Foundation Course in Managerial Economics
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Lecture - 23
Supply Curve of Market in Perfect Competition

Welcome back to our discussion on perfectly competitive market where we have been discussing about the supply curve of the firm. So far we have discussed how the supply curve is determined in the short run, in the long run by the perfectly competitive firm and now we are going to move on to look at how does the supply curve look like in a perfectly competitive market. This is what we are going to do but before that before we proceed to determine what the market supply curve looks like we shall make some very simplistic assumptions.

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So the assumptions that we make are all existing firms and potential entrants have identical costs. So what we are assuming is basically the all the firms are exactly the same. They look exactly the same. They have exactly same kinds of cost structures and any potential entrant who might enter the market later also they also have very identical costs.

So this is not a very realistic assumption because we know that even in a perfectly competitive setup also there are various firms of various sizes and they have different kinds of cost structures. So it is not a very realistic assumption and we are going to see what happens if we relax this

assumption later but for the time being let us assume these and see what the market supply curve would look like.

So the first assumption is all existing firms and potential entrants have identical costs. Each firm's costs do not change as new firms enter or exit the market. So we are assuming that if new firms enter the market or exit the market that does not change the cost situation for the existing firms in the market.

So that also is not a very realistic assumption because we may think that if there are huge number of entrants in a market there will be a lot or pressure on the existing inputs. That can happen right. So in those situations the cost of inputs may go up and costs may not remain the same as new firms enter or exit the market as we are assuming here. This assumption also we are going to relax later and see how that changes our long run market supply curve.

Third we are assuming that the number of firms in the market is fixed in the short run because of the fixed cost they can shut down but they do not exit the market and the number of firms in the market is variable in the long run due to free entry and exit because it is easy to enter or exit the market so in the long run the firms which are running at a loss they are going to easily exit the market and firms or new entrants who are hoping for some potential profit in this market they can enter the market. So this is a realistic assumption.

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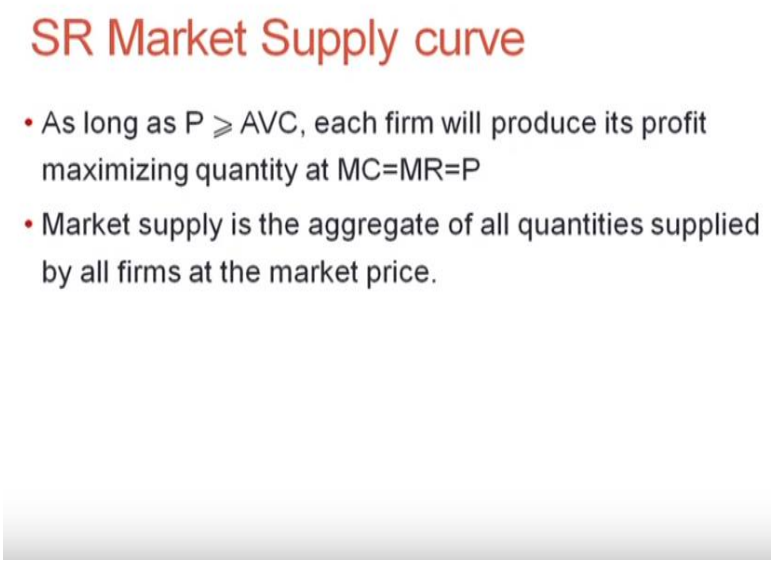

Now first the short run market supply curve. What does the short run market supply curve look like? In the previous discussion we already said that as long as price is above the average variable cost in the short run each firm will produce its profit maximizing quantity at marginal cost equals marginal revenue equals price.

So this is what we did in the previous module and we showed that the short run supply curve of a firm is basically the minimum of the average variable cost and from that point onwards it is the marginal cost curve of the firm. This is how we drew the short run supply function of a firm. Now market supply is nothing but it is the aggregate of all quantities supplied by all firms at the market price.

So at any market price all the firms whatever output they are supplying the aggregate of all that is going to give us the market supply curve but we know from our assumption from the previous slide we have already assumed that all the firms are identical. So let me draw the market supply curve what would it look like.

