Managerial Economics
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Lecture - 48
Theory of Market – II

Then we will start our actually fifth model which talks about theory of market where we basically look at the different kind of market; that is the perfect market, imperfect. We will see individually for each market how the price and output is determined. How generally firms they get profit under each market structure, and then finally we will take a specific example for each of this market to understand that what is their applicability or what is their; may be when you bring the example of that into the real world how much existence of there in the real world. So to start with, let us define market and as you know it is a very simple, from market you know where is market, right. So market is the place generally where the buyers-sellers meet, exchanges, and the transaction takes place. So to define formally, we can say market is one where the buyers and sellers do the transaction with the full information on the price and the product.

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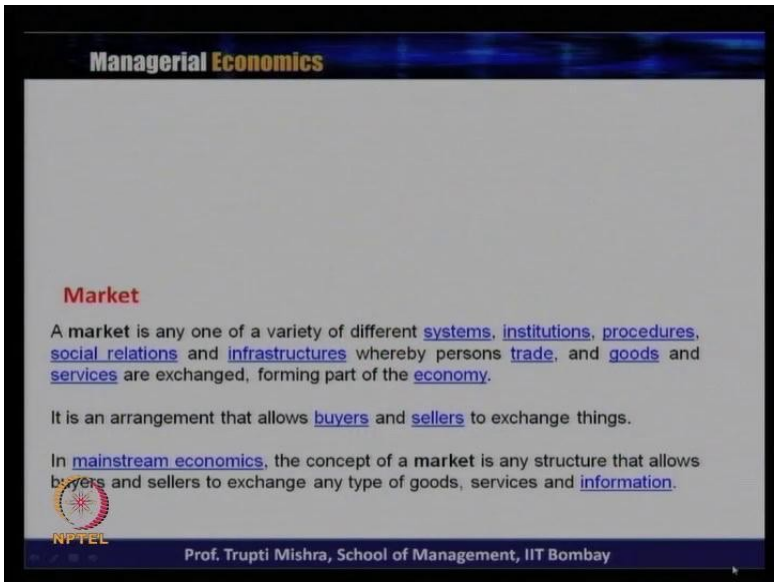

So, to go beyond more formal definition of market; market is one of the variety of different system, institution, procedures, social relation and infrastructure whereby a person trade, and goods and services are exchanged, forming the part of economy. So, it is an arrangement that allows the buyers and sellers to exchange things, and in typically mainstream economies, the concept of market is any structure that allows the buyers and sellers to exchange any type of

goods, services and also information. When we talk about information here because information is also now a product, you do not get it freely in many cases. So in mainstream economics, generally the market is any structure which allows the buyers and sellers to exchange any type of goods, services, and information.

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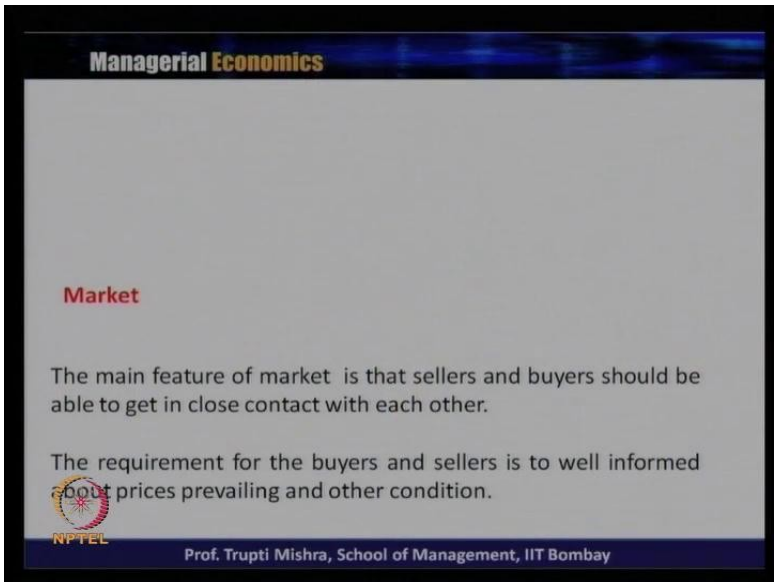

So, the main feature of market is that sellers and buyers should be able to get close contact with each other, and the requirement for the buyers and sellers is to well inform about the prices says prevailing and other conditions.

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So, to sum up we can say market is any organization whereby buyers and sellers of a goods are kept in close touch with each other and there are four basic components of a market; that is consumers, sellers, commodity, and price. So consumers and sellers, they are the economic agent; one has to buy, one has to sell, both of them has to get into the transaction. Apart from that, the product; that is the main component of the market.

Because of the product the buyers and sellers they are meeting each other, and finally the value at which the transaction is taking place, and generally that is the market. So, there are four basic component of a market; that is consumer, sellers, commodity or product, we can use the word interchangeably and now in fact goods and services, because service is also a product for which the transaction takes place between the buyers and sellers, and finally it is the price.

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Let us see how we can classify the market. Either we can classify the market on the basis of area; that is local, national, and regional. So if it is a locally placed, then it is a local market. The typical may be the weekly market we get it in our; that is the local market, the weekly vegetable market or what. National market in the national level, regional market in a regional level or we can classify the market by the nature of transaction: Spot and future. Spot market is one where the transaction takes place immediately and future market the transaction takes place for a later date of later point of time. Classification by volume of business: Wholesale and retail. So, if it is buying it in bulk, generally that is known as the wholesale market. If it is in buying in a unit wise, that is the retail market.

