Managerial Economics
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Lecture -58
Monopoly (Contd…)

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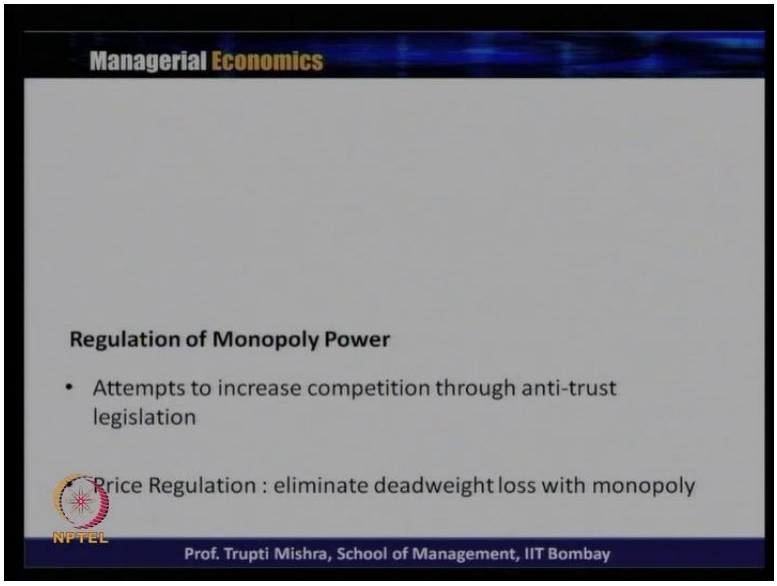

Now, what is the regulation of monopoly power, may be the regulations are many, but if you look at, there is antitrust legislation, which is generally for the firm which getting into the act of the monopolization. Now, since we know that monopoly power is something, which is imposing a cost on the society, there the public police come into picture. To up to how much quantity or up to how much limit, at least the monopoly power of the firm can get control. So, generally through one of it is generally the antitrust legislation or antitrust law, which attempts to increase the competition through the legislation. And whenever there is an increase in the competition, generally it takes away the monopoly power or market power from the firm.

Then we have the price regulation, and in price regulation the focus is to eliminate the deadweight loss with the monopoly, and why the deadweight loss takes place, because monopoly charges a higher price, which reduces the demand from the consumer. And when it reduces the demand from the consumer, generally some unused, there is a difference between the efficient and the efficient and the monopoly output, which leads to deadweight loss. So, the role of the price regulation is to charge a price, or to do a price sealing, which eliminate the deadweight loss with the monopoly. So, then we will try to understand this price regulation through this graph.

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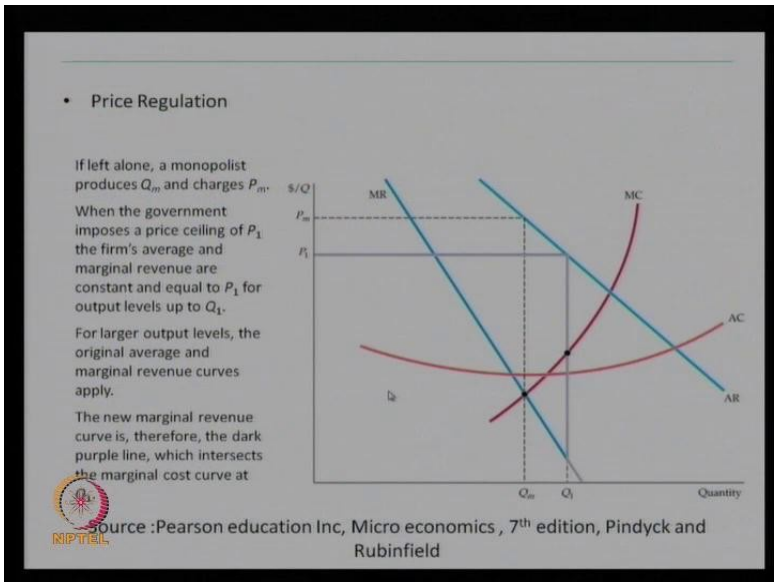

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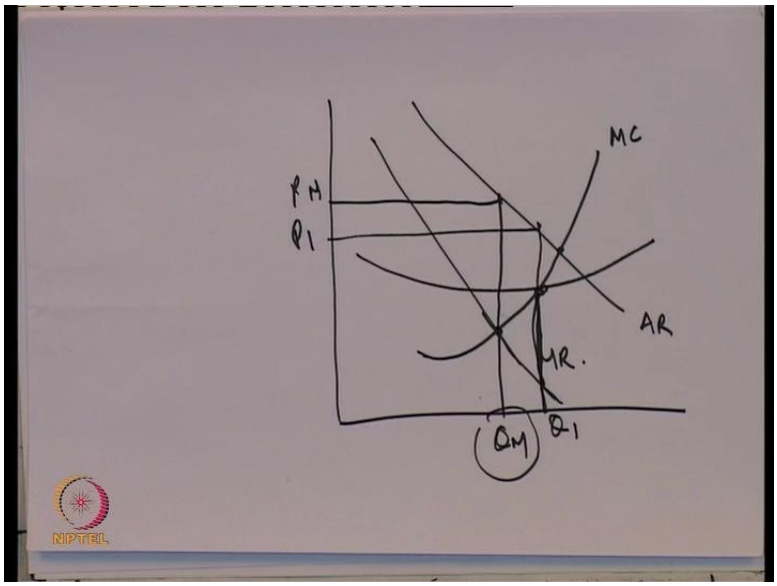

So, if you look at here, there are the typical monopoly understandings; like we have a average revenue curve, we have a marginal revenue curve, and we have average cost curve, and we have marginal cost curve. So, now if you look at the graph, there are two level of output; one level of output is with respect to, marginal cost and marginal revenue. And other level of output if you look at, its Q_1; that is on the basis of, mainly on the basis of the, may be you can call it mainly on the basis of the price sealing, and when the price sealing is done, that gives into the another quantity. So, if you look at the graph now, the monopolists produces Q_M, and charges the price P_M. When then come and impose a price sealing of P_1, the firms average and marginal revenue are constant and equal for P_1 at the output level Q_1.

