LESSON 10

EQUILIBRIUM OF A FIRM

A firm uses the available resources for production process in an economy. It produces consumer goods and intermediate goods for household and business sector. The aim of all the firms is to maximize the profit. The firm determines such quantity of production at which its profit is maximum. To obtain this objective, it sometimes increases, sometime decreases the production in order to achieve equilibrium condition, where it gets maximum profit. Thus, a firm is in equilibrium when it neither increases nor decreases the output. If a firm sees the opportunity of more profits in future, then it will surely increase or decrease the quantity of output.

To know the profit of a firm, it is necessary to know its revenues and cost curve. In previous chapters, we have studied the revenues and costs in detail. We will explain the equilibrium of a firm in this chapter by using these concepts.

Total Revenue means the total amount of money recieved by the firm from the sale of its product. It is obtained by multiplying price with the quantity sold. Whereas, total cost includes all the expenditure which a firm incures on production of a good. The difference between revenue and cost shows the profit or loss. If the revenue of any firm is more than its cost, then a firm earns profit. While on the contrary if its revenue is less than the cost, then there is loss. In economics, there are two approaches prevelant to analyse equilibrium of firm. 1- Total Revenue and Total Cost approach. 2- Marginal Revenue and Marginal Cost approach . The Equilibrium Price and output refers to that quantity at which firm obtains maximum profit. The equilibrium of all the markets by these two approaches are explained in the successive chapters.

Firm Equilibrium- Total Revenue & Total Cost approach.

According to this approach, the equilibrium of a firm will be where the difference between Total Revenue and Total Cost is the maximum. It is the difference between TR and TC curves. The firm will be in equilibrium at that quantity / output where it obtains maximum profit. This can be explained with the help of following figure-10.1.

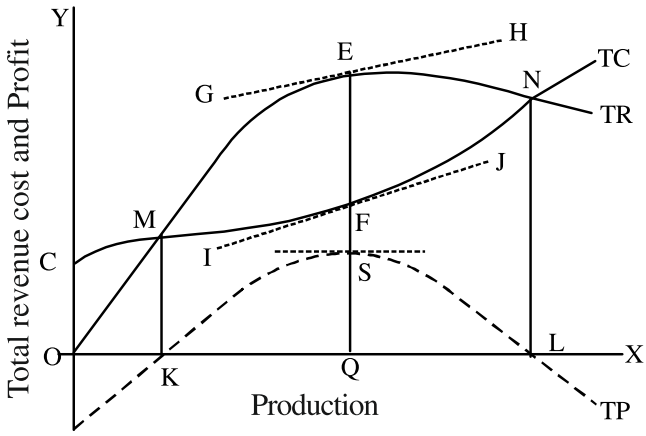

Figure 10.1

1. In figure10.1 on X axis output is shown and on Y axis, total revenue, total cost and profit are depicted.
2. Total revenue curve starts from the origin, which means that when no output is produced, total revenue is zero. As total output increases, revenue curve rises upwards.
3. Total cost curve starts from point C, which lies above the origin, it means OC is the fixed cost which the firm has to bear even if output is zero.
4. Total profit is derived from difference in the vertical distance between TR and TC.
5. Intially, up to the level of output OK, TC > TR showing that total cost is greater than total revenue. The firm incurs losses. The derived profit curve (TP) is located in negative zone.
6. At point M, total revenue just equals total cost

and the firm neither makes profit nor loss. This is known as break even point. The total profit curve touches X axis which shows that at K level of output profit is zero.

7. When total revenue is greater than total cost, between K and L level of output profits began to accrue to the firm. TR curve is above TC curve i.e. TR>TC.

8. In order to find out the maximum difference between TR and TC curves, tangents GH and IJ are drawn. These lines touch - TR and TC curves at E & F points respectively, where the distance between TR and TC is maximum. Therefore profit is also maximum. Equilibrium output is determined at OQ.At point S, the amount of profit is SQ, which is maximum.

