

Conservation Economics
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Module 9
Industrial organisation and Conservation
Lecture 3
Monopoly

Namaste! We carry forward our discussion on industrial organization and conservation and in this lecture we shall explore Monopoly. A monopoly is defined as a firm that is the sole seller of a product without any close substitutes. So, this is a firm that is the sole seller.

It means that it is the only seller, only seller of a product without any close substitutes. Now, what does that mean? When we look at things such as rice, now in the case of rice you have different varieties that are available. And if there is a seller who is the only seller of a particular variety.

In that case we will not call that seller to be a monopolist because the variety can be replaced or substituted by certain other varieties usually. However, if there is a variety of price that is the only rice that can be used for say a religious function.

In that case if this rice variety cannot be substituted by any other variety then the person who is the sole seller would be called a monopolist because in that case that would be the only person who would be selling that particular variety of rice. Now, this becomes important because we have observed that yeah in the case of a competitive market.

Everybody is a price taker, but in the case of a monopoly because this is the only person who can provide this particular variety of rice. So, he can charge as much as he wants. So, in this case in the case of a monopoly the monopolist is not a price taker, he is a price maker that is he decides what will be the price of the produce. And because he is the only seller, whatever price he wishes to charge he is in a powerful position to charge that price.

A monopoly is a firm that is the sole seller of a product without any close substitutes. Examples include a firm that is selling a patented medicine. Now, if there is a firm that has developed a medicine for a certain disease, and suppose that is the most effective medicine, that is the medicine that everybody wants to have, so that they can be cured of the disease.

In that case because the firm holds a patent on this medicine it would mean that the firm would be the only seller of the medicine for at least 20 years. In this period of 20 years we will say that this firm will be a monopoly because this firm is the only seller of something that is so unique that it has no alternatives. An example is the owner of the only well in a village.

This owner can charge any amount of money that he wants. Other good examples include things like patents and copyrights. So, when we talk about a copyright, the author who is holding the

copyright is the only provider of that particular book or if the publisher holds the copyright the publisher is the only provider or the only seller of that particular book.

If it is a book that everybody wants to read, say a new installment in the Harry Potter series. Now, this is something that all the fans of Harry Potter would like to read. Now, if they do not get this book they cannot read any other book and say that that book becomes a part of the Harry Potter series.

Because this book by the same author in the Harry Potter series it cannot be substituted by any other book. And in this case we will say that the author or the publisher will be a monopoly because they will be the sole sellers of a product without any close substitutes.

Now, the question is why do we have monopolies? Well, we have monopolies because of 3 main reasons: one is monopoly resources. A key resource that is required for the production is owned by a single firm. In that case we will say that we have a monopoly because of a monopoly over the resources.

And a good example is, say, mine. Say, when we talk about the diamond mines, the De Beers company holds the largest share greater than 80 percent in the whole world because they own the mines they are operating the mines from which the largest chunk of diamonds comes out.

And so, in this case the De Beers firm will be a monopoly because they are the sole sellers, they are the sole suppliers of diamonds because they own these resources. They have a monopoly over the resources. Similarly, for things such as tanzanites.

Now, tanzanites are mined from very few mines and so, the owner of this particular mine can become the sole supplier of tanzanite. So, we can have monopolies because of a monopoly over resources.

In certain other cases we can have monopolies because of a government regulation. In this case the government grants the exclusive rights to produce and sell something and examples include copyrights and patents. Now, why does the government grant exclusive rights to anybody?

In the olden days what used to happen was that if the king had a close friend then to favor his or his friend the king used to grant a monopoly over a certain trade. So, we can have monopolies as a way of favoritism, but these days we have monopolies because monopolies can provide a social good and a social well being.

Now, this is because a number of things such as inventions are extremely time consuming, resource intensive and effort influencing. And so, whenever somebody makes a new product, if the market was made open for all the competition then what would happen is that other people would just copy that product.

Now, making the product for the first time requires the greatest amount of inputs, the greatest amount of effort, but copying the product might not require that much amount of input. And so, if the market was let open for everybody then we would have a situation where nobody would want to make any new products.