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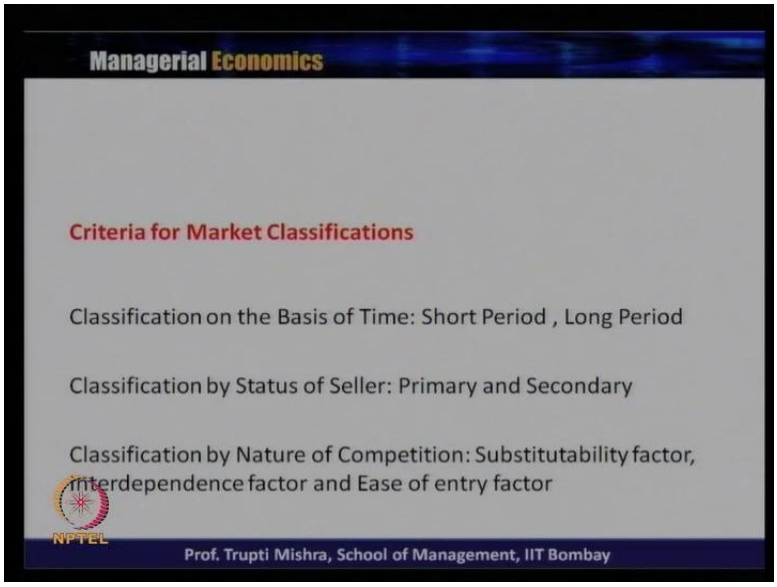

Classification on the basis of time that is short period and long period, that again brings the difference whether it is perishable good or whether it is a durable good. Classification by the status of the seller that is primary seller or the secondary seller, and classification by the nature of competition that is through substitutability factor, interdependence factor, and ease of entry factor. So, our focus is mainly on this that when we are classifying the market on the basis of the nature of competition and there are three major factors, there are three major variables, through which we differentiate the market one from the other. So, let us focus on the last classification that the classification on the basis of the competition and then we will see how we can define all the markets on taking the different variables.

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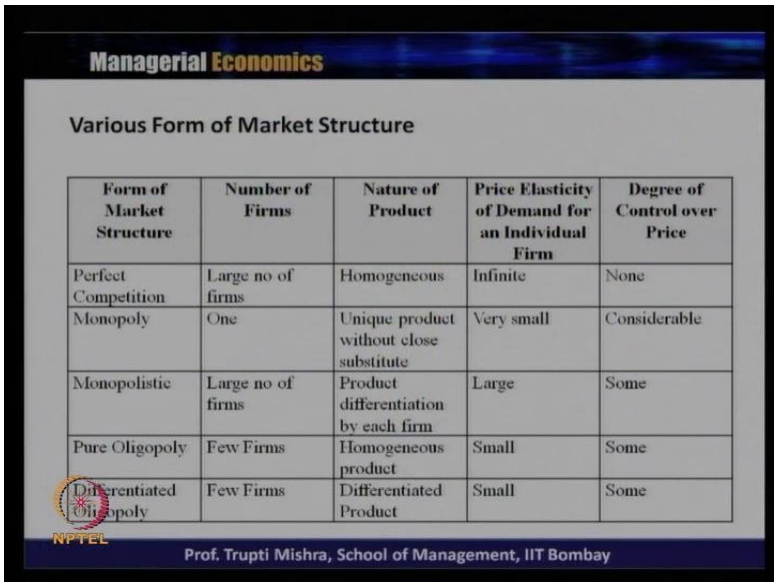

So, taking the number of firms, nature of product, price elasticity of demand for an individual firm, degree of control over price, these are the variable. On that basis there are different forms of the market structure. The first form of market structure is competition. The number of firm are large, nature of product is homogeneous or uniform that is similar, price elasticity of demand for an individual is infinite. A small change in the price will lead to take a bigger change in the quantity demanded because there are large number of firms, and all the firms that producing homogeneous product and degree of control over the price is none because here the price is decided by the market demand and market supply.

Monopoly, the number of firm is one. Its unit product without close substitute, price elasticity of demand is very small because since there is a unique product, even if the price increases still people they buy it and degree of control over the price is considerable. Monopolistic, large number of firm, product differentiation by each firm; like even if there are large firm of firm, each firm produces a different type of product which is different from the other. Price elasticity of demand for individual firm is large. Degree of control over the price is some or may be its little.

Pure oligopoly, then the last category of market structure is oligopoly. And again it is divided into two types of oligopoly; pure oligopoly and differentiated oligopoly. Pure oligopoly is one where there are a few firms, nature of product is homogeneous, price elasticity of demand is small, and degree of control over price is also some.

Differentiated oligopoly, few firms, differentiated product, small, and the degree of control over the price is some. So, individually we will check each market structure.

But here the basic difference if you look at that one is the perfect competition and rest all are the imperfect competition. So, we have one perfect competition market structure and other are the imperfect that comes under the imperfect competition of the market structure. Before going into the detail of each type of market structure, let us understand the few basic related to the market structure like how the equilibrium takes place, how the price is determined, and then we will get into the specific details of the each type of market structure, and we will check that how the equilibrium is maintained or how the price is decided.

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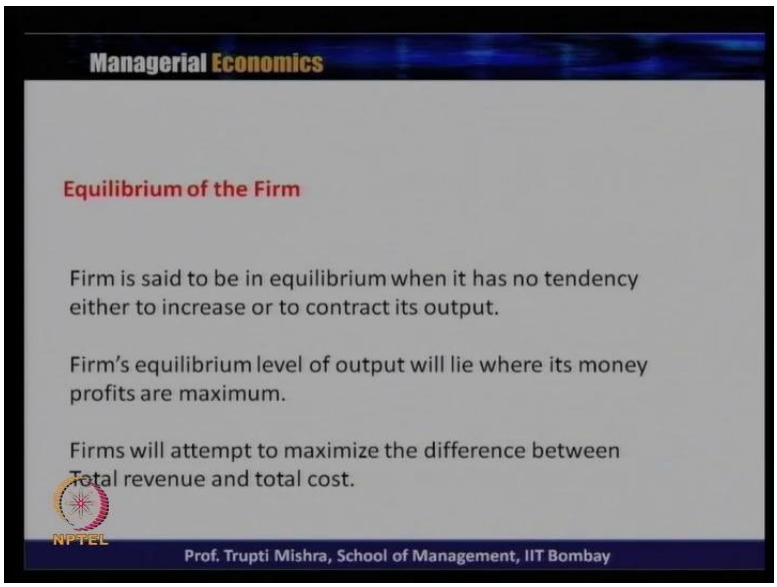

Firm is said to be in equilibrium, when it has no tendency either to increase or to contract its output. So it is a kind of state or balance, when it has no tendency either to increase or to contract the output and equilibrium level of output will lie where its money profits are maximum; so equilibrium level of output is one where profit is maximum. Firms will attempt to maximize the difference between the total revenue and total cost. Because the output level where the profit is maximum that has to be the equilibrium level and ideally if you look at where the profit is maximum, where the difference between the total cost and total revenue is maximum. So firm's optimization problem here again comes as the point, where the difference between the total revenue and total profit has to be maximum. Total revenue and total cost has to be the maximum.