For larger output level the original average and marginal revenue curve applies, and new marginal revenue curve is, therefore a dark purple line, if you look at, and which intersect the marginal cost curve at the point Q_1. So, corresponding to P_1 if you look at what is the new marginal revenue curve. The new marginal revenue curves, comes from the price sealing; that is from P_1, and which intersect the marginal cost curve at the point Q_1, so what is the marginal cost curve. So, marginal cost curve is this, and this is at Q_1, so this part can be called as the new marginal revenue curve. So, monopolist produce always Q_M, and the charges PM; that is the price, monopoly price, and the output level is Q_M, but when the price sealing is imposed, the price sealing if it is imposed, you will find that the quantity is Q_1 and the price is P_1. And for the larger output level, the original and original average and marginal revenue curve apply, but for the new marginal revenue curve is therefore, a dark purple line, typically this line, this line which intersect the marginal cost curve at Q_1.

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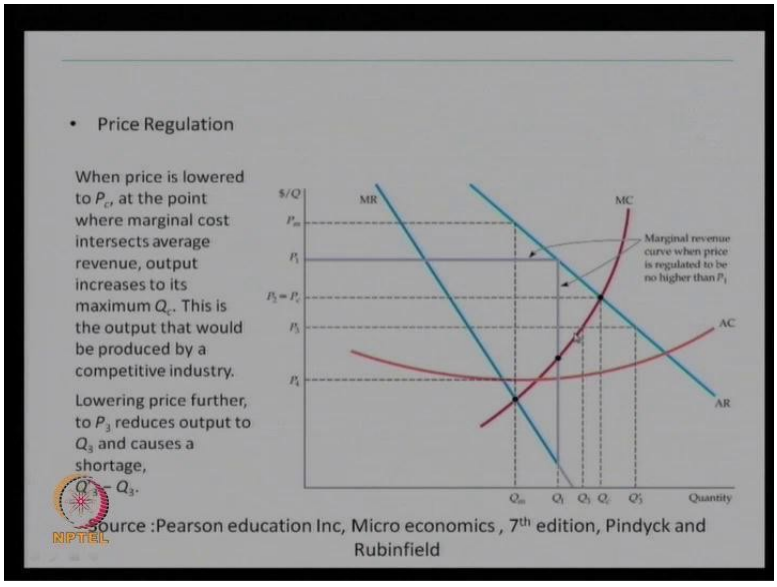

So, now if the price is lowered, so this is the $P_m$is the price of monopoly price, P_1 is the sealing price. When price is lower to P_c at the point, where marginal cost intersect the average revenue, and marginal cost intersect the average revenue here corresponding to we get a price; that is P_c, and output increase to its maximum that is Q_c. This is the output that would be produced by the competitive industry, because this level of output is generally through the competitive industry, and competitive industry is one, where you follow the, when we find out what is the equilibrium price and quantity. We follow a principle where P is equal to MC, and at this point P is equal to MC, corresponding to the that we get the Q_c level of output, and we get the price which is P_c; that is our, we can alternately call it as a P_2.

Lowering the price further, that is P_3, it reduces the output to $Q_3$and causes a shortage. So, again if you reduces the price to P_3; that will cause a shortage to the shortage, that is Q_3 by $Q_3^{'}$, and marginal revenue curve when price is regulated to be no higher than P_1.

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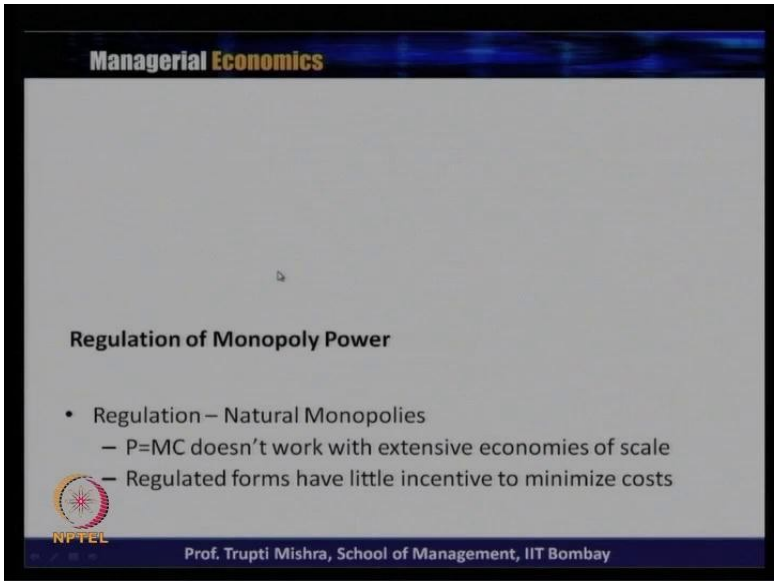

