Week #7 Notes – Perfect Competition ~ SR & LR Analyses

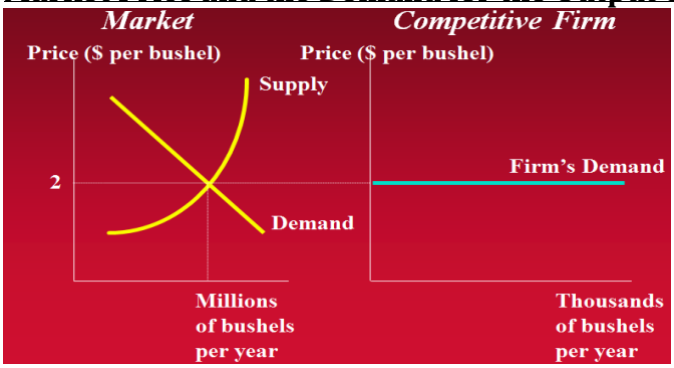
*Before reading this lecture, please make sure that you understand the previous lecture thoroughly, i.e., you should know MP, AP, ATC, AVC, AFC, and MC.

1. **Characteristics of Perfect Competition:**
   - **a.** Many sellers.
   - **b.** Homogeneous (identical) products. So products of a firm are perfect substitutes for product of other firms.
   - **c.** Each firm has a very small market share.
   - **d.** Firms are unconcerned about their competitors' marketing or production decisions.
   - **e.** Information is freely available.
   - **f.** Freedom of entry into and exit from the market.

2. **Competitive Firm:** is one that sells its product in a perfectly competitive market. A competitive firm is characterized as a "**price taker**" because it can only react to the market price and cannot by itself cause the market price to go up or down.

3. **Some Important Notes:** In a perfectly competitive market the number of sellers depends on the profitability of selling the product. Free entry and resources ensure that the number or sellers, and therefore market supply, will increase when it is profitable to sell a product in a market. The key idea underlying the notion of perfect competition is that individual firms react to market rather than influence the prices of the products they sell.

4. **Market Price and the Demand for the Output of a Competitive Firm:**



5. **Total Revenue, Average Revenue and Marginal Revenue for Compt. Firm:** Note that since the price is given to the competitive firm, it can only change the quantity produced to influence its revenue.

   Total Revenue = $TR = P * Q$

   Average Revenue = $AR = \frac{TR}{Q} = \frac{P*Q}{Q} = P$ ➔ $AR = P$ (for Competitive Firm !)

   Marginal Revenue = $MR = \frac{\Delta TR}{\Delta Q}$ ➔ $MR = P$ (revenue for each unit is P)

   $\therefore AR = P = MR$

6. **Total Revenue, Total Cost, Profit and Marginal Profit:** The total cost curve has the shape typically assumed to exist in the short run. Its shape reflects the law of diminishing marginal returns. The vertical distance between the total revenue and total cost curves gives profit at each level of production.

   ➔Total Profit (Economic Profit) = Total Revenue – Total Cost (Economic Cost)

   ➔Here take the derivative of both sides then we get

   ∴ Marginal Profit = $MR - MC$

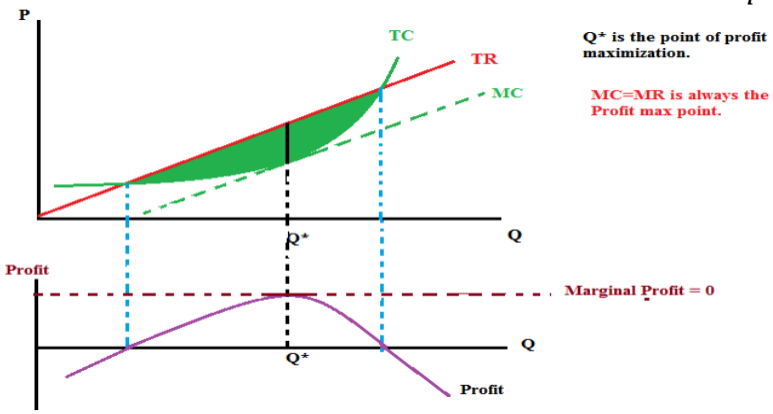
7. Profit Maximization:

In the profit maximization, the first order condition gives us.