9. In between K Q level of output the distance between TR and TC is widening, ie total profits are accrued at an increasing rate and is maximum at S. The profits are also accrued at Q L level of output but gap between TR and TC is narrowing down and therefore total profits are declining and TP curve is sloping downward.

10. At point N again total revenue is equal to total cost. This is called as break even point, where there is no profit no loss. The TP curve touches the X axis.

11. If a firm continues the production after OL level of output, the total cost increases and total revenue falls (TC>TR). The firm is in loss, the total profit (TP) curve lies below X axis. The profits are negative which shows loss to the firm.

The above figure and its analysis depict that the firm's equilibrium is at Q level of output at which the difference between total revenue (TR) and total cost(TC) is maximum. At this point the distance between TR and TC is maximum. The derived profit curve at this point is at apex i.e. the amount of profits SQ is maximum.

Criticism:-

This approach is simple and logical. Most of the firms use it but following flaws are found-

1. It is difficult to know the maximum distance between total revenue and total cost. To find the actual point of maximum output, many tangents are drawn.

2. It is not possible to find out price per unit on basis of the figure, as price is not shown directly.

Marginal Revenue and Marginal Cost approach-

Another approach to firm's equilibrium is marginal revenue (MR) and marginal cost (MC). Marginal Revenue means the additional revenue obtained by sale of an additional unit of commodity. Similarly, Marginal Cost is the additional cost incurred on additional unit of output.

When marginal revenue is greater than marginal cost, the firm makes profit. It is an ideal situation of production as the profit of the firm is maximium, when MC=MR. The firm maximises its profit.

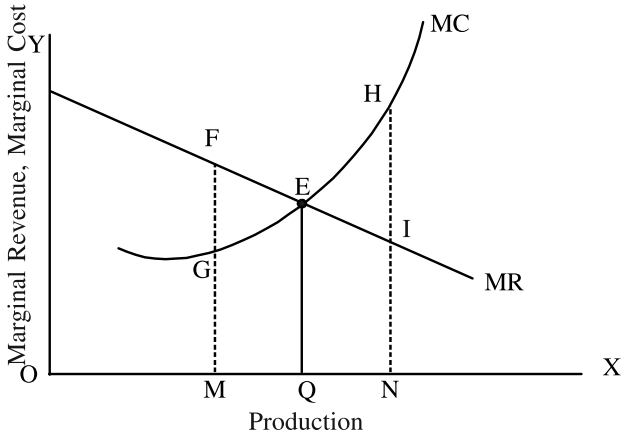

Figure 10.2

Explanation of the figure:-

1. On X axis the output is shown and on Y axis Marginal Revenue and Marginal Cost are depicted.

2. In Imperfect Competition and Monopoly Market, the Marginal Revenue curve falls downwards. The Marginal Cost falls in the beginning, and as the units of output increase, the Marginal Cost also increases.

3. The first condition of firm's equilibrium is that Marginal Revenue (MR) should be equal to Marginal Cost (MC).This equilibrium point is

depicted at point E at OQ level output profit is maximum.

4. If output level is OM, the marginal revenue FM is more than marginal cost (GM). The producer is motivated to increase the output, thus firm, in order to earn more profits, increases its production up to OQ level of output. The profit area is EFG.

5. If level of output is ON, the Marginal Cost HN is greater than Marginal Revenue IN. In such a condition, the firm incurs loss EHI.

Thus, the firm's equilibrium is at point E, where MC= MR. The output determined is OQ, at which profits are maximum.

The other conditions of equilibrium of a firm is that MC curve must cut MR curve from below (necessary in Prefect Competition).