Now, what is the regulation over here, if you look at, the regulation here is that, when we are going on decreasing the price, when we are going on decreasing the price; one is monopoly price, then the sealing price is impose that again increase the output level from Q_m to Q_1, and the price is from P_m to P_1. But the ideal is still there is some amount of the gap between the competitive price and the sealing price. So, still that amount of deadweight loss is still there with the monopoly. If the price reduces below this competitive price, generally this reduces the output to Q_3 and causes a shortage; that is Q_3 by Q'_3. So, this is again not profitable for the monopolist through regulation, if you are reducing the price which is even lower than the competitive price. So, here regulation works in the form of a sealing price; that somehow increases the output, beyond the monopoly output and reduces the price below the monopoly price. So, that somehow, some amount of the deadweight loss can be control through the regulation. Now, we will see how the regulation work in case of a natural monopoly, and what is natural monopoly here.

Natural monopoly is here, where the one firm generally they have generated a economies of scale, and they are producing in such a cost effective manner or at a lower a average cost of production; that reduces the scope for the other firms to enter into the market and operate. So, regulation, when it comes to regulation in the case of the natural monopolies, generally this P = MC does not work with the extensive economies of scale, so regulated firms of very little

incentive to minimize the cost. Now what is this P by MC, P by MC whenever, P is equal to MC, whenever we talk about this; this is the case of a competitive economy. So, since, when it comes to regulation in the natural monopoly, this P is equal to MC does not work with the extensive economies of scale, and natural monopoly is a market, where there is more economies of scale, and that generally creates a barrier for the other firms to enter. But when it comes to regulation, still regulated firms are very little incentive to minimize the cost, and but when your incentive to minimize the cost, at least some amount of the output can be controlled, when it comes to the regulation.

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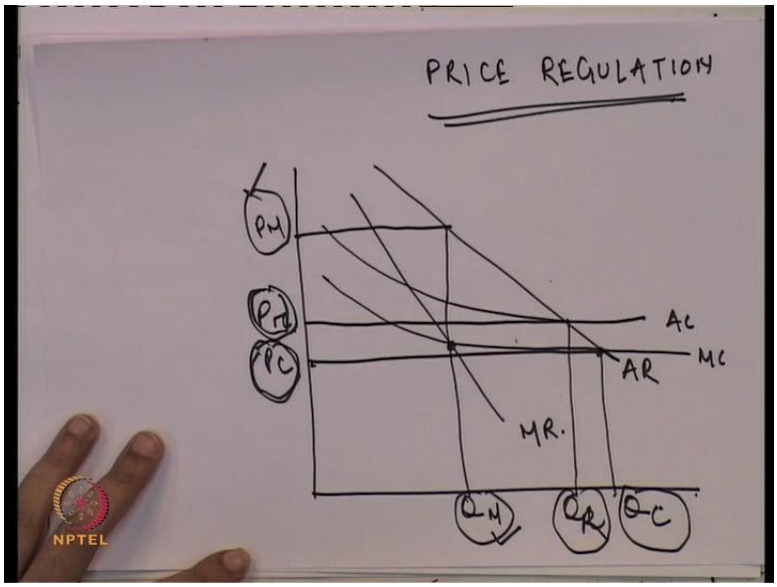

So, next we will see how the regulation work in case, or how the price regulation in case of the natural monopoly, and whether it affect the deadweight loss, or whether it also reduces the social cost of the production. So, we have average revenue curve, we have marginal revenue curve, then we have average cost. And why the shape of average cost is like this, because this is a case of natural monopoly and the firm is operating at the lower average cost, and we have marginal cost. Corresponding to this point; that is MC and MR, we get the quantity and price. So, price is P_m, quantity is Q_M. And what is the sealing price here, if you want to make it some, if you want to make or if the policy wants to do some regulation with that, then support a price where P is equal to AC, or AR is equal to AC. And if you do this, then we get a price; that is P_r that is the regulated price.

And what is our competitive price; competitive price is that point, where AR is equal to MC. So, AR is equal to MC is perfectly competitive price. So, we have three level of output, three level of price; we have monopoly output, we have regulated output, and we have competitive

output, we have a monopoly price, we have a regulatory price, and we have competitive price. So, if it is unregulated if there is no regulation, then the monopolist should produce Q_m and charge P_m, if the price were to regulate and be the price that is the firm would lose money and go out of the business, cannot cover the average cost. So, if you can ask the monopoly to produce at the price, P_c which is competitive price, and produce the level Q_c. Generally monopoly would go out of the business, because they will lose money, and it will not cover the average cost also.

So, as a regulator, generally the regulator will fix the price at P_r, giving profit as large as possible without going out of the business, and that also reduces the deadweight loss associated with the monopoly. So, what is the motive behind this price regulation in case of natural monopoly? Even if the regulator is not forcing the monopolist to use the competitive price or competitive level of output, at least they are giving a regulated price, which is above the competitive price and below the monopoly price. And if the monopolist through regulation if they have to follow it, still they are getting some amount of profit; and they are not out of the business. And in other way it also control the deadweight lost and brings down or reduces down the, social cost associated with the monopoly power, or social cost associated with the monopolist profit.

