolist. So let me write PDM and this is consumer surplus in case of price discriminating monopolist.

So what is the producer surplus in case of a price discriminating monopolist? It is basically this entire area. He is able to wipe out the entire consumer surplus so this entire area of ABE is his producer surplus and consumer surplus is zero. Consumer surplus is zero so in both the situations total welfare is exactly the same.

Total welfare is this triangle ABE. So total welfare is equal to ABE but consumer surplus is equal to zero in case of a perfectly price discriminating monopolist. So should that make any difference. So the next question is should that make any difference because total welfare in the economy is still the same in both the cases because the our allocative efficiency is achieved because this is a this is the output is exactly the same as the competitive output.

So both our productive and allocative efficiencies are achieved because the every buyer is paying what he is willing to pay and for that unit of output he is the and finally the producer is

producing till the point where price is equal to the marginal cost. So productive and allocative efficiency is achieved in this situation. The only difference is if in the eyes of the economy there is difference between the producer and the consumer then probably there is difference between the two outcomes. But if we do not differentiate between a producer and a consumer but in that case total welfare is the same in the case of price discriminating monopolist as in the case of the perfectly competitive output.

So now this is a price discriminating monopoly so at least in the case of price discriminating monopolies there is no deadweight loss. So we know that monopoly output is not as good as the competitive outcome but at least price discriminating monopolist outcome is better than the monopoly outcome and it is close to the competitive outcome in the sense that the total surplus for the economy still remains the same.

Now does price discrimination happen in the real world? So we have said here that the monopolist knows each and every buyer's willingness to pay but is that possible? No. That is perfect price discrimination is not possible in the real world because no buyer is going to reveal his real preference to the buyer to the seller. He is not going to say that yes I really want your product and I am going to pay as high a price as this.

So it is not possible for a seller to actually know the exact willingness to pay of each and every buyer but there are ways in which the sellers basically figure out the willingness to pay of different categories of consumers.

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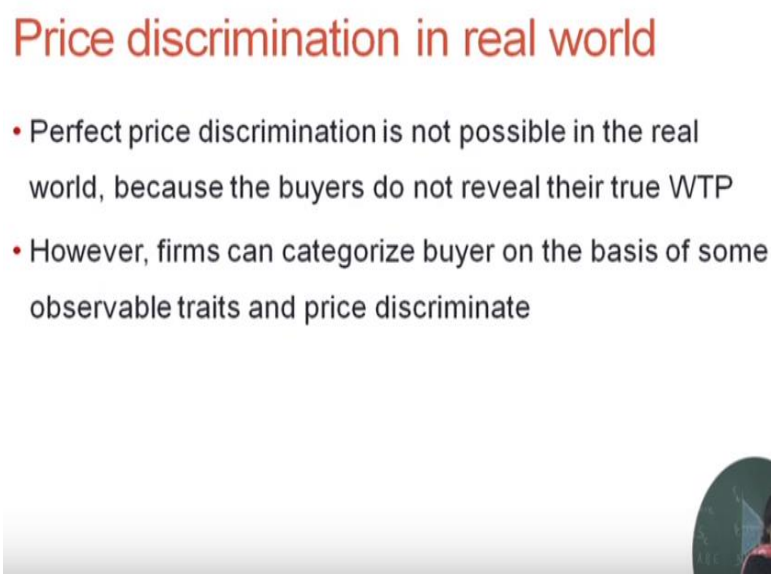

So say price perfect price discrimination is not possible in the real world because the buyers do not reveal their true willingness to pay. However, firms can categorize buyers on the basis of some observable traits and price discriminate.

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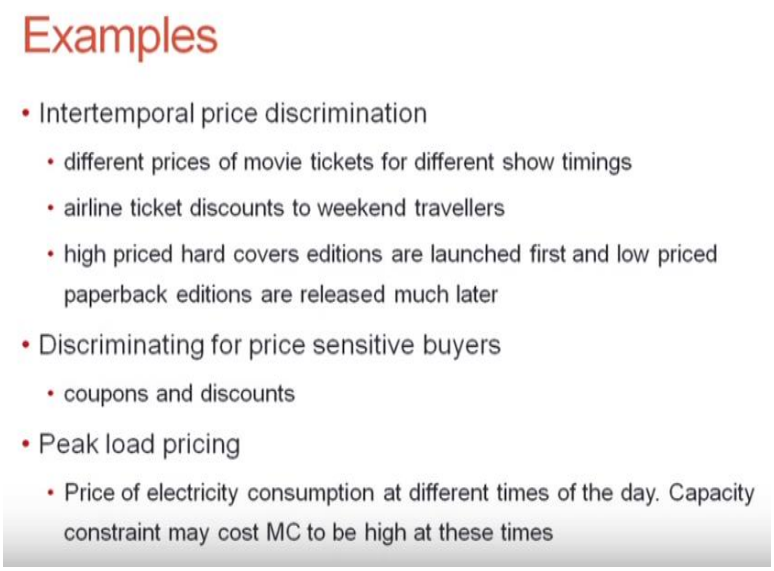

So let us take some examples. Say for example the intertemporal price discrimination. So price discrimination, intertemporal price discrimination can happen when the intertemporal price discrimination basically means that the seller is discriminating across different time of selling the products. Say different prices of movie tickets for different show timings. Now the assumption of the seller is the busier people are richer people and who have better willingness to pay for say movie tickets or entertainments but they cannot come in the morning, during the weekdays, during the morning hours when they are working.

