Laxmi Narain Dubey College, Motihari
(a constituent unit of B.R.A. Bihar University, Muz.)
NAAC Accredited 'B+'
Department of Economics

Topic: LONG-RUN COST ANALYSIS

Paper-I: MICROECONOMICS

Part-I

B.A. (Hons.)

Instructor
Durgesh Mani Tewari
Assistant Professor
dmtewari@gmail.com

LONG-RUN COST ANALYSIS

- ✓ In the long run, the supply of most of the factors of production is elastic. No factors are fixed, so all the factors of production can be changed in the long run.
- ✓ It is important to understand that the long-run cost curves are formed by the short-run cost curves.

➢ Long-Run Average Cost

- ✓ The long-run average cost is the average per unit cost of production when all the factors of production are variable in the long run.
- ✓ The long-run average cost curve can be derived from the short-run average cost curves as it is tangent to the short-run average cost curves.
- ✓ To start with, it is assumed that given the technology, only three methods are available to a firm to produce the output.
- ✓ These three methods can be represented by three different plants, each with a different scale of operations.

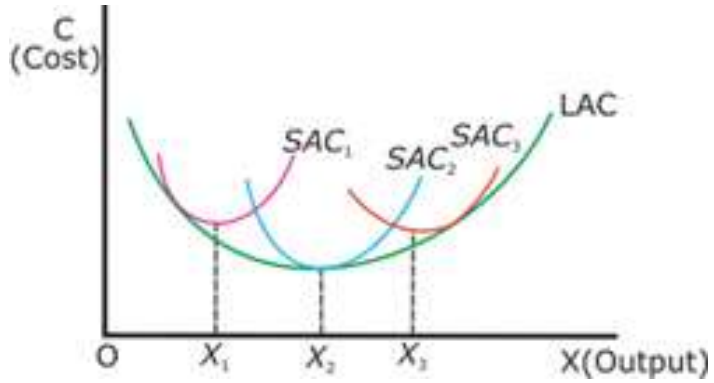

Fig: The Long-Run Average Cost Curve

- ✓ In the figure, SAC_1 is the short-run average cost of the small-size plant, SAC_2 is the short-run average cost of the medium-size plant, and SAC_3 is the short-run average cost of the large-size plant.
- ✓ To produce an output of OX_1 per unit, costs are lowest in plant SAC_1. Similarly, for an output of OX_2 per unit, costs are lowest on plant SAC_2, and for an output of OX_3, they are lowest on plant SAC_3.
- ✓ If one examines the reality, there are infinite numbers of such plants, each represented by an SAC.
- ✓ ***The long-run average cost curve is derived from the SAC's as the minimum per unit cost of producing each level of the output.***
- ✓ It shows the least cost of producing each level of the output. The long-run average cost curve is called the ***envelope curve*** as it envelops the SAC's.

❖ ***The long-run average cost curve is U-shaped because of the law of returns to scale:***

- ✓ Initially, the long-run average costs fall as a firm experiences with increase in returns to scale because of economies of scale.

a) When the economies of scale have reached their limit while diseconomies of scale have not yet appeared, the long-run average cost curve reaches its optimum plant producing the optimum output.

b) When a firm increases its output beyond its optimum capacity by changing its scale of operations, the disadvantages that it experiences are called the diseconomies of scale.

➢ Long-Run Marginal Cost

- ✓ The long-run marginal cost curve can be derived from the short-run marginal cost curves, as shown in the figure.

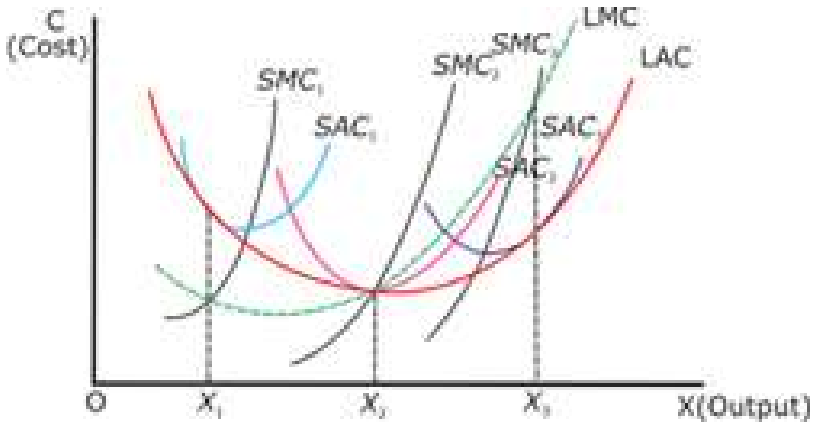

Fig: The Long-Run Marginal Cost Curve

- ✓ The long-run marginal cost curve is the locus of points which is formed by the point where the vertical line, drawn from the point of tangency of the SAC with the long-run average cost curve, intersects the corresponding SMC curve.
- ✓ By joining all such points, one can draw the long-run marginal cost curve.

RELATIONSHIP BETWEEN LONG-RUN AVERAGE COST AND LONG-RUN MARGINAL COST

From the above figure it is seen that

i. ***When long-run average cost is falling, long run marginal cost is also falling and is below it.***
ii. ***When long-run average cost is rising, long run marginal cost is also rising and is above it.***
iii. ***When long-run average cost is at its minimum point, long-run marginal cost is equal to long run average cost, or the long run marginal cost curve intersects the long run average cost curve.***

➢ Long-Run Total Cost

- ✓ The long-run total cost curve is the minimum total cost of producing different levels of output from different plant sizes.
- ✓ In the figure, the long-run total cost curve is derived from the short-run total cost curves taking the point which represents the optimum size of the plant.
- ✓ The short-run total cost curve begins from the level of the fixed costs while the long-run total cost curve begins from the origin since in the long run there are no fixed costs.
- ✓ The long-run total cost curve is ***inverse S-shaped*** because of the law of returns to scale.

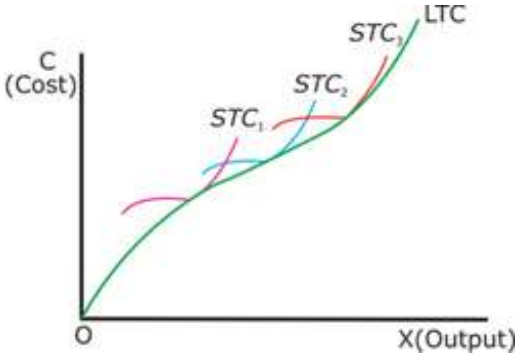

Fig: The Long-Run Total Cost Curve