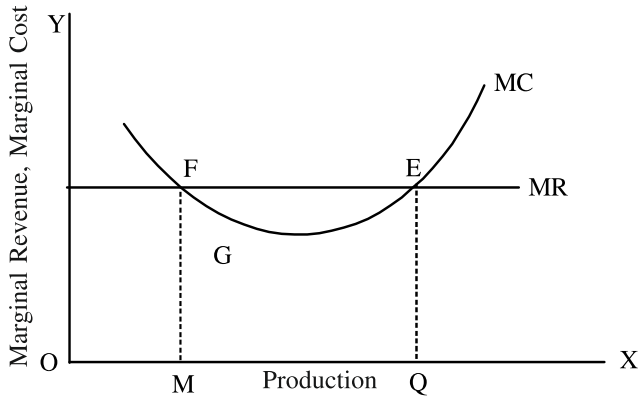

Figure 10.3

Explanation of the figure:-

1. At E point MR = MC i.e. Marginal Revenue is equal to Marginal Cost, thus first condition of equilibrium is fulfilled here. The second condition that MC should cut MR from below is also fulfilled. Thus, at OQ level of output the firm accrues maximum profit. This is called the equilibrium of the firm.

2. If the firm determines OM level of output the first condition MC=MR is fulfilled at point F but as the second condition is not satisfied, the firm cannot maximize its profit because after point F, more profits are obtained by expanding the output. Before point F, MC>MR firm will be in loss.

Thus the firm's Equilibrium is at OQ level of output where both the conditions are fulfilled (i) MC =MR (ii) MC cuts MR from below

Thus, both the approaches are used for firms' Equilibrium.

The marginal revenue, marginal cost approach is superior, as the profit and output can be known easily using the marginal revenue and marginal cost curve. The per unit price can also be known.

These approaches of firm's equilibrium are used in all types of markets. Its analysis is important from both producer and production point of view.

Important points

- A firm is in condition of equilibrium when it has no tendency to expand or contract the output.
- At equilibrium of a firm the producer accrue maximum profit.
- There are two approaches of firm's equilibrium- (i) TR & TC (ii) MR & MC
- According to TR/TC approach, a firm's equilibrium is at point where the difference (distance) between TR & TC is maximum.
- According to MR & MC approach there are two conditions for equilibrium of a firm (i) MR=MC (ii) MC cuts MR from below.
- Both these approaches are used in all types of markets for firm's/ industry's equilibrium.

Exercise Questions

Objective Type Questions :-

1. When firm's total revenue (TR) in greater than total cost (TC), then firm acquires -

   (A) Abnormal profit

   (B) Loss

   (C) No loss no profit

   (D) None of these

2. Break even point is where-

(A) MR = MC (B) TR = TC

(C) MR > MC (D) MR < MC

3. Firm gets loss, when-

(A) MR = MC (B) TR > TC

(C) TR < TC (D) TR = TC

4. According to first condition of firm's equilibrium-

(A) MR = MC (B) MR > MC

(C) MR < MC (D) MR # MC

5. Firm determines the output where

(A) MR = MC and MC curve cuts MR curve from below-

(B) MR # MC

(C) MR > MC

(D) MR < MC

Very Short Answer Type Questions :-

(1) What is the meant by Firm's Equilibrium?

(2) The point where TR=TC is called?

(3) What is the meaning of marginal revenue?

(4) How is total revenue calculated?

(5) What is the condition of the firm when MC=MR?

Short Answer Type Questions :-

(1) Which of the two approachs as (TR/TC/& MR/MC) of firm's equilibrium is superior and why?

(2) What do you mean by break even point?

(3) What are the two necessary conditions for firm's equilibrium, according to MR and MC approach?

(4) What is the meaning of total revenue and total cost ?

(5) How does a firm acquire (make) maximum profit?

Essay Type Questions:-

1. What is meant by firms's Equilibrium? Explain firm's equilibrium by MR=MC approach with the help of suitable figure.

2. Explain the firm 's equilibrium with use of TR and TC approach with the help of figure.

Answer Table

1	2	3	4	5
A	B	C	A	A