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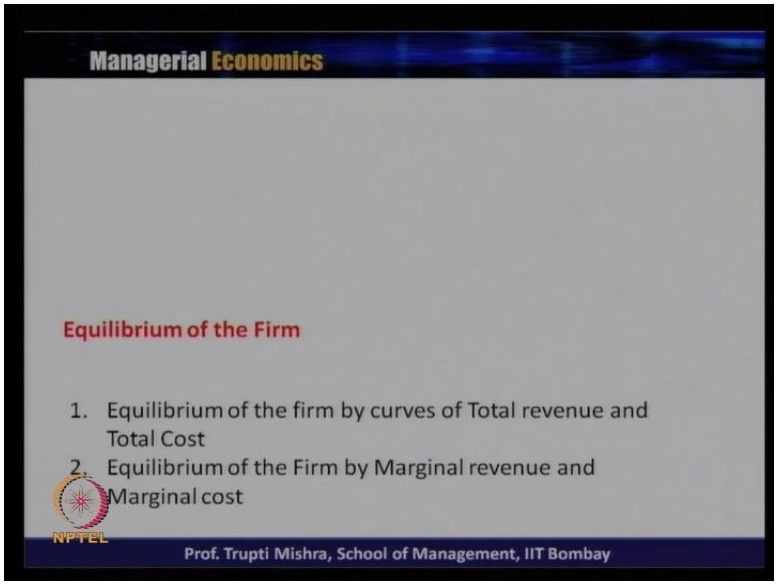

So, the equilibrium of the firm can be achieved either by total revenue, total cost or by the marginal revenue and marginal cost. So, individually we will see through the graphical explanation how the equilibrium is maintained or how the equilibrium is achieved through the total revenue and the total cost firm, and how the equilibrium is achieved through the marginal revenue and marginal cost firm.

Like in case of total revenue and total cost, where the difference is more or most that is the level of output where the profit is maximum. But in case of marginal cost and marginal revenue, the point at which the marginal cost is equal to the marginal revenue that is the higher level of output where the profit is maximum, because beyond this the cost will be on a higher side.

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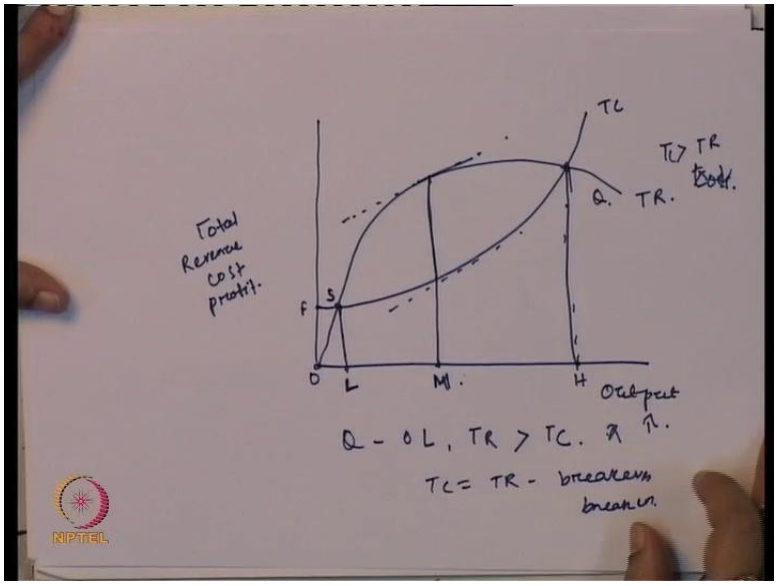

So, let us first check that how to achieve the equilibrium with the total cost and total revenue method. So, we will take output on the x-axis, total revenue cost and profit on the y-axis. So the total cost, we will take the total revenue. This is the total revenue and this is some amount of fixed cost is there. This is the total cost. So, we have one point over here, we have one point over here. So this is S, suppose this is L, this is O, and this is H. Now this is say suppose Q and in between we will see how to find out the maximum difference between the total cost and total revenue. We need to see just by drawing this we will know this is the level of output.

So when the firm increases its output beyond OL. If the output goes beyond OL, then total revenue is greater than the total cost. So, if total revenue is greater than total cost; similarly the profit also goes increasing. Because if you consider this, this is the total revenue, this is the total cost. Total revenue increases, the difference between the total cost and total revenue go more and that is why the profit goes on increasing. Up to the output OM till from OL to OM, the profit is also increasing.

The distance between the total revenue and total cost is greatest, and so the profit is maximum at this point M. Now the firm will not produce any output larger than OM, since after this the gap between the total revenue and total cost has come down and if you look at, the gap between the total revenue and total cost is coming down, and the total profit is decreasing and it continue till the time OH; the level of output is OH and beyond this if you look at total cost is more than the total revenue. So, beyond this anyway may be the firm can

think of producing from M to H even if with a decreasing profit at the initial level. But not beyond this, where the total cost is more than total revenue and profit is decreasing or we can say it is a case of actually loss.

So, the point at which the total cost is greater than the total revenue; that is the point actually the firm should produce at that level of output because that gives us the maximum profit and that is the equilibrium level of output. So, we have two breakeven point here; one is corresponding to L level of output, that is S where the total cost is equal to total revenue that is one breakeven point. And the second point is where total cost is again equal to total revenue at the point H, where we get the another breakeven point. So we have two breakeven points in this. In between this two points the profit is increasing; reaching maximum then still decreasing and still it reaches zero, and the equilibrium level of output is one where the profit between two is maximum.

