

Laxmi Narain Dubey College, Motihari

(a constituent unit of B.R.A. Bihar University, Muz.)

NAAC Accredited 'B+'

Department of Economics

Topic: SHORT-RUN COST ANALYSIS

Paper-I: MICROECONOMICS

Part-I

B.A. (Hons.)

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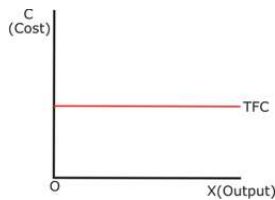
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SHORT-RUN COST ANALYSIS

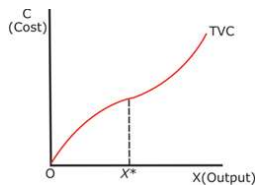
- ✓ As short-run costs are incurred over the time in which the supply of some of the factors of production are fixed, in the short run, while some costs are fixed, others are variable.
- ✓ Let us understand some important concepts in this analysis.
- ❖ **Total cost:** Total cost is the cost incurred to produce a given level of output in the short run by utilising both the fixed and the variable factors. It includes both the total fixed cost and the total variable cost.

$$\text{Total Cost} = \text{Total Fixed Cost} + \text{Total Variable Cost}$$

- ❖ **Total fixed cost:** Total fixed cost includes those costs which do not vary with the level of output. Whatever is the level of output, these costs have to be incurred. They include the cost of managerial and administrative staff, depreciation of building and machinery, and others. In the figure here, the total fixed cost curve is shown as a straight line, which is parallel to the X-axis.



- ❖ **Total variable cost:** Total variable cost is the cost which varies with the level of output. It includes cost of raw material, labour, fuel, and others. In this figure, the total variable cost curve is shown as an inverse S-shaped curve.

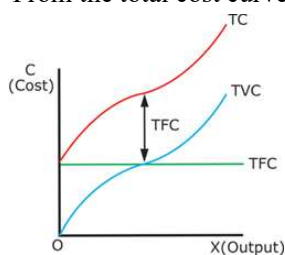


The **inverse S-shape** is due to the law of diminishing returns:

- ❖ When the output is zero, the total variable cost is also zero.
- ❖ As output increases, the total variable cost also increases. According to the law, as more and more units of the variable factor are applied to a given amount of the fixed factors, the output will initially increase at an increasing rate. This implies that total variable costs will initially increase at a decreasing rate.
- ❖ At the output level of X^* , when additional units of the variable factor are added to a given quantity of the fixed factors, the output of a good will increase at a decreasing rate. This implies that total variable costs will increase at an increasing rate.

Average Costs

- ✓ Let us revisit the definition of total cost once again before studying about per unit costs.
- ✓ Total cost is obtained by adding total fixed cost and total variable cost at the different levels of output.
- ✓ Thus, in the figure, the total cost curve is shown as a summation of the total fixed cost and total variable cost at the different levels of output.
- ✓ The total cost curve is also an inverse S-shaped curve like the total variable cost curve and is higher than the total variable cost curve everywhere by the same amount as the total fixed cost.
- ✓ From the total cost curves, we can now arrive at the per unit cost curves.



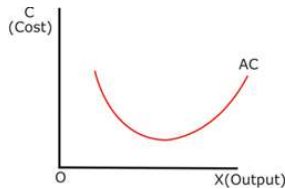
- **Average cost:** Average cost can be obtained from the total cost.

$$\text{Total Cost} = \text{Total Fixed Cost} + \text{Total Variable Cost}$$

$$\text{Average Cost} = \text{Total Cost/Output} = (\text{Total Fixed Cost/Output}) + (\text{Total Variable Cost/Output})$$

Thus, **Average Cost = Average Fixed Cost + Average Variable Cost**

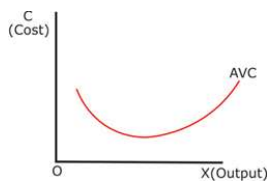
- ✓ In the following figure, the **average cost curve** is shown as **U-shaped**. Initially, it falls, then reaches a minimum and starts rising.
- ✓



- **Average variable cost:** Average cost can be obtained from the total variable cost.

$$\text{Average Variable Cost} = \text{Total Variable Cost/Output}$$

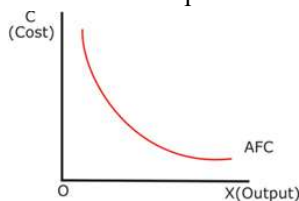
- ✓ In the figure here, the **average variable cost curve** is shown as **U-shaped**.



- **Average fixed cost:** Average fixed cost can be obtained from the total fixed cost.

$$\text{Average Fixed Cost} = \text{Total Fixed Cost/Output}$$

- ✓ In the following figure, the **average fixed cost curve** is shown as a **rectangular hyperbola** because as the level of output increases, the fixed cost per unit decreases.



Marginal Costs

- ✓ Marginal cost is the change in the total cost or total variable cost due to a unit change in the level of output.

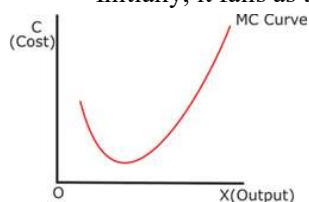
$$\text{Marginal Cost} = \text{TC}_N - \text{TC}_{N-1}$$

Alternatively, it can be written as:

$$\text{Marginal Cost} = \Delta \text{TC} / \Delta \text{X}$$

i.e. change in total cost due to unit increase in output.

- ✓ In the following figure, the **marginal cost curve** is shown as **U-shaped**.
- ✓ Initially, it falls as the variable factor is used more efficiently, and then starts rising.



Relationships between the AC and MC

Both the average cost curve and the marginal cost curve are *U-shaped*. The following figure depicts that:

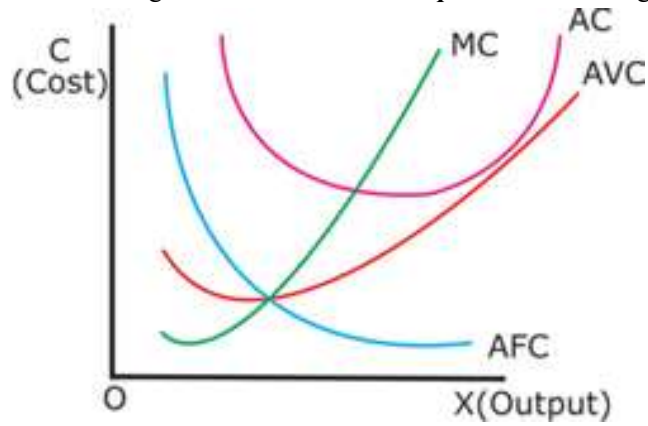


Fig: The Short-Run Cost Curves

- a) *When average cost is falling, marginal cost is also falling and is below it.*
- b) *When average cost is rising, marginal cost is also rising and is above it.*
- c) *When average cost is at its minimum point, marginal cost is equal to average cost or the marginal cost curve intersects the average cost curve.*