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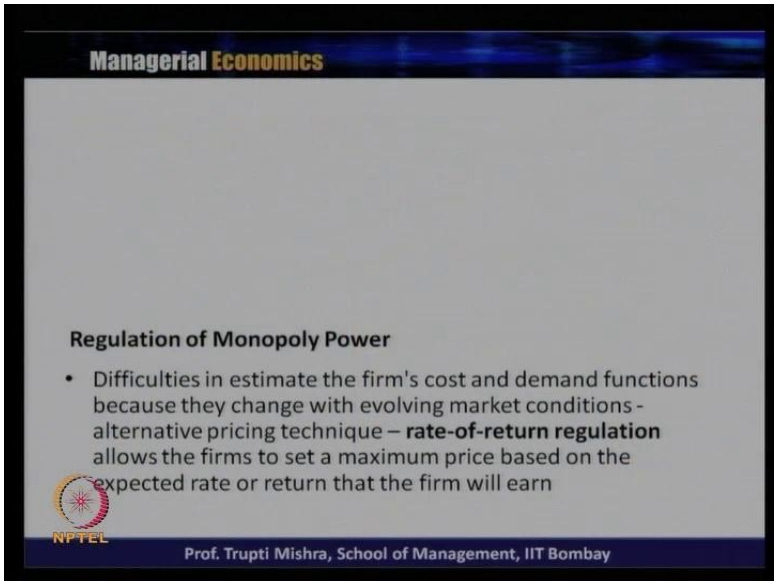

Now, what is the difficulty when it comes to regulation, till the time there is a good estimation of demand and cost; that generally helps in regulating the price. But there is always a difficulty in estimate the firms cost and demand function, because they change with

evolving market condition. It is not that the cost and demand function is constant; generally they change with evolving the market condition. So, that leads to the need of a alternative pricing technique, and what is the alternative pricing technique. The rate of return regulation allows the firm to set a maximum price based on the expected rate of return; that the firm will earn.

So, the rate of return regulation is the alternative pricing technique, in order to capture the dynamics in the demand and cost function. And it allows the firm to set a maximum price based on the expected rate of return; that the firm will earn. So, here the firm is, they can do a prediction that what is the rate of return they will earn, once they fixed up the price at this level, and here the rate of return method generally the firm is allowed to choose a higher price which will give them the maximum profit. But here if you look at its still not the free of challenges, still there is challenges in this method also, this rate of return, but still it has emerged as a alternative pricing technique, looking into the change in the demand and cost function.

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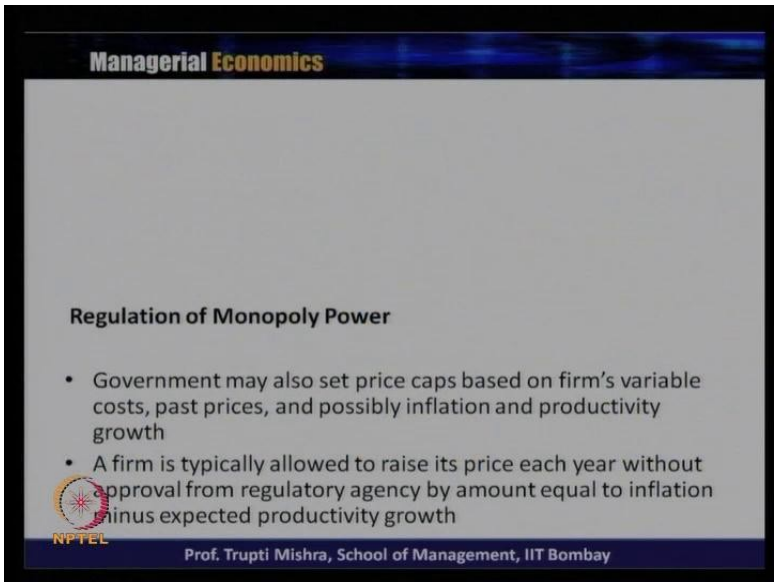

So, apart from this rate of rate of return techniques, government can also setup a price cap; typically the sealing price, like we discussed just now, based on firms variable cost, past prices possible inflation and productivity growth. So, here when the government is setting a price cap or they are doing a price sealing. It is not may be on the basis of the competitive price or the monopoly price rather here, some other variable is taken into consideration; like what is the firms variable cost, like what is the average variable cost at what rate the scale of operation is increasing. Their previous what is the price records, the possible inflation and the

productivity growth. And a firm is typically allowed to raise its price each year without the approval of regulatory agency, by amount equal to the inflation minus expected productivity growth.

So, even if the regulation is there still there is some amount of freedom to the firm, when it comes to increase in the price, and they can increase the price each year, with the approval from the regulatory agency, by amount equal to the inflation minus the expected productivity growth. So, the gap between the inflation and the expected productivity growth; that is the amount what they can raise through the increase in the price; that is each year, and for that they do not need the regulators' approval. Then we will start a new kind of market where it is. So, till now if you look at, it is about how many sellers or how many buyers. So, here we will specifically talk only about the more from the buyer perspective, because this is a market structure or this is a form of market, which is a subset of the monopoly or kind of monopoly, where its market with a single buyer.