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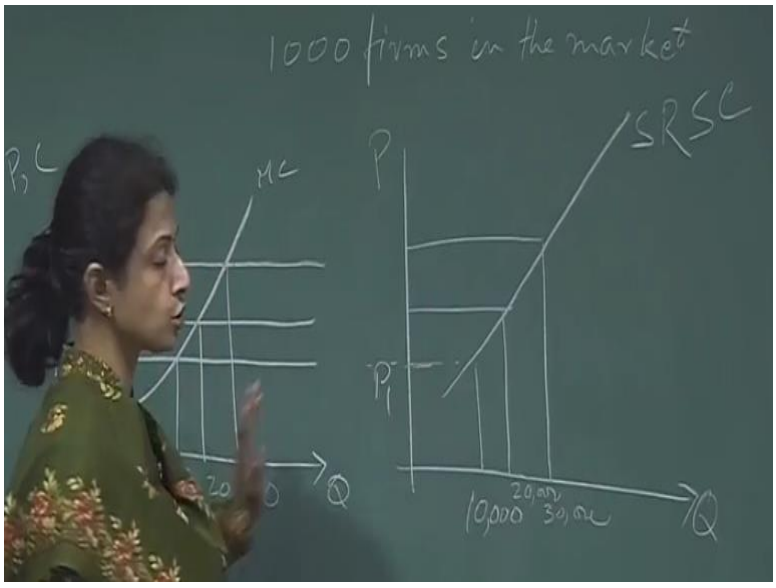

So if this is a firm this is a typically a typical firm and this is the price line and this is the marginal cost and at P 1 say there are it produces 10 units of output, it produces 10 units of output. At P 2 it produces 20 units of output. At P 3 it produces 30 units of output and so on. So this is for the firm this is for a typical firm but by our assumption all firms look like this. All firms look like this and if we are assuming there are 1000 firms in this market so what does the supply curve look like for the market.

So for the supply curve also this market so for the supply curve if there are we are assuming there are 1000 firms in the market and these firms are all similar by our definition by our assumption so at P 1 10,000 units of output is produced. At P 2, 20,000. At P 3, 30,000 and so on.

So this basically gives us the market supply curve. So this gives us the market supply curve. Here we have P, here we have Q and this is the short run supply curve of the market. This is the short run supply curve of the market and which we arrive at from the individual firm's supply curve.

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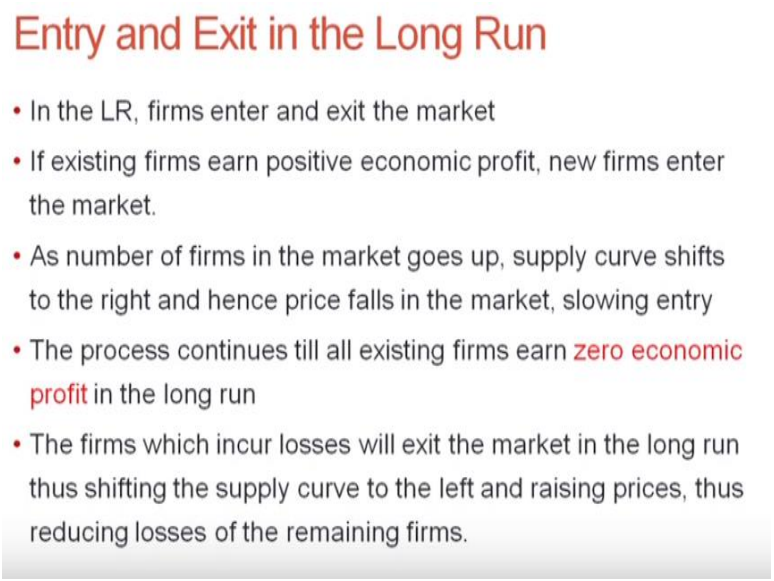

Okay now moving on in the long run what happens? In the long run there is entry and exit in the market. So in the long run firms enter and exit the market and if existing firms earn positive economic profit new firms enter the market. So if there is positive economic profit new firms are going to enter the market.