Because there is no financial incentive and as we have seen incentives are very important tools to make people do something because people respond to incentives. So, if the government wants that we should have a society in which new things are coming up in which we are able to manufacture new technologies.

New technologies are important because they overall increase the efficiency and reduce the cost because of which the welfare of the whole society would increase. Now, to incentivize people to make these new technologies the government grants them exclusive rights over whatever they make.

Typically the government grants them patents through which they will have an exclusive right on selling that product for the next 20 years. Similarly, when we talk about books or means of art then we have copyrights. Now, copyrights ensure that the people who are doing this creative work in the form of writing a book.

Making a movie or say singing a song these people retain the rights of selling these creations. So, there is an incentive to make these creative things. And so, we can have a government regulation through which exclusive right to produce and sell a certain product is granted to somebody and when we have such a situation we will have a monopoly. And a third reason is that of the natural monopolies. In the case of natural monopolies the cost of production for a single firm is much lesser than the cost of production for competitive firms.

What happens in the case of natural monopolies is that in the case of certain sectors it so happens that if one person provides or if one firm provides the services they would incur a certain cost, but if you have a competitive situation where multiple firms supply the same goods the cost increases. A good example is that of water pipes.

If we have a town and there is a company that is supplying water from a river then this company will have to make a pipeline probably have distribution pipelines that will provide water to the whole of the society and then they can also have the smaller pipelines

The cost of laying the pipelines is very high and so, when this pipeline system has been made then the residents would have to pay a certain price for this water. Now, the price that they will be paying to the firm will be used to recuperate the cost of dig of earth moving, laying of these pipes and providing water

Suppose the per capita cost is coming to be say rupees 10 per liter. Now, this is when one firm is supplied. Now, suppose there is another firm that also comes up and says ok we are also going to supply. Now, what will happen? Now, the second firm that will also have to lay this a very similar pipeline probably next to it because it is supplying to the same locality. And so, it will have to do all this to work and provide for all these smaller pipes as well.

What is happening in this case is that the cost of laying the pipe has now doubled because while one pipe would have provided water now we have two pipes for each of the areas. But, what happens also is that now the water that is being supplied by any one firm is reduced because half of the customers are now being supplied by firm A and half of the customers are now being supplied by firm B.

In that case because of a reduced market share they will each of these firms will not be getting that high an amount because the quantity has gone down. What will they do? They have to recuperate the cost of the earth work and digging of the pipes. So, probably when this second firm comes up then both of the firms start to charge 15 rupees a litre.

So, what we are observing here is that when we have two firms that are supplying the same thing then even though there is a situation of competition, what is happening is that the cost for every

person has gone up. So, now people have to pay more money to get the same amount of water and this is a situation of a natural monopoly.

Natural monopolies arise when the cost of production for a single firm is much lesser than the cost of production for the competitive firms because the more the number of firms that are there the more is the amount of input that they have to put in. Another example is laying off roads.

If we have two roads that are running right next to each other in that case the efficiency of operation will go down or things such as electricity lines or things like railway lines. Now, a large number of these services are natural monopolies, which means that if there is a single firm then the products will be made available at a much cheaper price to the people or to the public as compared to when we have more than one firm.

What we observe here is that the economies of scale that result because a single firm is acting that also results in a natural monopoly. So, what we are observing here is that on the y axis we have the cost, on the x axis we have the quantity and here we are plotting the average total cost.

If a lesser quantity of the thing is sold, say in that case with a lesser quantity the cost increases. So, everybody will have to pay a larger cost. Whereas, if the quantity that is being supplied is large in that case people will have to pay lesser costs.

Now, when we have a situation like this, when there is more quantity that is supplied the average total cost reduces, which means that when more and more of the quantity of the goods is being supplied then the firms are able to supply at a lesser cost. Then such sectors become natural monopolies because when we have a lesser quantity of goods that are being supplied because there are more sellers.

What we are observing here is that at this point there are more sellers and at this point there is a single seller because of which a larger quantity can be provided by the single seller. So, the single seller is much more efficient and so, the economies of scale normally result in natural monopolies.