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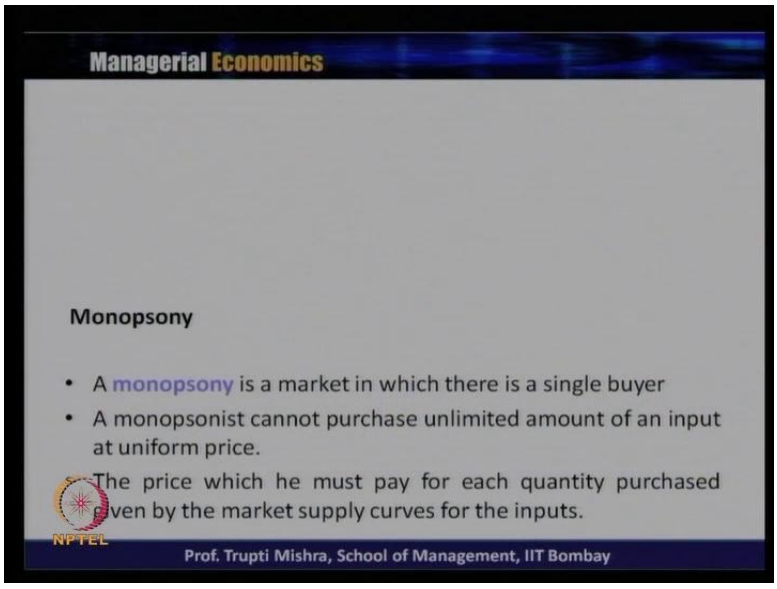

So, till the time we have the understanding that monopoly is the market, where there is only single seller, but monopsony is a market, in which there is a single buyer, and a monopsonist cannot purchase unlimited amount of an input at uniform price, even if it is the single buyer. And here the monopsony market is more into the input pricing rather than the product pricing, and this monopsony; the evidence of monopsony can be found more in the input market rather than the product market. So, this is a market, with a single buyer. It cannot purchase unlimited amount of an input in uniform price. The price which the monopsonist must pay each quantity purchase given by the market supply curve for the inputs.

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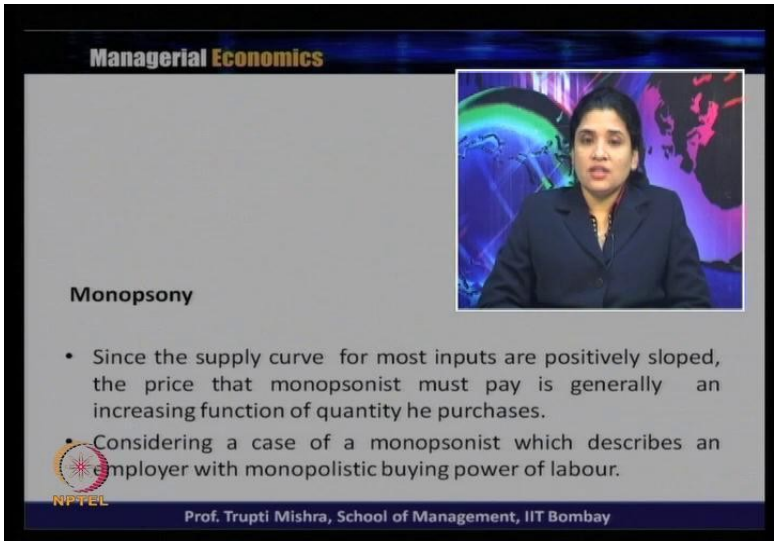

So, whatever the price he pays for each quantity, it has to be the market, on the basis of the market supply curve for the inputs. And since, the market supply curves for the most inputs are positively slope. The price that monopsonist must pay is generally an increasing function of quantity he purchase. So, since the supply curve is positively slope, the price what he is paying that is also an increasing function of quantity he purchases. And generally, we take a case of the monopsonist, which describe an employer with a monopolist buying power of the labor.

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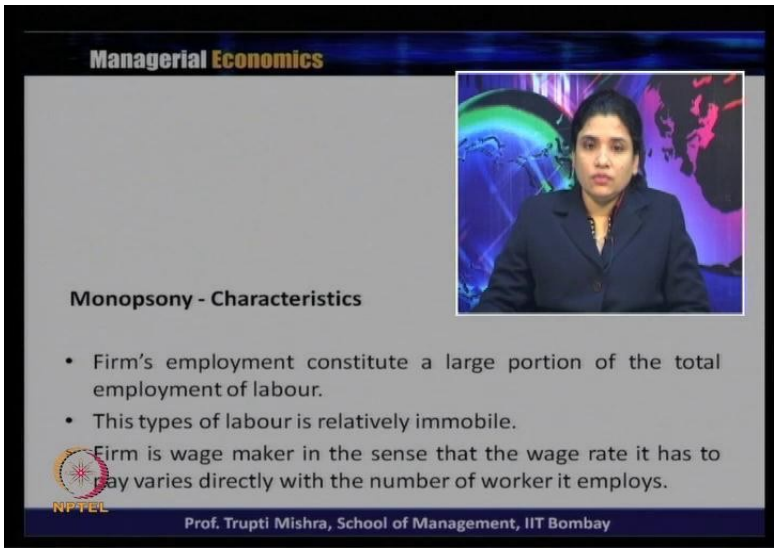

So, here the firm's employment constitutes a large portion of the total employment of labor, and we assume that, that this type of labor is relatively immobile. Firm is the wage maker in the sense that wage rate it has to pays very directly with the number of worker its employ. So, they are not the wage taker, they are the wage maker, and whatever the wage rate they are

paying to the labor; that generally varies with the number of worker its employ. And the employment constitutes a large portion of the total employment of the labor, then only they can influence it. So, even if they are the single buyer, at least their capturing majority share of the labor market, then only they can consider as the single buyer or they can consider as the monopsonist.