The profit is maximum or the gap between the two that is total cost, total revenue is maximum. Then we will see how to achieve the equilibrium level using the marginal cost and marginal revenue approach. So, you know what is marginal cost and marginal revenue. Marginal cost is the additional cost to the total cost by producing one more unit of output and marginal revenue is the addition to the total revenue by selling one more unit of output. This is nothing but the first total derivative of the total cost and total revenue.

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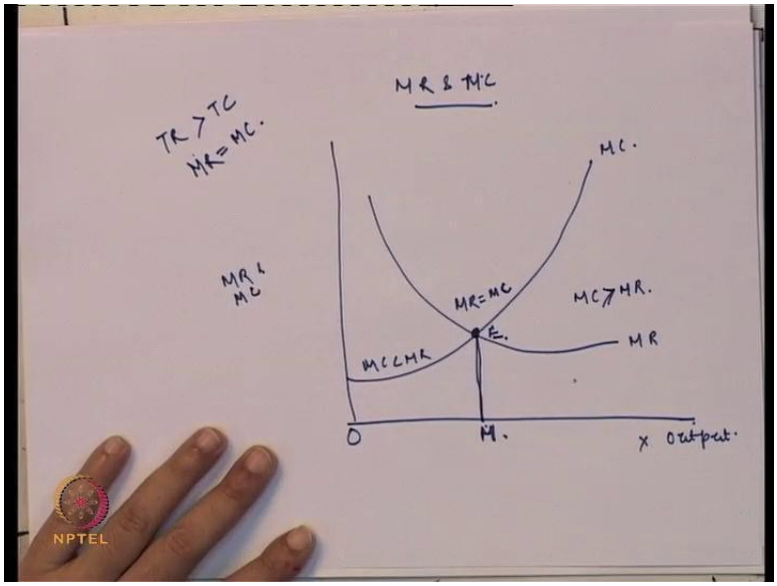

Now we will see how we will do this with the marginal revenue and marginal cost. This is the marginal cost, this is the marginal revenue, this is O, this is marginal cost is less than marginal revenue. Here marginal cost is greater than marginal revenue. So, at this point marginal revenue is equal to marginal cost; so corresponding to that we have the level of output that is M. So, x that is the output in the x-axis, and marginal revenue and marginal cost is at the y-axis. So, marginal revenue; if you look at marginal revenue curve is sloping downwards and marginal cost is sloping upward. They intersect each other at this point E that corresponding to the output M. Now up to this OM level of output, marginal revenue exceeds the marginal cost and beyond this OM level of output, the marginal cost is exceeding the marginal revenue.

That is the reason it is not a profitable level of output and that is why the equilibrium when we decide at the equilibrium level of output, it is always at a point where the marginal cost has to be equal to the marginal revenue and in this case, it is not more of cost and more of revenue. Rather it is just equalization of the marginal cost and the marginal revenue. So, the equilibrium level if you look at when we decide the equilibrium level of the firm, either at a point where the total revenue is greater than total cost or at a point where marginal revenue is equal to the marginal cost. So, equilibrium can be achieved or the equilibrium can be derived in the different market condition, either by following the total revenue and total cost approach or by following the marginal revenue and the marginal cost approach.

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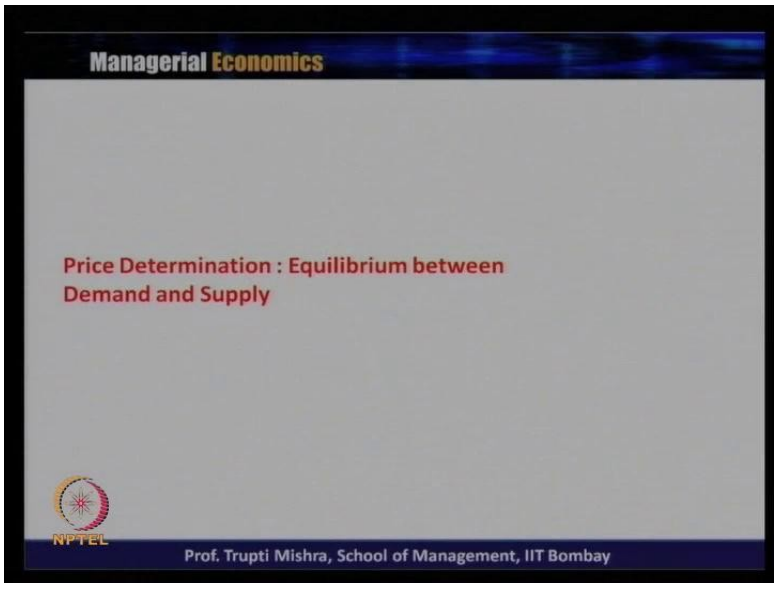

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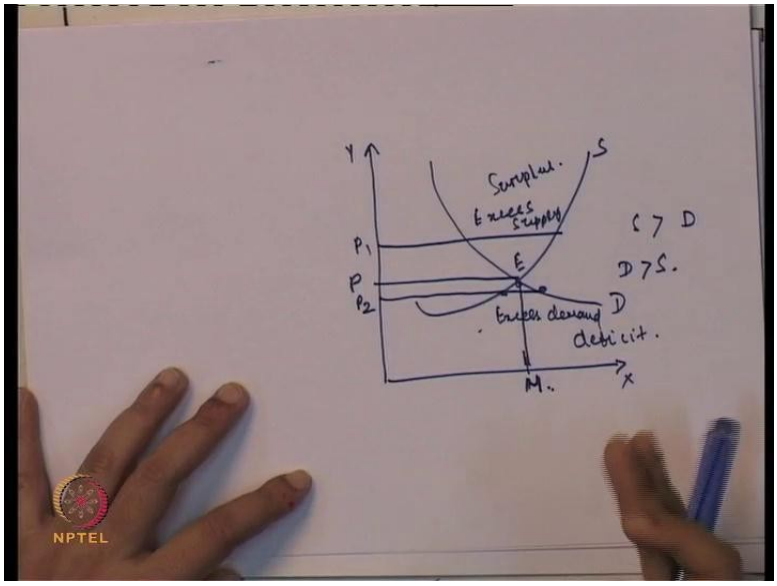

Then this way we have already discussed when we are talking about the demand and supply; just to refresh this because since we are discussing the market structure again, how the equilibrium price is decided or how the equilibrium takes place between the demand and supply, and correspondingly how big at the equilibrium price and equilibrium quantity. So, this is our demand curve, this is our supply curve. E is the point; that is equilibrium point. At this point, demand and supply intersect with each other. This is the equilibrium price; P is the equilibrium price and M is the equilibrium level of output. Any price above this P1, the supply is more than demand and this leads to excess supply.