Now, a monopolist market is very different from a competitive market. Because in a competitive market everybody is a price speaker, which means that the price is fixed by the market. And in the case of a competitive market at the set price the firm can sell as much as it wants.

Because there are so many buyers that the firm can sell as much as it wants, but it cannot change the price. The price has been determined by the market. So, in this case the demand curve that the competitive firm faces is a straight line that is at the price that is fixed by the market it can supply any quantity. So, this is the demand curve that the competitive firm faces because it is a price taker.

In the case of a monopoly the demand curve is the market's demand because there is no fixed price. So, what happens is that in the case of the demand curve we have observed that as the price increases the quantity demanded reduces. Now, when this is the demand curve for the market then the monopolist can pick any price.

And so, if the monopolist says that I am going to sell my product at this price then in that case this is the quantity that the monopolist will be able to supply to the market. If the monopolist says that no, I will sell my products at this price. So, at that price this is the quantity that will be sold by the firm

In the case of a monopolist firm, the firm decides the prices and at those prices the demand curve of the market will tell how much is the quantity that will be or that should be made by the firm. Because that is the quantity that is being demanded at that particular price point and so that will be the quantity that will be supplied to the market.

There is this major difference between a competitive firm's demand curve which is a straight line that is parallel to the x axis and a monopolist firm's demand curve that is actually facing downwards. Now, we have observed that or we have assumed that in economics people are rational decision makers.

When the monopoly firm is providing this good, it is providing this good to earn a profit to increase its welfare. Now, the question is if it supplies the goods at a higher price lesser quantity is sold and if it supplies at a lower price then higher quantity is sold, but then the amount of revenue that it will earn will be given by the price at which the goods are being sold multiplied by the quantity of the good that is sold.

When the firm is trying to maximize its profit it would also want to maximize the revenue or probably go for an optimum level of revenue. But, what we are observing here is that if price increases then the quantity decreases and if the price decreases then the quantity increases.

In such a scenario how should the monopolist firm decide how much of the price should be kept and how much of the quantity should be produced for the market? So, that is a question that the monopolist firm faces. And the monopolist firm is free to make the prices, it is free to decide the prices.

But because of the market's demand curve the revenue that it earns it will depend on its choice, but it will not have a complete control. Because when it increases the price the quantity that will be supplied to the market will also go down. So, let us now understand how the monopolist firm maximizes its profit.

So, we are taking the example of a monopolist who is holding the only well in a village and everybody in the village has to come to this well to get water. Now, if the price is less, then people would demand more and this is because people will use water for say recreational activities or they will not be using water that stringently, but if the price of water increases then people will try to cut down on the amount of water that they will consume.

Probably people will go for a shorter bath or probably people will shift to crops that do not require that much amount of water or probably people will stop watering the plants. So, this is a scenario in which we will have a market demand curve that will be sloping downwards, but then we also have this monopolist who holds access or ownership of the only well and so, he can decide the prices.

Let us say that the monopolist has decided these prices. So, it can be as high as 11 or as low as 3. And what is the quantity that is being sold in the market when this price has been decided? So, the quantity that has been sold is given here. So, in this case what we are observing is that when the price is less when the price is 3 rupees per liter then 8 liters of water are being sold.

Let us assume that this quantity is given on a per hour basis, that is if the price is 3 rupees then 8 liters of water are being sold per hour. Now, if the monopolist increases the price, so, from 3 if he increases it to 4 then a lesser quantity of water is getting sold. When he increases it to 5, 6, 7,

8, 9, then we are observing that progressively less quantity of water is getting sold. Now, this is because of the market demand curve.

In the case of a monopolist the monopoly firm faces the market demand curve as the demand curve according to which it will have to supply because the price is not fixed. So, when the monopolist is increasing the price, a lesser quantity of water is getting sold. Now, the total revenue TR is given as $P \times Q$. So, when the price is 11 then the revenue is 11 into 0 is 0 rupees. When the price is 10 rupees only 1 liter is being sold. 10 into 1 is 10 rupees is the total revenue.