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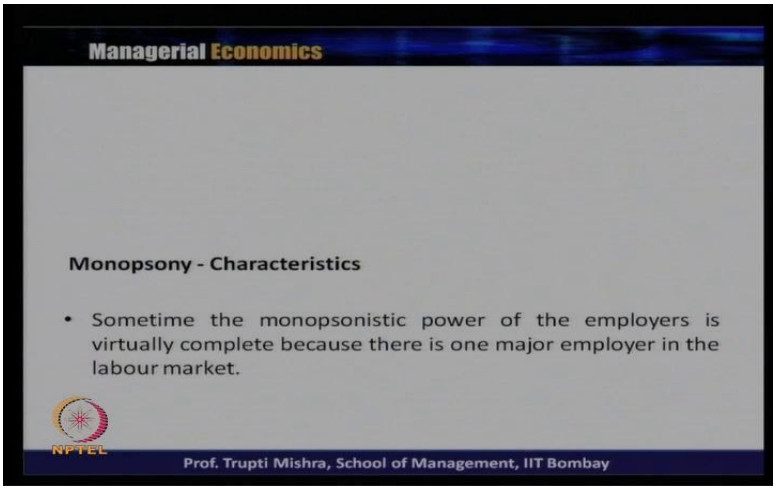

So, sometimes this monopsonic power of the employee is virtually complete, because there is one major employer in the labor market. And in this case, they generally enjoy the maximum monopsonic power, because they are the single buyer, or they are also capture in the majority market share of the typical input. So, suppose if you look at, we take an example that how generally this cost changes in case of a monopsony and how we get the equilibrium, in case of a monopsony market. We will just take a small example to understand this.

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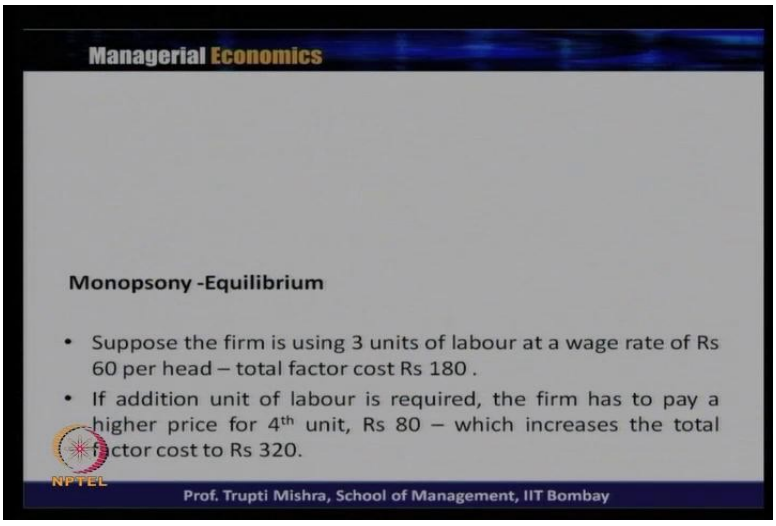

Suppose a firm is using 3 units of labor at the wage rate of 60 per head, and how much total factor when they are hiring 3 unit of labor with a wage rate of 60; that comes to 80 .If

additional unit of labor is required, the firm has to pay higher price for forth unit; that is rupees eighty, because all the inputs or all the units of input cannot be charge in a single wage rate, and up to 3 units of wage rate, they are charging 60 per head, so the total factor cost is 180. When forth unit is required, he is charging 80, and it is not only 80 to the forth unit, also 80 to the rest of the units also, rests the units of labor; that increases the total cost from 20 each for each unit of labor, which increases the total factor cost to rupees 320, because this is now 80 rupees plus 4 unit. So, that comes to rupees 320, for the total factor cost.

Now, what is the marginal factor cost? The marginal factor cost if you look at here, it exceeds the price of labor, because price of labor is 60, and marginal factor cost at this stage is, from third unit to forth unit, is more than the price of the labor. So, now we will see how we take this example, with the help of this total factor cost, marginal factor cost with the graphical explanation, and how generally monopsony reach the equilibrium.

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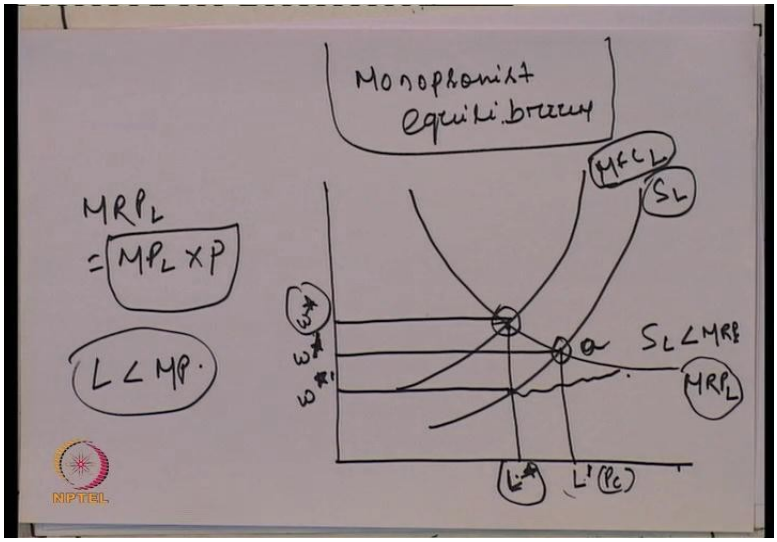

So, this is the marginal factor cost for labor, this is supply for labor, this is marginal revenue product for labor. Corresponding to this we get number of laborer, here we get another laborer; that is according to the perfect competitive. We get a wage rate; that is with respect to a; that is, this is w star, this is, yes this is w star, this is w dash, and this is w star. Now, what is marginal factor cost for labor here? This is each increase in the quantity of the factor, the firm use, because this is the marginal factor cost with respect to the labor. Now what is MRP_L. MRP_L is the demand curve for the labor, and how we get the marginal product for labor; that is MP_L multiplied by price, that gives us the marginal revenue product for labor. Supply curve is the, supply curve for the labor. Now, what is the profit maximizing quantity?