Because supply and price they are positively related, so price increases supply increases and that leads to excess of supply with respect to demand. So, this is the case of excess supply or also we call it surplus. So in this case, generally it is the supply reduce the price in order to increase the demand and finally, they reach the equilibrium again. And any price which is below P that is suppose P2, the demand is more than supply and this is the case of excess demand or may be this is the case of deficit and here how to reach this. This is not an equilibrium; how to reach this equilibrium point again. The supplier has to increase the price, so that the demand reduces and again they reach to the equilibrium condition.

This is how we discuss in case of market when we are talking about demand and supply. So, just to refresh the same thing works when the firms or when the industry decides the price of the product. It decided on the basis of supply and demand and that leads to the equilibrium price. So, P is the equilibrium price. Any imbalance between this price and equilibrium

quantity, generally the demand forces and supply forces they correct among themselves and reach the equilibrium again.

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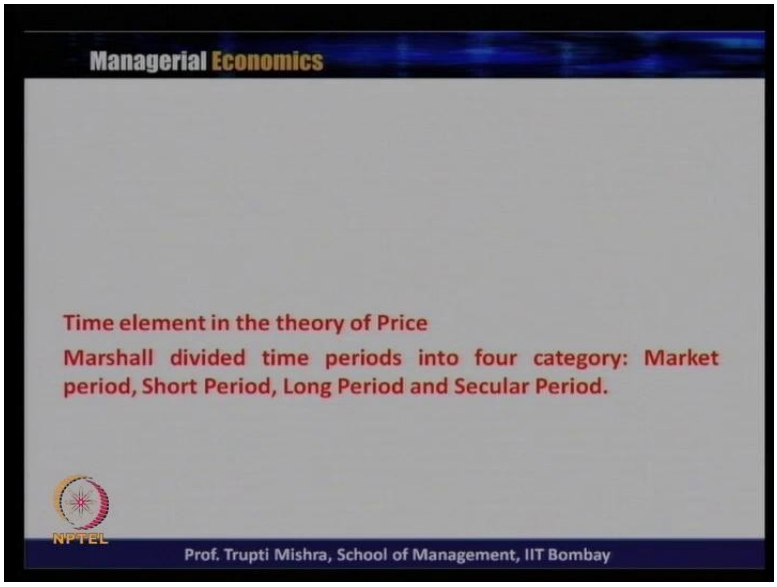

So, there is always a time element in the determination for the price in the market price for the goods. So, Marshall define they are divided the time period into four categories; that is market period, short period, long period and the secular period. Now what is the essential difference between all these four types of time period? That is true that time plays always play an important role when it comes to determination of price and quantity. But when the time is defined on the vision of short, long, market and secular period, we will see particular in case of market period, short period and long period, how generally the price is decided.

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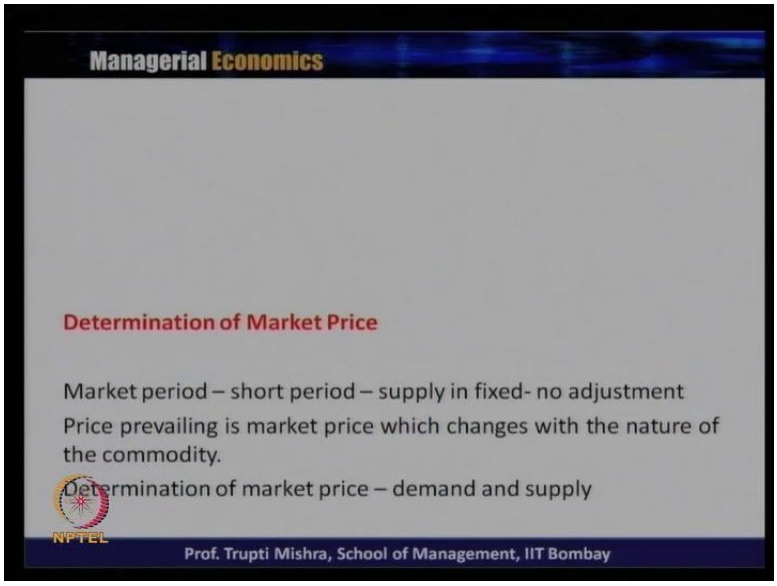

So, market period is one that is the essential is a short period and how the market price is decided. The market period is decided on the basis of demand and supply and what is short period over here. Short period because it is the supply is fixed, no adjustment price prevailing in the market price which changes the nature of the commodity. So, supply is fixed that itself talks about a short period. There is no adjustment from the supply side and the price prevailing in the market price is with changes the nature of the commodity and the determination of market price is through the demand and supply.

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So since we are talking about the short period, again the discussion goes for the perishable goods and the durable goods. And in case of perishable goods, again the price is decided on the basis of the fact that the perishable goods cannot be kept in the stock but in case of durable goods it can be kept in the stock, again the price is decided keeping that in the mind.