When the price is 9 rupees then 9 into two is 18 and so on. So, this column is telling us the total revenue. Now, from the total revenue we can compute the average revenue and average revenue is given as average revenue is total revenue divided by the quantity sold. So, at this price point of 10 rupees the total revenue is 10 divided by Q which is 1 and you get 10.

At this price point of 9 rupees the total revenue is 18, 18 divided by 2 is 9. Here 24 divided by 3 is 8. So, what we are observing here is that the average revenue in this case is what is the price. So, average revenue and price are the same. What about the marginal revenue?

Now, the marginal revenue is given by change in our total revenue divided by change in the quantity that is when this monopolist is moving from 0 to 1 then the change is 0 to 10

So, in this case the marginal revenue will be given as the change in the total revenue which is 10 minus 0 is 10 divided by the change in the quantity which is 1 minus 0 is 1 or the marginal revenue will be 10 rupees. The when the price is 9 rupees, so, when the price has decreased from 10 to 9 rupees the quantity has increased from 1 to 2 and the total revenue has increased from 10 to 18

In this case the marginal revenue will be given by ΔTR is 18 minus 10 is 8. So, here we have 8 divided by ΔQ which is 2 minus 1 is 1. So, 8 by 1 is 8. So, this is how we compute the marginal revenue. Now, this marginal revenue is for a change from 0 to 1 or a change from 1 to 2 and so on.

When the seller is trying to increase the price or when the seller is trying to change the quantity that is being supplied then we are observing that there is a change in the total revenue and the total revenue it increases reaches to a maximum and then starts to decrease.

So, it has increased from 0 to 30. There is an increase, but then it decreases from 30 to 20 4 and so on. Now, this is because when we write TR is equal to $P \times Q$ then there are two impacts that are happening. One is the output effect. So, if Q increases then TR increases, but then there is also the price effect because when Q increases P decreases and when P decreases then TR also decreases.

Because of the output effect the TR is increasing because of the price effect that TR is decreasing when Q is getting increased and which is what we are observing here. When the quantity increases then we can have a situation where the PR may go down or it may go up or it may go down.

If we plot the average revenue and the marginal revenue. So, in this case this is the average revenue and the average revenue is actually equal to the price and so, we can plot that it is going like this. So, it is going like this. This is the average revenue, but the marginal revenue.

Now, remember that this value of 10 is for a change between 0 to 1. So, when we are talking about the value of 0, the marginal revenue will be a bit greater than 10. So, what we do is we plot it from the same beginning. So, we plot it from a point of 11 and here we are observing that between 0 to 1 that is at a point of 0.5, we have a marginal revenue of 10.

At a point of 0.5 we have a marginal revenue of 10. At a point of between 1 and 2 that is 1.5, it has become 8. So, at this point at this point the value is 8 and so on. So, what we are observing here is that the marginal revenue is less than the average revenue.

This is marginal revenue in the red line and this is the average revenue in the blue line. And what we have observed is that the average revenue is given by the price or it is also given by the demand curve.

But what we are observing here is that the marginal revenue is always less than the average revenue. Now, why is that so? When the firm tries to increase the output by a certain amount then the price goes down because we have a demand curve in this market. This is the demand curve that the firm is facing.

When it increases the quantity the price goes down. Now, when the price goes down it does not go down for only the next item the price goes down for all the preceding items as well because the firm can set up a price, but when it sets up a price. So, let us say that the firm has set a price to be this.

So, in this case this quantity is being sold, but then all of this quantity will be sold at this price. So, when that happens with each increasing amount of goods that is being sold in the market the price of everything goes down and so, the marginal revenue has to be less than the average revenue.

Because whenever we have an increase in the quantity that is being sold the price reduces by so much that the price of everything goes down. And So, the marginal revenue has to be less than the average revenue, which is what we are observing here. So, the marginal revenue is less than average revenue, but average revenue is equal to the demand or the price.

When that happens how does the firm maximize its profits? Now, we have observed before that the quantity to be supplied in the market is given by the point of crossing of these two curves; the marginal cost and the marginal revenue because if the firm is supplying anything to the left of this point.

