

Subject: Microeconomic Theory I

Instructor Name: Muhammad Nouman Shafiq

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Long-Run Equilibrium of the Firm and Industry:

Long-Run Equilibrium of the Firm:

The long run is a period of time in which the firm can change its plant and scale of operations. Thus in the long-run all costs are variable and there are no fixed costs. The firm is in the long-run equilibrium under perfect competition when it does not want to change its equilibrium output.

It is earning normal profits. If some firms are earning supernormal profits, new firms will enter the industry and supernormal profits will be competed away. If some firms are incurring losses, some of the firms will leave the industry till all earn normal profits.

Thus there is no tendency for firms to enter or leave the industry because every firm must earn normal profits. **“In the long-run, firms are in equilibrium when they have adjusted their plant so as to produce at the minimum point of their long-run AC curve, which is tangent (at this point) to the demand (AR) curve defined by the market price”** so that they earn normal profits.

Assumptions:

This analysis is based on the following assumptions:

1. Firms are free to enter into or leave the industry.
2. All firms are of equal efficiency.
3. All factors are homogenous. They can be obtained at constant and uniform prices. SMC
4. Cost curves of firms are uniform.
5. The plants of firms are equal, having given technology.
6. All firms have perfect knowledge about price and output.

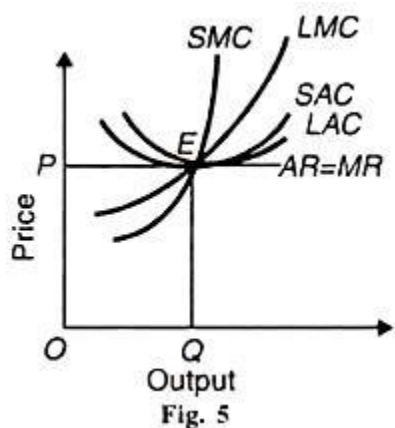
Given these assumptions, each firm of the industry will be in long-run equilibrium when it fulfils the following two conditions.

(1) In equilibrium, its short-run marginal cost (SMC) must equal to its long-run marginal cost (LMC) as well as its short-run average cost (SAC) and its long-run average cost (LAC) and both should equal $MR=AR=P$.

Thus the first equilibrium condition is:

$SMC = LMC = MR = AR = P = SAC = LAC$ at its minimum point, and

(2) LMC curve must cut MR curve from below: Both these conditions of equilibrium are satisfied at point E in Figure 5 where SMC and LMC curves cut from below SAC and LAC curves at their minimum point E and SMC and LMC curves cut $AR = MR$ curve from below. All curves meet at this point E and the firm produces OQ optimum output and sells it at OP price.

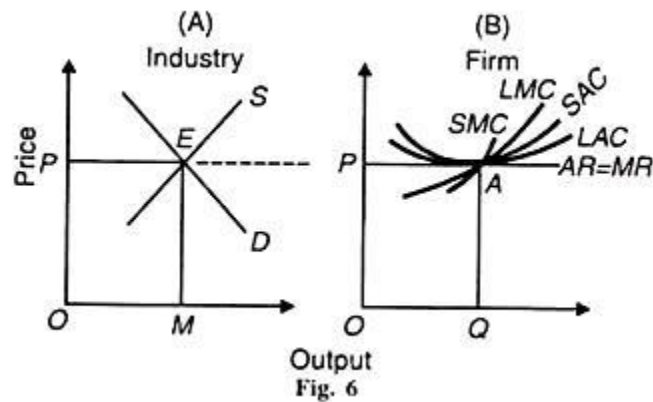


Since we assume equal costs of all the firms of industry, all firms will be in equilibrium in the long-run. At OP price a firm will have neither a tendency to neither leave nor enter the industry and all firms will earn normal profits.

Long-Run Equilibrium of the Industry:

The industry is in equilibrium in the long-run when all firms earn normal profits. There is no incentive for firms to leave the industry or for new firms to enter it. With all factors homogeneous and given their prices and the same technology, each firm and industry as a whole are in full equilibrium where $LMC = MR = AR (-P) = LAC$ at its minimum.

Such an equilibrium position is attained when the long-run price for the industry is determined by the equality of total demand and supply of the industry.

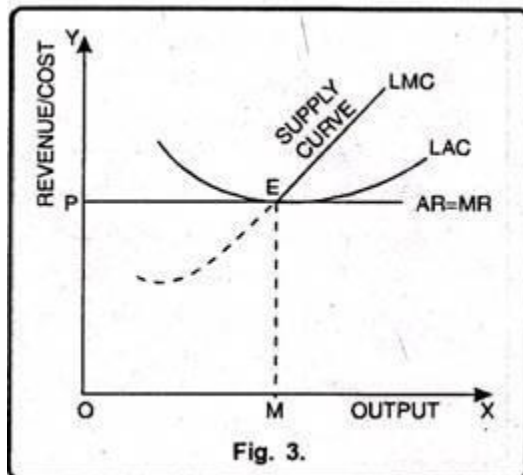


The long-run equilibrium of the industry is illustrated in Figure 6 (A) where the long-run price OP is determined by the intersection of the demand curve D and the supply curve S at point E and the industry is producing OM output. At this price OP , the firms are in equilibrium at point A in Panel (B) at OQ level of output where $LMC = SMC = MR = P (= AR) = SAC = LAC$ at its minimum.

At this level, the firms are earning normal profits and have no incentive to enter or leave the industry. It follows that when the industry is in long-run equilibrium, each firm in the industry is also in long-run equilibrium. If both the industry and the firms are in long-run equilibrium, they are also in short-run equilibrium.

Long Run Supply Curve of a Firm:

Long run is a period in which supply can be changed by changing all the factors of production. There is no distinction between fixed and variable factors. In the long run, firm produces only at minimum average cost. In this situation, long run marginal cost, marginal revenue, average revenue and long run average cost are equal i.e., $LMC = MR (= AR) = LAC$ (minimum). The firm is enjoying only normal profits. So that position of marginal cost curve will determine the supply curve which is above the minimum average variable cost. The point where minimum average cost is equal to marginal cost is called optimum production. Thus Long Run Supply Curve of a firm is that portion of its marginal cost curve that lies above the minimum point of the average cost curve.



In figure 3 the firm is in equilibrium at point E where $MR = LMC (=AR)$. AC is minimum corresponding to this point. This point E is also called optimum point because at this point $MR = LMC$ at minimum LAC. That portion of LMC which is above E is called long run supply curve.

Long Run Supply Curve of an Industry:

In the long run, industry's supply curve is determined by the supply curve of firms in the long run. Long run supply curve in the long run is not lateral summation of the short run supply curves. Industry's long run supply curve depends upon the change in the optimum size of firms and change in the number of firms.

It is on account of two reasons:

- (i) In the long run, firms continue to enter into and exit from the industry,
- (ii) Firms get economies and diseconomies of scale. This displaces the long run marginal cost (LMC). Due to these reasons, long run supply curve of industry is not the lateral summation of supply curve of firms. In reality, long run supply curve of industry can be known from the long run optimum production of firms multiplied by the number of firms in an industry.

$$LRS_i = Q \times N$$

Where LRS_1 is long run supply curve of industry. Q is the optimum output of a firm and N, the number of firms

Books

1. Pindyck and Rubinfeld with Mehta (2005), Microeconomics- latest available Edition in market.
2. D.N Dwivedi (2016), Microeconomics Theory and Application-- latest available Edition in market.
3. Walter Nicholson, Microeconomic Theory, Tenth Edition, Thomas Learning Newyork
4. Koutsoyiannis, A., Modern Microeconomics, Macmillan, London.