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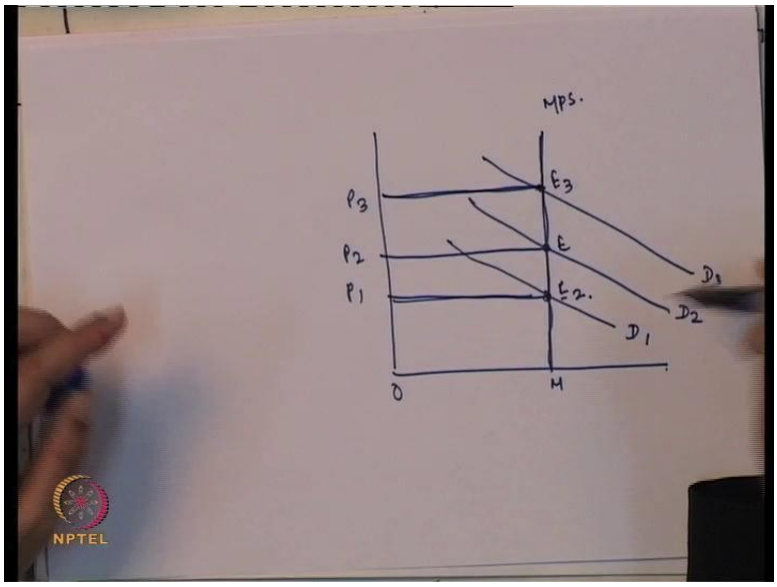

So, let us look at how the price is decided in case of the short period. Typically this is the price determination for the nonperishable product or maybe we can say the durable product. So, this M is the level of output, this is O, this is P1, and this is P2, and this is P3. So if you look at, this market supply curve is a durable good is not a vertical straight line throughout its length and there is two level of price; one is sufficiently high that the seller will be prepared to supply the whole stock of the good. That generally happens in case of P3 and secondly there is a minimum price at which the seller will not be prepared to sell anything.

Instead of that they will hold back and keep it in the stock. Now what is the minimum price here? The minimum price here is the range of price and if you look at here, this typical different time period like or different point that is E, E3, and E2. The maximum price can be OP3 and the minimum price can be OP1 and if you look at here, it is written the supplier that at which price they are going to charge that; at which price they are going to sell it. And here typically we are talking about nonperishable goods not about the perishable goods. So, short period always the supply is decided on the basis of the demand. Supply is remaining fixed it cannot be changed with the increase in demand.

Only thing what they can do, they can change the price with the different level of the demand from the or with the customer response or with the different level of the demand. So market period is one, it is a short period. The supply is fixed. The supply cannot be changed with the change in the demand and the price is not fixed on the basis of the demand and the supply strictly, because the supply is remaining fixed. Only the supplier has some flexibility when it comes to and that what price they are going to charge.

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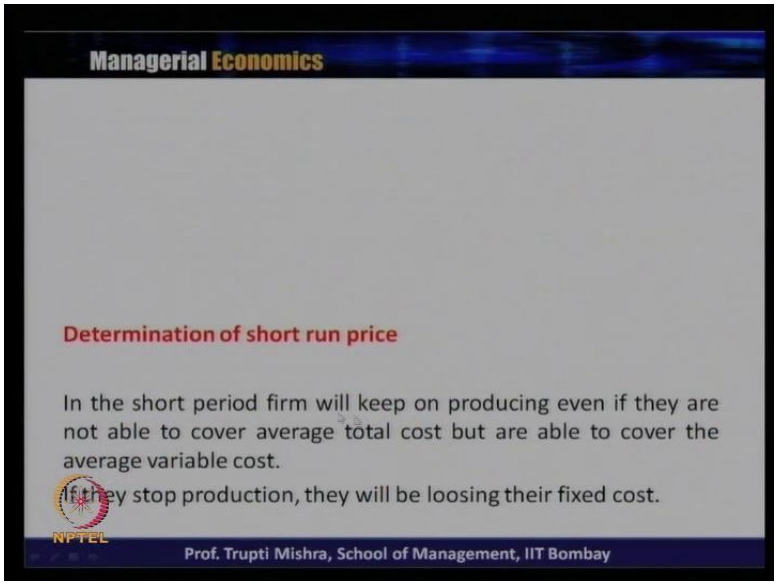

Then we will talk about a determination of market price in the short period; short run price and then we will talk about the long run price. So, in the short period firm will keep on producing even if they are not able to cover the average total cost but they are able to cover the average variable cost. If they stop production, they will be losing their fixed cost. So if you look at in the short run, generally the firm keeps on producing even if they are not able to cover the average cost; average total cost but are able to cover the average variable cost.

But if they stop production, they will be losing their fixed cost and that is the reason they always evaluate which one is more profitable whether to stop the production or whether to continue. Till the time they are continuing to get their average variable cost, they prefer to produce and once they are not getting the average variable cost generally they stop the production. Because any way they are not covering the average variable cost also, so there is no point of producing anymore

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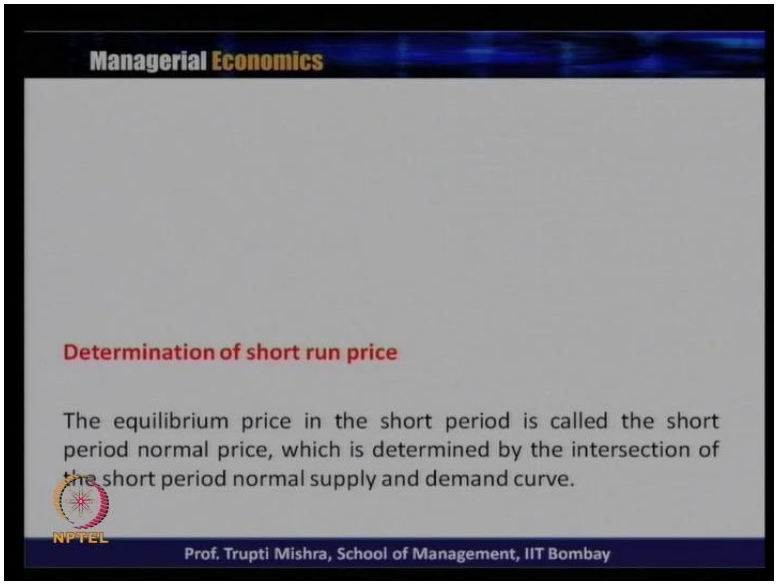