This is our point of intersection which gives us a quantity Q , which is the optimum quantity. If the firm decides that we should supply a quantity that is less than this, that is we should supply only this much of quantity. Now, in that case we have a situation where the marginal revenue is greater than the marginal cost.

When the marginal revenue is greater than the marginal cost, it means that for every item that is being sold from this point onwards we will have more revenue and less will be the cost of manufacturing this item which means that if the firm produces a single more item then it will only add to its profits because at any stage to the left of our equilibrium point we have a situation where the marginal revenue is greater than the marginal cost.

And so, for every item that is being sold we have a marginal profit and because of this marginal profit the company will decide to sell a bit more. Because remember that we have begun with an

assumption that the monopolist is also a rational thinker. So, because the monopolist is getting some more profit, it would say why not and.

For any point that is to the left of this point of equilibrium because this situation holds true that the feeling of one more item will lead to a marginal profit then the firm will try to move towards the right that is towards this equilibrium. But what happens after it has crossed the equilibrium point? So, let us take a point to the right. Let us take this point.

At this point the firm finds out that the marginal cost of producing is greater than the marginal revenue, which means that for the item that we have just sold we were requiring more inputs or more money to make that item, but we were getting lesser returns.

Which means that we were at a net loss, a net marginal loss, which also means that the firm would think that ok, probably we have manufactured a bit too more because if we did not manufacture this item because the marginal cost is greater than the marginal revenue, if we did not manufacture this item we would have reduced our losses.

And so, for any point to the right of this equilibrium point the firm will try to move towards the left. And so, to a point to the left it moves towards the equilibrium any point to the right it moves towards the equilibrium and so, this is the point that has to be the equilibrium point.

This is the point at which the firm will be earning the maximum profit. Now, at this point we are getting the quantity and we also get the price. Now, this price is determined by the point where this vertical line cuts the demand curve. So, this is the point. So, this will give us the price.

This is the situation in the market for a monopoly format and here as well we have a to an average total cost of making the goods and the marginal cost curve will cut the average total cost at the lowest value. So, this is something that we have observed in the case of a competitive firm and this will hold here instead.

The marginal cost curve cuts the average total cost curve at the minimum. So, that holds true here. But, the only difference here is that the point of cutting off the marginal revenue and the marginal cost will only give the quantity, it will not give the price. The price will be given by this vertical where it cuts the demand curve that will give us the price.

What we are observing here is that while in the case of a competitive firm we were observing that P is equal to MR is equal to MC . So, the price was fixed and this price was the marginal revenue because for each item it will be sold at this price only. So, P is equal to MR and the maximization of profit happened, where MR is equal to MC that is marginal revenue is equal to marginal cost and where it was cutting we were getting the price. So, that was the maximization of the profit, but the price was fixed.

This only gives us the quantity. In this case also we have MR is equal to MC which is giving us the quantity. But what we are observing here is that this MR curve is lower than the demand curve, the demand curve is always upper and so, we will have a price that will be always greater than this point.

So, P is greater than the marginal revenue and the marginal cost at the point of profit maximization. This point P is greater than this point where MR is equal to MC . So, this is the situation for a monopolist firm. This is the situation of the maximum profit.

In such a situation we can compute the profit. Profit is total revenue minus total cost, so, TR

minus TC. Now, we can divide this whole portion by Q and multiply it by Q. So, that will mean the same thing because Q and Q will get cancelled out. So, this is what we are writing here, TR by Q minus TC by Q into Q.

Now, total revenue divided by the quantity, total quantity that is Q is equal to the price because we had observed that the total revenue is given by price into the quantity. And so, if you divide both the sides by Q, in that case this Q and this Q will get cancelled out and so, we have P is equal to TR by Q.

Here we have TR by Q is equal to P or the price minus TC by Q. Now, TC by Q is telling us the total cost divided by the quantity sold, which is the average total cost. And remember that here we were drawing this curve the average total cost curve and the marginal cost curve was cutting it at the minimum and here in the equation also we are coming to the same thing.