Marginal Profit = $MR - MC = 0$

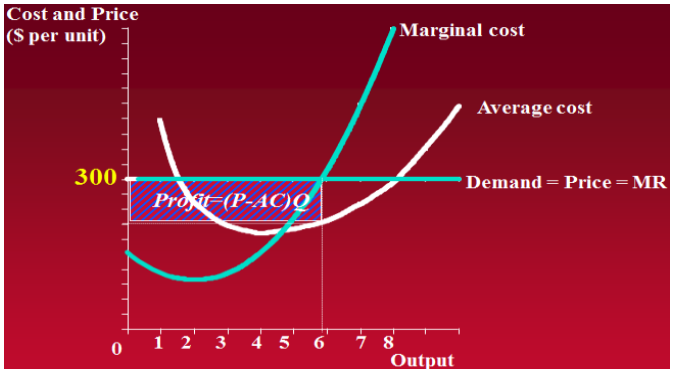
$\therefore MR = MC$ ➔ $MR = P = MC$ since $AR = P = MR$

➔ $MR = MC = P$ *is the condition which determines the quantity should be produced.*



a. Note that the output at which profits are maximized is not necessarily the output at which the plant achieves the minimum possible average cost of production. To find out the output which maximizes profit, the firm should use $MC = MR$

b. A firm maximizes profits by continuing to produce up to the point at which marginal profits is zero or in other words marginal revenue equals to marginal cost. After that point profit starts to decline as shown in the graph.



Total Profit = P*Q – Total Cost

= P*Q – ATC*Q

= (P-ATC)*Q

➔So, determine the profit max point by using MR=MC=P, then use the above formula to calculate the total profit.

➔Note that in the graph: Demand=MR=P

c. **Zero Economic Profit and Shut Down Point:**

i. At P_1 the maximum possible profit is positive. At the quantity when MC=MR=P_1 $\Rightarrow (P_1 - AC) * Q > 0$

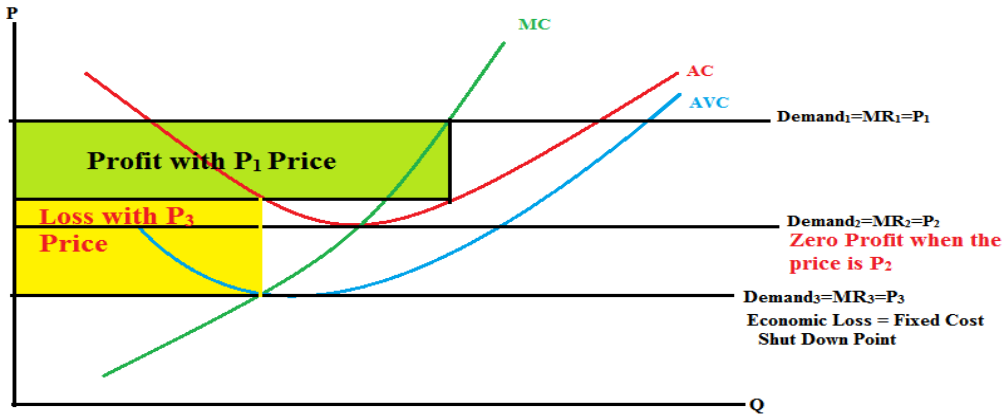
ii. At P_2 the maximum possible profit is zero. At the quantity when MC=MR=P_2 $\Rightarrow (P_2 - AC) * Q = 0 * Q = 0$

iii. When the positive profits are not possible, marginal analysis can be used to pick the option that results in the smallest losses.

iv. At P_3 the maximum possible profit is negative (losses are minimized). At the quantity when MC=MR=P_3 $\Rightarrow (P_3 - AC) * Q < 0$

v. Note that P_3 is passing from the minimum possible point of AVC and we know from the previous class that MC intersects the AVC at its minimum as well. So at the quantity when MC=MR=P ➔ MC=P=AVC. Therefore we can write the total profit as follows.

⇨ Total Profit = (P_3-AC)*Q = (AVC-AC)*Q = (-AFC)*Q = -FC➔ Loss = Fixed Cost (in short-run with P_3)



vi. Therefore, at P_3 the firm **shuts down** and produces nothing in the short run. The reason for that is the firm losses the same amount of money (fixed cost) by shutting down, so why to bother producing.

vii. To sum up, the firm elects to continue operating at a loss in the short run only if the price is larger than the AVC. This allows firm to generate revenue to cover some of the fixed costs.

8. **<u>Short-run Supply Curve of The Competitive Firm:</u>** is the portion of its marginal cost curve above the minimum point of its average variable cost curve. *Short-run supply curve slope upward because the firm's marginal costs tend to increase eventually (due to the law of diminishing marginal returns to the use of variable inputs) as output is increased.* Note that the points below the average variable cost curve are not included because firm shuts down below AVC.