Theory of Firm under Perfect Competition

Firm is single production unit whereas industry is group of firms producing similar products. Firm can be defined as commercial enterprise involved in buying and selling of a product or services to the consumers with object of making profit. In microeconomic theory we consider a single plant single product firm. But, in reality, firms can be multi-product or multi-plant firms that are organised as public limited company, private limited company, partnership, sole proprietorship and co-operative enterprise.

Perfectly Competitive market is a market where following characteristics fulfilled:

1. Large number of sellers (firms) and buyers;
2. Homogeneous or identical products manufactured by the firms;
3. Free entry and exit in the market;
4. Perfect knowledge to the buyers and sellers about market conditions;
5. Transport cost differentials do not exist between firms.

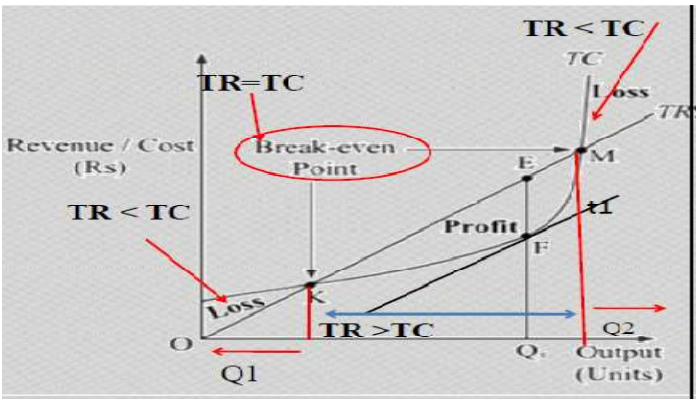
When above conditions are fulfilled firm becomes a price taker and has to accept market price as to be given and can sell any amount of output it desires at prevailing market price. This makes TR curve linear line originating from origin.

Equilibrium of perfectly competitive firm can be studied with the help of two approaches:

1. TR-TC approach; and
2. MR-MC approach.

TR-TC Approach

The firms aim at maximizing the difference between total revenue and total cost because the profit = TR-TC. When firm produces less than Q_1 units of output, it suffers losses because the TR < TC. When it produces Q_1 level of output, firm makes no loss and no profit because TR =TC. This is a break-even point. The firm gets profit only when it produces more than Q_1 and again profit becomes zero at Q_2 level of output since here again the TR =TC. If more than Q2 output is produce then there are losses as TR < TC. Thus, profit is obtained by firm between the range Q1 and Q2. To identify profit maximizing /or equilibrium level of output we need to draw a tangent to TC which is parallel to TR. At the point of tangency distance between TR and TC will be maximum. The Qe will be equilibrium level of Output.



CALCULATION OF BREAK EVEN POINT

At break-even point TR and TC is equal and firm makes no loss no profits. Mathematically, it can be expressed as:

$Profit = TR - TC$

At the break-even point

$TR = TC$

Since $TR = P\ XQ$ and $TC = TFC + TVC$

$TVC = AVC\ X\ Q$

Therefore, $TR = TFC + TVC$

$P\ X\ Q = TFC + AVC\ X\ Q$

$P\ X\ Q - AVC\ X\ Q = TFC$

$Q(P - AVC) = TFC$

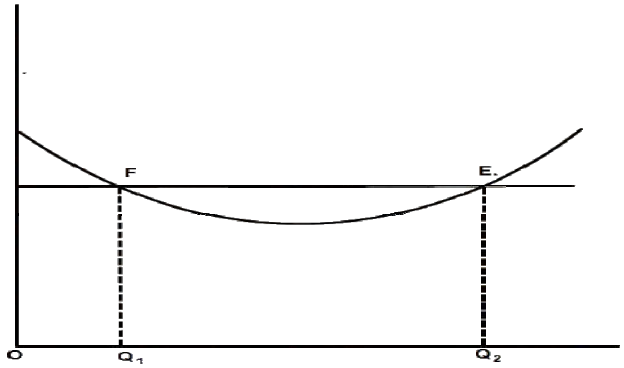
$Q_{BEP} = \frac{TFC}{P-AVC}$

P-AVC is contribution margin per unit.

MR-MC Approach

To understand MR-MC approach we have to understand the meaning of the Marginal Revenue and Marginal Costs. MR is defined as addition to the total revenue made by additional unit of output sold whereas MC refers to addition to the total cost made by additional unit of output produced. Thus the difference between MR and MC refers to addition to the total profit added on additional unit of output produced and sold. As long as MR > MC every extra unit of output produced will add to the profit. The addition of profit will cease if MR=MC and after this point MR < MC and if additional output is produced the losses will be added on every additional unit of output produced. Thus, maximum profit will be at point where MR = MC.

In figure MR is marginal revenue curve and MC is marginal cost curve. The firm is in equilibrium at point where MR=MC which happens to be at two points in the figure F and E. At F we produce Q_1 level of output and at E we produce larger Q_2 level of output. If we produce output less than Q_1 then MR<MC and hence firm suffers losses. At Q_1 level of output MR=MC and the firm breaks even. The profits will ensure if it produces output more than Q_1 and every additional unit of output produced above Q_1 will add to total profits.



- This addition of profit will continue till the point E where MR=MC and output produced is Q_2. If we produce output more than Q_2 again there are losses.

Thus the maximum profit occurs at point E where two conditions are fulfilled.

1. MR = MC;
2. MC curve should cut MR curve from below.