Profit is equal to price minus the average total cost multiplied by the quantity that is being sold in the market. Now, the firm has an option. It can either choose Q or it can choose the price at which it will be sold. It will be selling the things and that would determine the other object. Now, profit is price minus average total cost into the quantity.

This is what we are marking here in the curve. The price is given by this point which will tell us the quantity where the marginal cost and the margin revenue are the same. So, this is giving us the quantity, drawing the vertical where it cuts the demand curve and gives us the price. So, this is the price.

And the average total cost for this quantity is given by the point where this vertical line is cutting the average total cost curve, which is this point. This is P, this is ATC and so, this length is P minus ATC, this one P minus ATC. This much is the quantity Q. So, this portion of this rectangle is the quantity Q.

And so, the area of this rectangle is given by A is area is P minus ATC which is the height multiplied by Q which is the base or in other words we can say that this area shown in green represents the profit of the monopolist firm

To recap, how did we come to this point? We first of all computed Q which is given by the crossing of the MR and the MC curve. So, this is the point of profit maximization and this will give us the Q.

Now, for this Q we draw a vertical and this vertical will cut the demand curve at the price point of P and it will cut the ATC curve to give the the average total cost for this quantity and so, this side or the height of the rectangle is P minus ATC, this point minus this point. The side of the rectangle is given by Q.

This is the quantity that we have found out by this point and so, the area of this rectangle is the profit of the monopolist firm. Now, this is different from what we were observing in the case of a competitive firm. Now, in the case of a competitive firm, the marginal cost is the same as the price. So, we had observed here that in the case of a competitive firm marginal cost is the same as price.

And because a competitive firm is a price taker, the price is fixed which means that the marginal cost also is fixed. And so, we are drawing it like this that the marginal cost is fixed at the price which is also the competitive price. So, this is P competitive and this is the marginal cost curve.

This is the demand curve of the market and the point where this demand curve cuts the MC curve. Now, the MC curve is also the supply curve of the firm because we are talking about not the accounting costing, but the economic costing. So, it includes all the opportunity cost.

And we had observed that a firm will be able to supply goods, a competitive firm will be able to supply goods at its marginal cost and so, this is the supply curve. And the point where the supply and the demand are meeting each other this will give us the quantity that is supplied by a competitive firm.

Suppose that for the monopolist curve firm, we also have the same marginal cost. In that case the quantity supplied by the monopolist firm will be given by this point, where the MR and the MC are cutting each other. This gives us the quantity supplied by the monopolist firm.

When we draw the vertical the point where it cuts the demand curve gives us the monopoly price. Now, two things are important here. One is that the quantity that is supplied by the monopolist firm is less than the quantity that is supplied by the competitive firm.

Here it is important to know that the quantity that is being supplied by the competitive firm is the most efficient quantity because that is the quantity at which the surplus of the society is maximized. The second thing to note is that the monopolist firm supplies at a price that is greater than the competitive firm's price.

These are two things that we need to remember that the monopolist will supply a lesser quantity of the good and at a higher price than a competitive one. Now, that would result in deadweight losses because we have observed that when we talk about a competitive firm the point where the the demand and the supply curve meet each other that gives the point of maximization of the total surplus.

That is if we talk about these curves, so, this is the marginal revenue, this is the marginal cost. So, marginal cost is the supply curve for a competitive firm, this is the demand curve of the market and this point it gives the efficient quantity and the efficient price which is the equilibrium quantity and the and the equilibrium price and we call it as efficient because it maximizes the total surplus.

But for the monopoly firm we have a situation that the quantity is given by this point where the marginal revenue is cutting the marginal cost and we get this quantity and the price is given by this point where this vertical cuts the the demand curve and so, we get this price.

Now, the situation is if we take any point between the monopoly quantity and the efficient quantity and if we draw a vertical then what happens? For this quantity let us say that this is quantity Q . So, for this quantity we have a situation that it cuts the marginal cost curve at this point and it cuts the demand curve at this point, which means that the cost of providing the goods to the market for the firm is this much.