Profit maximizing quantity is the, intersection of the marginal revenue product and marginal factor cost for labor.

So, that gives us $L^{¿}$ worker, and pay wage rate that is w star. Now, labor receives a wage, which is less than the marginal product. So, labor receives a wage, which is less than the marginal product, and how we find this equilibrium. We find this equilibrium through, this wage rate; that is w star, and labor that is $L^{¿}$. Now, what is this $L^{'}$? $L^{'}$ is ideally, what is through perfect competitive, it is a case of a perfect competitive. Then the equilibrium can be found, with the help of supply of labor and demand for labor. So, corresponding to that we get a level that is a, which is $w^{'}$, is the wage rate, and $L^{'}$ is the amount of labor. So, if it is a case of a perfect competitive market, then ideally this should be the total amount of labor, and this should be the wage rate. Any wage rate below this will generally bring the difference in the supply and demand for labor.

Then the supply of labor will be less, because this wage rate is not profitable or not beneficial from them, and that is the reason if you look at the supply of labor is less than demand for labor, if any wage rate below this. So, this can be called as $w^{¿'}$ or simply $w^{''}$, which is the wage rate, which is less than the $w^{¿}$ which is the monopsonist wage rate, and this is the perfect competitive wage rate. Any wage rate below that, will generally brings down the labor supply, and there is a gap between the labor demand and labor supply. So, in case of monopsony equilibrium you find the equilibrium at this point, where MFC_L. Generally the marginal factor cost of labor is intersecting the marginal revenue product for the labor, and we get the output; that is, $L^{¿}$ is the labor output, and $w^{¿}$ is the wage that is given to them. And generally labor receives a wage, which is less than the marginal product for the labor. Now, we will see, what is the monopsony power, like the way we analyze, there is a market power for the monopolist, whether there is any market power for the monopsonist.

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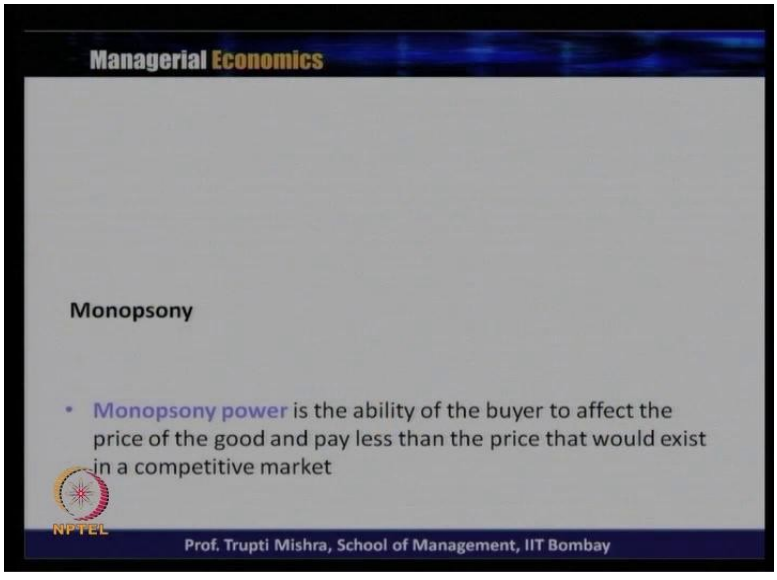

So, monopsony power is the ability of the buyers to affect the price of the good, and pay less than the price that would exist in a competitive market. So, this is again a power to give a lower price, then whatever existing in the market. So, through this; and when this will happen? When suppose, you take a case of a place, where there is only one industry existing, and they are considered to the largest employer in this particular locality. So, whatever the price they are charging, the labor, they has to accept it, otherwise there is no other way out to get the employment. So, this is the case where the firm or where the plants they have a market share, because they can influence the price, and they can pay wage rate, which is lower than the existing wage rate in the market. So, monopsony power is the ability of the buyers to affect the price of the good, and pay less the price that would exist in a competitive market. Now, what are the factors on which the degree of monopsony power generally depends?

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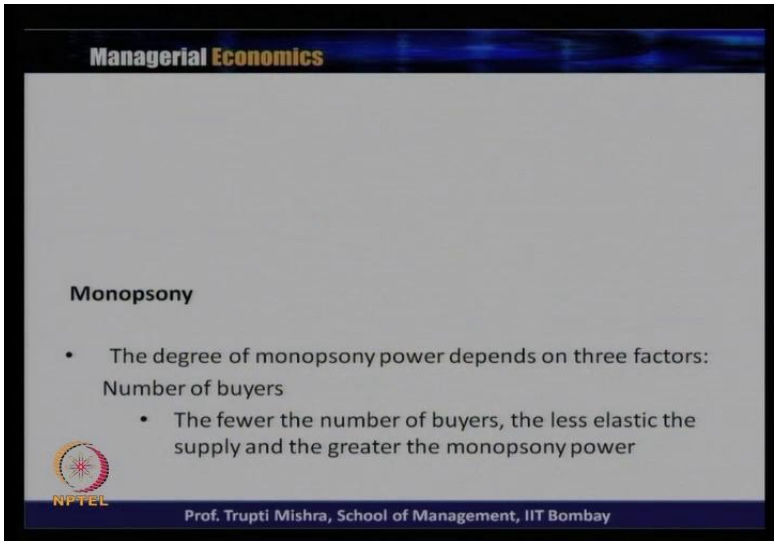

First one is the number of buyers; the fewer the number of buyers, the less elastic the supply, and the greater is the monopsony power.