As the number of firms in the market goes up supply curve shifts to the right and hence prices fall in the market slowing entry. This process continues till all existing firms earn zero economic profit in the long run. The firms which incur losses will exit the market in the long run thus shifting the supply curve to the left and raising prices thus reducing losses of the remaining firms. Now what happens here?

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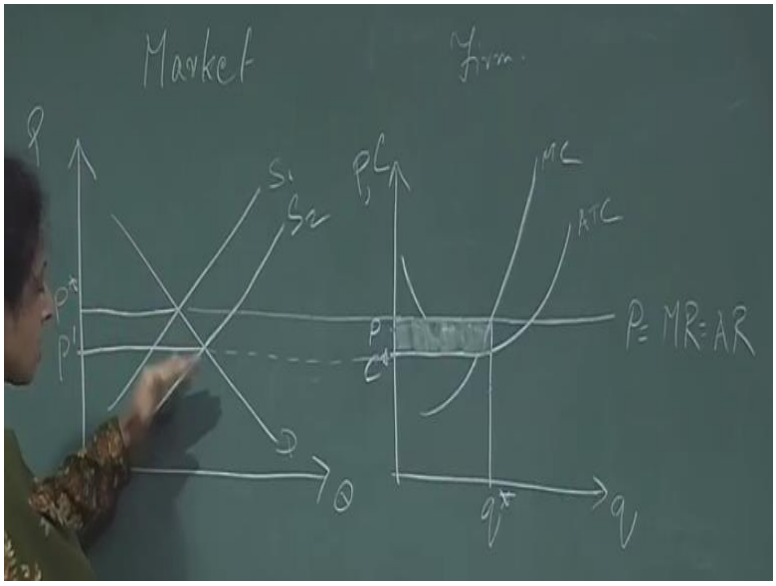

So what happens is basically say let me show what is being said in this slide. Say this is the this is the market. This is the market, price, quantity. This is demand and this is supply. Now there is this firm which is like any other firm and this is the price, this is the price and this is small q, this is P and costs and this is the this is its price line which is equal to MR, AR and this is the marginal cost of this firm and say this is the average cost of the firm.

So say this is the average cost of the firm in the short run, this is the market, this is the firm. So in the short run the firm is incurring some profit why because this is the price line and at the intersection of marginal cost and marginal revenue this is the q star is the optimum amount of output that the firm is going to produce. At q star the cost of the firm is C star and the profit that the firm makes is this green region.

So in the short run the firm is making the firm is basically making a profit of the amount of this green rectangle and looking at the profit in the long run what will happen is more firms are going to enter the market. Since there is positive economic profit to be made in this market and since we have assumed that all the firms are similar in their in terms of cost they are they all are making these profits. So firms new firms enter the market.

As new firms enter the market the supply curve in the market shifts to the right. So as supply shifts to the right so supply shifts to the right as new entrants, new firms enter the market supply shifts to the right and then the equilibrium price falls from P star to P prime. As it falls from P star to P prime we will see that gradually this process is going to continue. This process is going to continue till all this profit is wiped out.

So basically firms will keep entering the market and as firms keep entering the market the supply curve will gradually shift to the right and as the supply curve keeps shifting to the right price falls in the market till price reaches the minimum of the average total cost of the firm. So when the price reaches this minimum there is zero economic profit to be made in the market and this is where the firm's entry will stop.

After this no more firms are going to enter in the market because already the existing firms are making zero economic profit. So in the long run the price is going to fall here and in the long run price will come down to the minimum of the average total cost curve and all firms will be operating at the level where price is equal to marginal cost is equal to the minimum of the average total cost so that all firms incurring zero economic profit. So this is what has been said in the slide.