So, this is the cost and the value that somebody in the market is putting on this is this which means that there is some person who is willing to pay this much amount to this company or to this firm and this amount is greater than the cost of producing the good which would mean that if a transaction happened between this person and this firm we will have a situation that the person will be happy because he or she will be able to have this product at any price between this V and C .

If that is a price that is decided then there is a consumer surplus because this price will be less than V and there will also be a producer surplus because this price is greater than C . So, both are having a profit, but the thing is this transaction does not happen because the monopolist firm only sells this much quantity, it does not sell this quantity Q .

And so, there is a situation where there is a deadweight loss because there is somebody who is putting a higher value to the product and the firm can manufacture it at a lower cost, but still it is not selling it because it would reduce the total profit for the firm.

In the quest to increase the profit for the firm we are creating a situation where the society is getting hampered and so, this is a deadweight loss. And so, this triangle shown in green represents the amount of deadweight loss that will be there because of the action of the monopolist firm. Because the firm supplies this quantity to maximize its profit and it does not supply the efficient quantity that actually the society or the market demands.

We need to remember that there is a deadweight loss. Now, the next thing is is there something that the monopolist firm can do to reduce the deadweight loss while ensuring that it also earns the maximum profit. Now, this is something that most firms actually are doing. So, let us now understand how that works.

So, now, the firm is trying to reduce the deadweight loss and the firm is trying to reduce this deadweight loss because it wants to sell a bit more. It wants to earn this profit that was being left out because it was not selling that quantity. But it wants to do that in a manner that will not reduce the price of the good.

Because if it produces more quantity the price goes down which will affect all the goods that it is selling. So, it wants to find out a way in which the firm can sell more quantity while not reducing the cost for everything. And this brings us to the topic of price discrimination.

And let us understand price discrimination with an example. Suppose there is a publisher of a book and this publisher is publishing an ebook. Now, in the case of an ebook the cost of publishing is next to 0, but the publisher is not writing the book. There is an author that is doing the writing and the publisher needs to pay a royalty to the author.

And suppose they have decided that the royalty to be paid is 20,00,000 of rupees. Now, when the publisher looks at the market the publisher finds out that there are two markets. The first market is that of the diehard fans of the author. So, these people who have read the earlier books of the author are ready to pay a higher price because there are fans of the author.

And so, here we have 1,00,000 people who are ready to pay as high as 30 rupees to get a copy of this book, but then there are also certain other people in the market who have not read this author or probably who are not fond of this author. So, these people will buy this book if they can get it cheaply, but they will not pay 30 rupees for this book.

So, the publisher has found out that they will be ready to pay say 5 rupees per copy and in this case the number of people is 4,00,000. Now, the publisher has to decide what price it should sell the book at. Now, suppose the publisher decides that ok I should sell it for 30 rupees.

Because 30 rupees is the maximum that it can charge to these people. Now, when that happens, these 1,00,000 people will buy the book at 30 rupees. So, the firm will get a revenue of 30,00,000 of rupees, but none of these 4,00,000 people will buy the book. So, the revenue from

this segment of the market is 0 rupees.

The total revenue is 30,00,000 and out of this 30,00,000 the firm will pay 20,00,000 to the author and make a net profit of 10,00,000 rupees. Now, this is one scenario when the publisher is choosing the largest price. If the publisher chose the second price, if the publisher chose a price of 5 rupees,.

Now in the case of a normal monopoly market. What happens is that when the price reduces that is the price for all the goods. So, even these 1,00,000 people who are able and willing to pay 30 rupees will get this book for 5 rupees because that is the price that the publisher has set.

And from these people the revenue will be 5,00,000 rupees and from these people these 4,00,000 people now because they are able and willing to pay 5 rupees. So, they will purchase the book and the publisher will get 20,00,000 of rupees.

So, total is 25,00,000 of the revenue out of which 20,00,000 has to be paid to the author and so, the profit is 5,00,000 rupees. So, what we are observing here is that in the first case when the publisher chose the higher price 30 rupees it was making a profit of 10,00,000 rupees.