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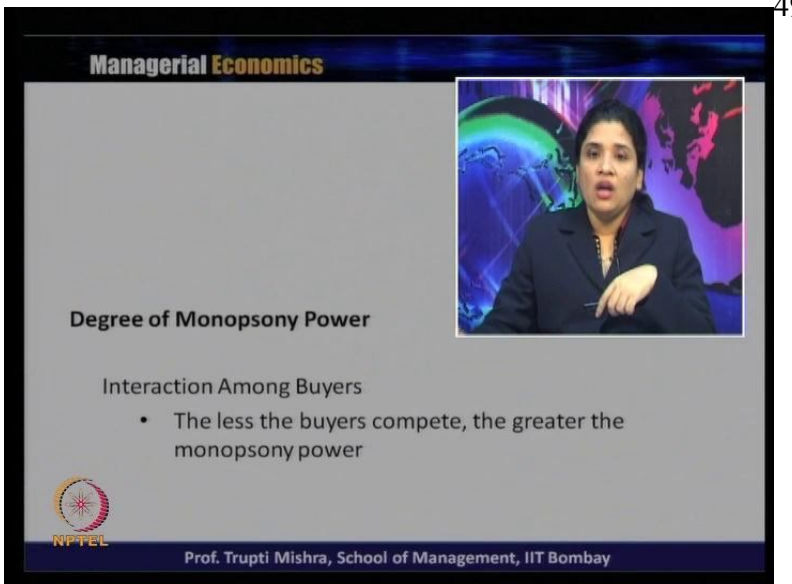

Interaction among the buyers, the less the buyers compete, the greater the monopsony power. And elasticity of market supply extent to which the price is marked down, below the MV, depends upon the elasticity of supply facing buyer. And if the supply is very elastic mark down will be small. The more inelastic the supply, the more is the monopsony power.

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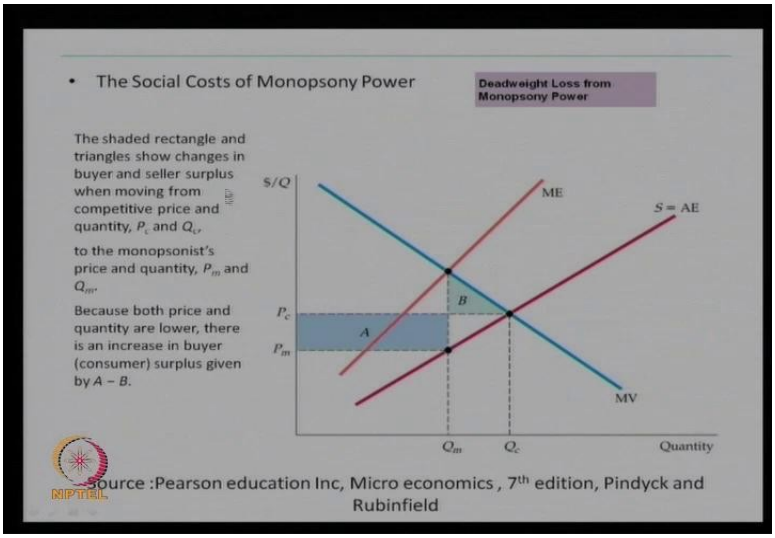

Now, if you look at what is the social cost of the monopoly power. Here if you look at, again we have one to understand the demand, another to understand the supply. Here if you look at the shaded rectangle and the triangle shows, change in the buyers and sellers surplus, when moving from competitive price to the competitive price and quantity. So, this is what this triangle B is nothing but the change in the buyers and seller surplus, or we can call it this is the deadweight loss, because this neither goes to the buyers nor goes to the sellers. And why we get this amount, this triangle as the deadweight loss, because of the competitive price; that is P_c and the Q_c, to the monopsony price and quantity that is $P_m$and Q_m.

So, the difference between the P_m; that is the monopolist price, and competitive price P_c, and the quantity; that is quantity of monopsonist, and quantity of perfect competitive that gives us the deadweight loss, and because both price and quantity are lower, there is an increase in the buyer surplus given the amount A by B. So, some amount of buyer surplus is there, but still it is not going to the society, rather its coming to the as a deadweight loss, because part of its

going to buyer, and some amount is still consider as the deadweight loss. So, what is the social cost of monopsony? The producer surplus fall by A plus C, and there is a deadweight loss given by the triangle B C, and it is more, if you look at it is not B is the deadweight loss, also the B plus C is the deadweight loss, because of the monopsony power.

So, we will continue our discussion on monopoly, few more kind of monopoly, like a typical example of bilateral monopoly. Then we will do a comparative assessment between the monopoly and perfect competition, and we will talk about a monopolistic form of a market, which is an ideal mix of both the perfect competitive market structure and monopoly, somewhere lie between the monopolist, monopoly market structure and the perfect competitive market structure in the next session.