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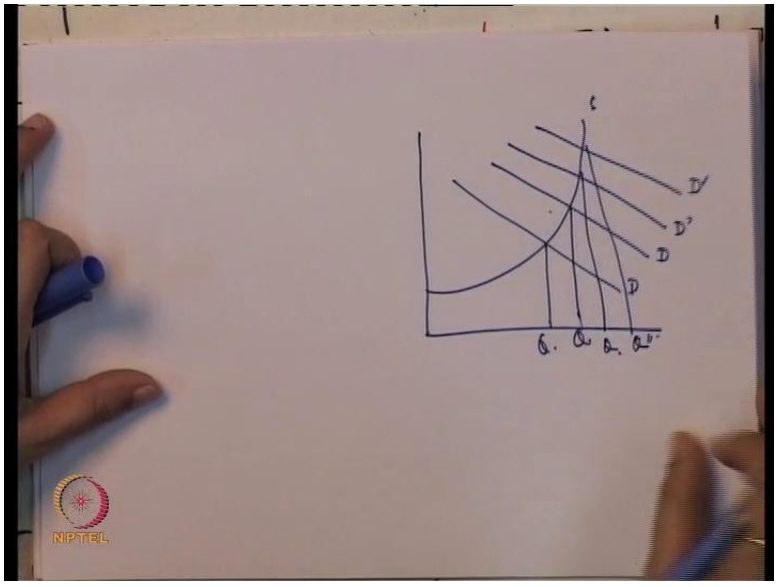

So, the equilibrium price in the short period is called the short period normal price, which is determined by the intersection of short period normal supply and the demand curve. So if you look at, this is the supply curve, and this is the demand curve and different demand curve. There are different levels of quantity and again the concept is same short run, we cannot do much change with the output. Rather we should just whatever the supply only we can change the price and we can send it and sell it to the buyer.

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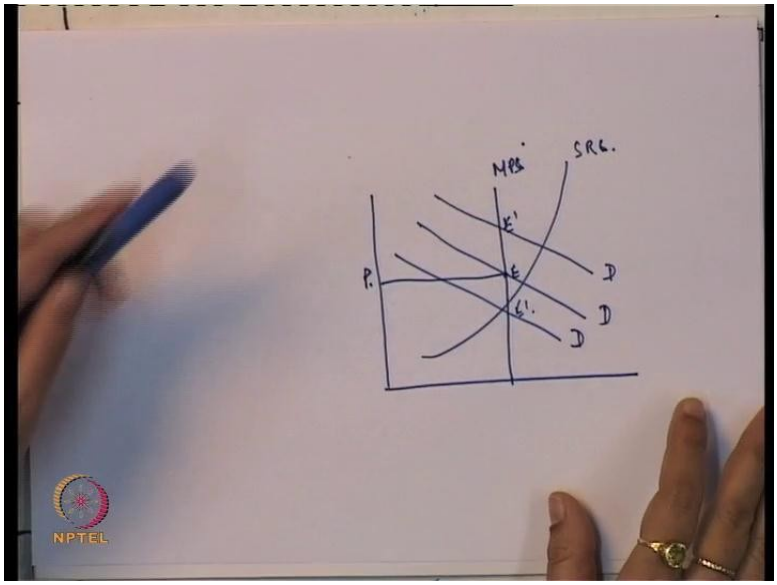

So now when it comes to determination of price, again we will take the MPS that is market price supply. Then we will take a short run supply curve and corresponding to that we will take the demand curve; the different demand curve and on that basis we will decide which one has to be the price, and which one has to be the at the region of price, and which one has to be price on what they have to sell. So here if you look at, it is the MPS is the market period supply curve and SRS is the short run supply curve of the industry. And here OP if you look at, OP is the point but because this is the short run price; both the market price as well as the short run price. Since the given demand curve D D intersect both the market period supply curve and the MPS and that is why we can consider this as the equilibrium price.

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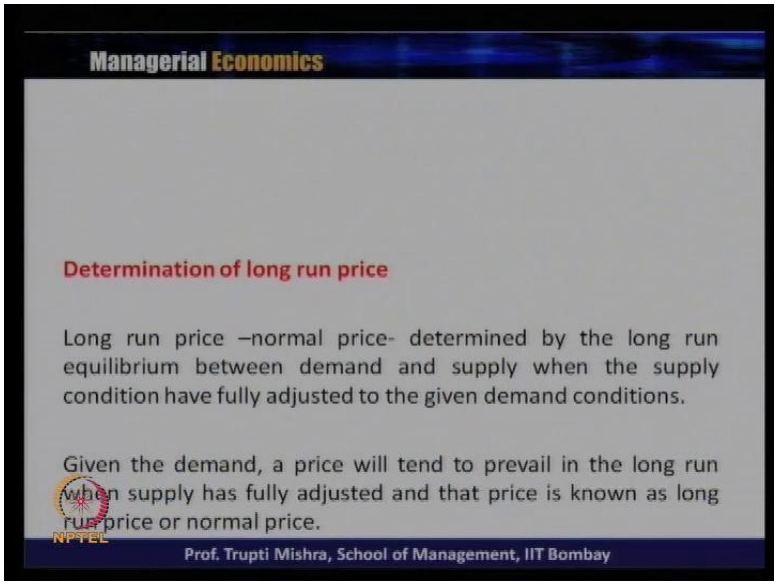

Then we will talk about the equilibrium price, how the equilibrium price is decided in case of the long run. So, long run it is a case of a normal price again, determined by the long run equilibrium between demand and supply when the supply condition have fully adjusted to the given demand condition. And given the demand, a price will tell to prevail in the long run when supply is fully adjusted and price is known as the long run price or the normal price, and how the price is decided in the long run.