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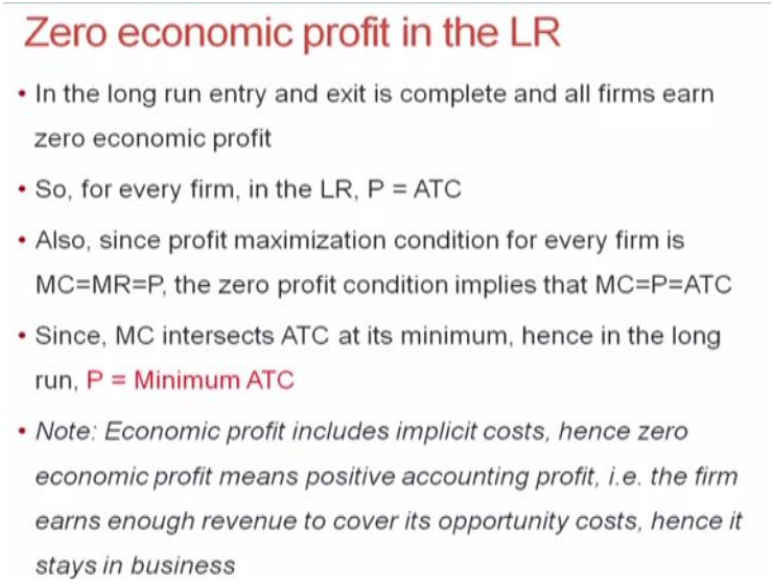

Now let us discuss a little more about zero economic profit. So in the long run entry and exit is complete and all firms earn zero economic profit. So for every firm in the long run price is equal to average total cost. Also since profit maximizing condition for every firm is marginal cost equals marginal revenue equals price in case of perfectly competitive market marginal revenue is equal to price as we have discussed earlier.

So the zero profit condition implies that marginal cost is now equal to price is equal to average total cost because if the average total cost is less than price then there will be positive economic

profit. But since zero profit condition has been reached so it is basically marginal cost is equal to price is equal to average total cost.

But at what point is marginal cost equal to average total cost? At what point of the average total cost curve is marginal cost equal to average total cost? You may remember we had discussed this when we had talked about the cost curves and we said that the marginal cost intersects the average total cost at its minimum. The marginal cost intersects the average total cost at its minimum. Hence in the long run price is equal to minimum average cost.

So basically price is falling till where the price is equal to the minimum average cost of average total cost of all the firms in the industry because we have assumed all the firms have very similar cost. All the firms have exactly similar cost is what is our assumption. So in the long run prices will fall as firms keep entering the market prices will fall till the prices reach the minimum of the average total cost of all the firms.

And just a quick recap, why does the marginal cost intersect the average total cost at its minimum? Because as we discussed earlier we took the example of grade point average and this is another example I am going to give. Say for example the average cost of producing pizza is say say 100 Rs and the cost of producing an additional unit of pizza is going to be 105 Rs. So is the average if I produce that additional unit of pizza is my average cost going to go up or down?

Now since the average cost, the marginal cost is higher than the average cost so my average cost is going to go up if I produce that additional unit of pizza. On the other hand if the cost of producing an additional unit of pizza is actually 98 Rs which is less than the average cost right now so if I produce that additional unit of pizza my average cost is going to go down.

So in that case my marginal cost when my marginal cost is below my average cost the average cost is falling. When my marginal cost is above my average cost my average cost is rising. So my marginal cost will be equal to my average cost at the point where average cost is minimum.

So this was the logic and coming back to our discussion so it basically means that if prices fall keep on falling and price is equal to marginal cost is the profit maximizing condition so basically price is for zero economic profit the price has to be equal to the average total cost of the minimum average total cost of the firm. Okay so zero economic profit does that mean that the firm is running at a loss or the so where is the income coming from?

So the firm is basically not getting anything because it is zero economic profit? No. If you remember that we discussed about economy, difference between economic profit and accounting

profit and we said that economic profit includes implicit cost or opportunity cost. So when you have zero economic profit that basically means that this profit includes implicit cost hence zero economic profit means positive accounting profit. That is the firm earns enough revenue to cover its opportunity cost, hence it stays in business.

So economic zero economic so in the long run all perfectly competitive firms are going to earn zero economic profit which means they have positive accounting profit and which means it is they have they earn enough revenue to stay in business yet they operate at a level where price is equal to their minimum total cost.

In the next module we are going to extend this discussion a little more and look at what happens when there are demand changes in the market and what happens to supply and we are going to look at the long run supply curve of the firm in the next module. Thank you.