So it is better to charge higher prices in the evening shows when these busy people who are basically earning people will turn up for the movies and the morning timings, morning show timings, afternoon show timings are for people who are usually either students or retired people or homemakers who do not have such high level of income and probably lesser willingness to pay or lesser ability to pay. So these are the people who the sellers are trying to categorize by selling the movies movie tickets at a lower price in the morning hours.

Similarly airline ticket discounts to weekend travellers. So weekend travellers are usually people who are travelling for personal reasons maybe holiday or vacation travellers or who are paying

from their own pockets in contrast business travellers who usually travel during the weekdays. So the weakened travellers weekend airline tickets are usually cheaper.

High priced hard cover editions are launched first and low price paperback editions are released much later. So often we see that if there is bestselling author's books is coming up, it is going to be launched. Initially the people who are really hardcore fans of the author they are really waiting eagerly for the book and they would like to buy it as soon as it is launched. So to charge a higher price to these groups of readers often the book is launched in hard covers with some fancy jacket etc. and the cost is not so much higher than the ordinary paperback version but the price is considerably higher.

So the purpose is to target or categorize or differentiate between 2 categories of buyers, one is more price sensitive who are patiently waiting for the prices to come down and then they can buy the paperback version and the other people who are willing to pay a much higher price for the to read the book to be one of the first people to read the book in the market.

Second is discriminating for price sensitive buyers. So typical example is coupons and discounts. We often see that there are fliers or coupons which are mailed or distributed at departmental stores and it is said that if you really want this discount or coupon please mail it back to the seller or mail it back to the company and you get the discount you get a cash back or something like that. The purpose is people who are really busy are not so much price sensitive. They would not bother to respond to these coupons. They will probably throw it away as opposed to people who are really price sensitive and who would take the time to fill up these coupons mail them to get that additional discount.

Another example is the peak load pricing as happens in case of specially electricity in the case of pricing of electricity; so price of electricity consumption at different times of the day. So capacity constraint may cause the marginal cost to be high at these times. So this is slightly different from the examples that we have taken in the earlier, we have taken earlier in the other kinds of situations where the assumption is cost is not so much different but basically the seller is categorizing people on the basis of their willingness to pay but our last example is where let me quickly draw it.

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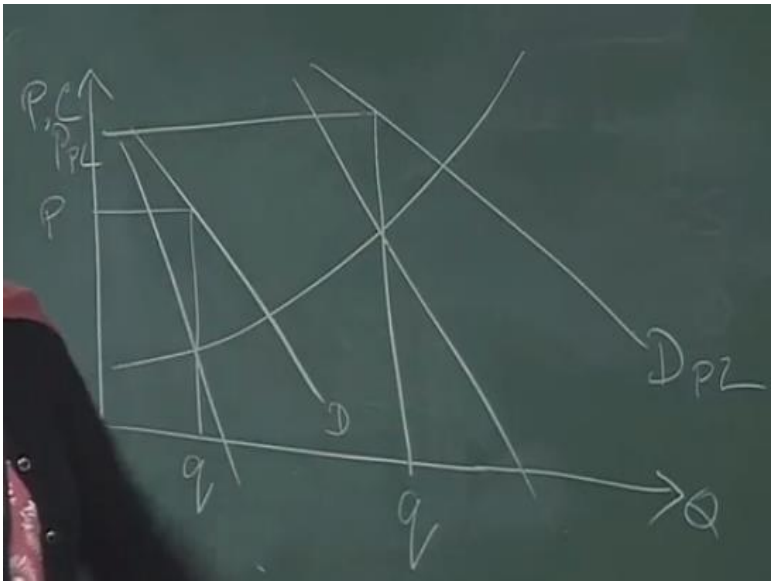

The last example is kind of interesting that so it is possible that so at normal times this is the demand for electricity which is probably inelastic that there is there the people are sensitive about the price of electricity and they are going to use it so this is where it is like a necessary good. So it is inelastic and we have the marginal cost curve.

Now at low amount of generation, so this is the quantity that is sold here and this is the price that is being charged. But what happens when there is too much too high demand for electricity. So our demand curve would be somewhere here. So in that case our marginal cost has gone up. You will see that with higher levels of output the cost is going up and so here for here the price is different.

So you have a higher amount of output that is produced. So this is D and this is peak load D. So this is peak load D and peak load price. So basically there are what is being said is there are 2 categories of consumers who are consuming the electricity and this is in peak load the demand is too high and hence the cost that is being incurred by the seller is also high so he charges a very high price for this for peak load electricity generation and supply.

So this was our example. We are going to discuss lot of more different ways in which the not only a monopolist but also any producer who has some amount of market power what are the various innovative ways that the sellers with at least some amount of market power they come up with to price discriminate across different categories of consumers.

So these examples we are going to take up later once we have discussed the different kinds of market structures and look at the different amount of market power different levels of market

power that a seller could have because the monopolist is a very extreme case where he has complete market power but at least but in situations where there are a few sellers in the market there also the sellers have some amount of market power and they come up with lot of ideas to discriminate across different categories of consumers and try to make a as much profit as possible.

In the following section we are going to talk about what the government does to see to it that the monopolist does not charge too high a price and monopolist can be regulated so that consumer welfare is at least improved if not the competitive output cannot be achieved but at least some amount of welfare improvement is possible, is attempted by the government through public policies and regulation. Thank you.