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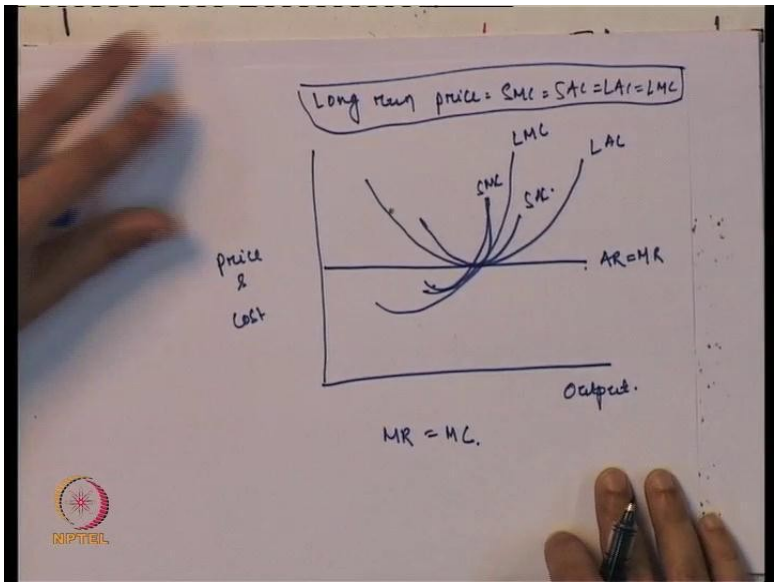

Here we again take output in the x-axis, price and cost in the y-axis. This is the long run average cost, this is the long run marginal cost, and this PL is where average revenue is equal to marginal revenue. So, the price is decided on the basis of the marginal revenue and marginal cost, and long run price is one where the strict condition to follow for long run price is here also this is the evidence of short run; we can bring our short run over here and also short run marginal cost curve, SAC is short run average cost curve, SMC is the short run marginal cost curve, then LMC is the long run marginal cost curve, and LAC is the long run average cost curve.

So, long run price condition is the point where $SMC = SAC = LAC = LMC$. So, long run price is one; this is the point where the long run price is then decided and long run price, the SMC is equal to short run average cost curve, which is equal to long run average cost curve, which is equal to long run managerial cost curve, and that is how the normal price is decided in case of the long run.

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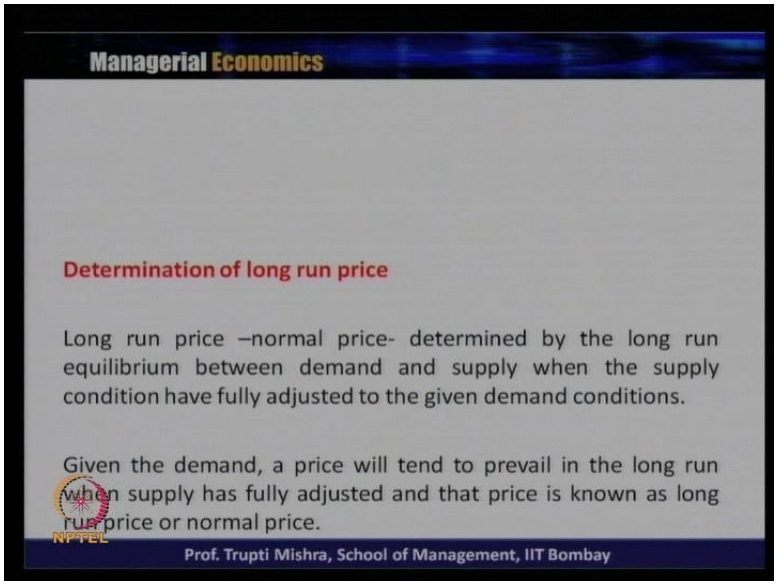

So, if you if you quickly summarize whatever we discussed today, we just carried forward our discussion on economies of scale, we talked about managerial economies of scale. Thus there is an evidence of managerial diseconomies. Then we talked about the transport and storage economies of scale. Then we talked about pecuniary economies of scale and external economies of scale. Then we try to look whether there is a limit to economies of scale and that comes in the firm of managerial diseconomies of scale and that is mainly because of inefficiency of the management.

Then we started our discussion on market, what is generally a market, what is the different types of market, and how the classification of the market on the basis of the nature of competition. And then we discussed the price and the output determination in a market through marginal revenue, marginal cost, total revenue, total cost method and then we saw the determination of price in the different time period like short period, market period, and the long period. So, we will carry our discussion on this market structure in the next session with perfect competitive market structure.

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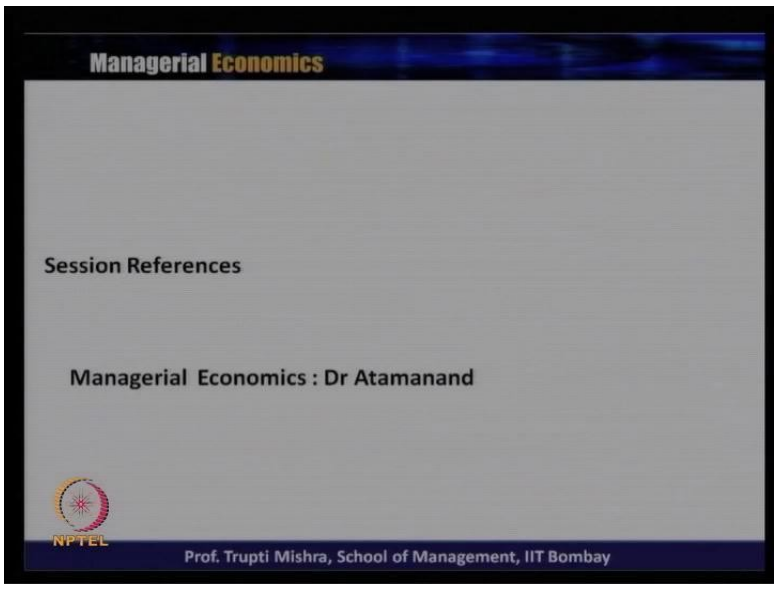

And the reference for this typical lecture, typical session what we followed today is the managerial economies book by Dr Atamanand.