In the second case when it chose the lower price looking at the second market segment it made a profit of 5,00,000 rupees. The question now is can the publisher do something to increase the amount of profits that it can make. Now, suppose the publisher chooses to release the book at 30 rupees and when this book is released then all the diehard fans of the author go and purchase this book.

After they have bought this book now at a later point of time the publisher reduces the price and sells it for 5 rupees. Now, what will happen? The people who wanted or who were ready to pay 30 rupees because they were diehard fans they bought the book immediately. So, that market is now saturated and after they have bought the book the publisher sells it for 5 rupees.

If that happens, the publisher would be making 30,00,000 rupees from the first segment and 20,00,000 rupees from the second segment. So, the total revenue becomes 50,00,000 out of which 20,00,000 has to be paid to the author and so, the profit has become now 30,00,000. So, price discrimination or selling the same good at two or more different prices is a strategy that the monopolist can use to maximize its properties.

What is happening in this case is that earlier because here the marginal cost is the same it is 0 rupees. The point where the marginal revenue was cutting this curve gave the monopoly quantity and the point where it was cutting the demand curve it was giving the monopoly price.

When we had this situation this was the profit given by the green rectangle and these people who were putting a higher value, but were able to get the product at this price they were getting a surplus. So, this was the consumer surplus. And these people who were ready to pay a price that was smaller than the monopoly price, but was still greater than the marginal cost they were not getting anything and so, we had a deadweight loss here.

In the case of price discrimination what the what the publisher is doing is that it is selling a particular quantity at this price another quantity at this price another quantity at this price and so on. So, now what the publisher can do is to have multiple prices.

And when we have multiple prices the profit gets maximized because in the case of a perfect price discrimination we have innumerable number of prices. So, everybody gets the product at

the value that they are putting in the product.

When that happens then the consumer surplus for every person is 0 rupees because they are getting the product at the same price that was their value for the product. So, the consumer surplus is 0 rupees, but the profit is maximized because you are selling each product to each person at the maximum possible price that they were willing to take it for.

And so, the profit increases and the deadweight loss becomes 0 because in that case every person, whatever value this person is putting if it is greater than the marginal cost the publisher will sell them. So, this is perfect price discrimination and in this case all the surplus goes to the producer. So, we have a good amount of producer surplus of profit. The consumer surplus is 0, but at least everybody is getting the product.

And examples of price discrimination include things like paperback edition versus library edition. So, when the book is released a number of publishers just released the library edition. So, it will be a hard bound book at a very high price meant for libraries, but all the diehard fans will buy this book. And once they have bought this book then at a later point of time the publisher will release say a lower price paperback edition.

In that case the publisher is able to do a price discrimination it is able to cater to the needs of the diehard fans and also to the needs of those people who put a lower value to this product. Another is economy class versus business class in the case of aeroplanes. In this case the airlines are selling the same product that is the service of transporting people from point A to point B at two different prices or another example is discount coupons.

Those people who can pay less can always cut these discount coupons from newspapers and magazines and bring them to the shop and in that case they will get a discount. But those people who are not ready to cut these discount coupons or collect these discount coupons are probably very busy people or they are very rich people. So, they just do not give a thought about getting a discount.

In that case those people will not collect these discount coupons and when they go to the market they will get the same product at a higher price. So, these are all different examples of price discrimination. Now, because monopolies have a deadweight loss, we have different public policies towards monopolies.

In certain cases the government says that no, monopoly is bad for the society and so, we should have an increased amount of competition and the government makes use of antitrust laws to break down the monopolies. That is one large firm will be broken down into two or more smaller firms so that the amount of competition increases.

Another policy is price control. So, the government might say that no the monopoly is selling the things at too high a price and so, we put a price ceiling that nobody can sell above this price. Or the government may go for a public ownership or nationalization.

In a number of countries things like roads or railways are natural monopolies they are nationalized. The government is the only one who provides for these and another option is doing nothing. Because here again we have observed that markets are a good way of organizing economic activity and certain governments might say that let the market do what they want to do.

Whereas certain other governments might say that the governments can sometimes improve the market outcomes and so, it is our duty to improve the market outcomes and we will do that. The choice is dependent on the society that we live in.

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