Lecture - 12

Cost:

In common usage, the monetary value of inputs used in production of goods and services is called cost.

In basic economic sense, cost is measure of alternative opportunities foregone in the choice of one good over the other.

Opportunity Cost:

What the producer gives up to use resources to produce goods or services. It is the cost of next best alternative given up.

In business, two types of resources are used.

1. Market supplied resources
2. Owner supplied resources

Explicit Cost: The opportunity cost of market supplied resources is the monetary payments made to the owners of these resources. This is called explicit cost.

Implicit Cost: The non-monetary opportunity costs of using the owner supplied resources are called implicit cost.

Total economic cost = Explicit cost + Implicit cost

Other types of costs:

Fixed cost: The costs which don't vary with change in output.

Variable cost: Costs which depend on the output produced.

Total cost (TC) = Fixed cost + variable cost

Sunk cost: Costs which have been incurred but can't be recovered

Economic Profit vs Accounting Profit:

Economic Profit = TR - Total Economic cost
= TR - Explicit cost - Implicit cost

Accounting Profit = TR - Explicit cost

Accounting profit ≥ Economic profit

Short-run Cost:

The cost of inputs used in the short-run production is called short-run cost.

In the short-run

$$Q = f(L, \bar{K})$$

$L \rightarrow$ variable input

$K \rightarrow$ Fixed input

So TC = Total Fixed cost (TFC) + Total variable cost (TVC)

$$\Rightarrow TC = \bar{\omega} \cdot L + i \cdot \bar{K}$$

Average cost (AC) = TC / Q

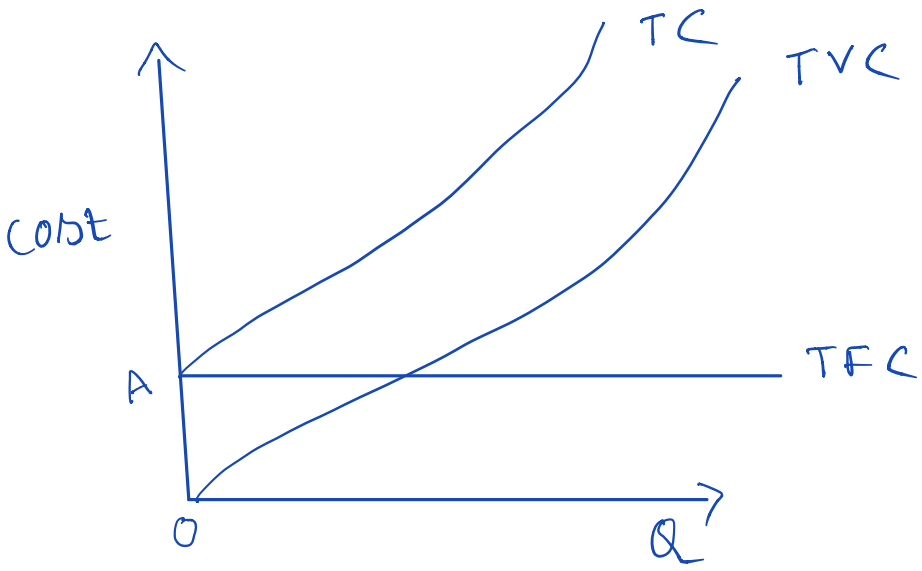
$$= TFC + TVC / Q$$

$$AC = AFC + AVC$$

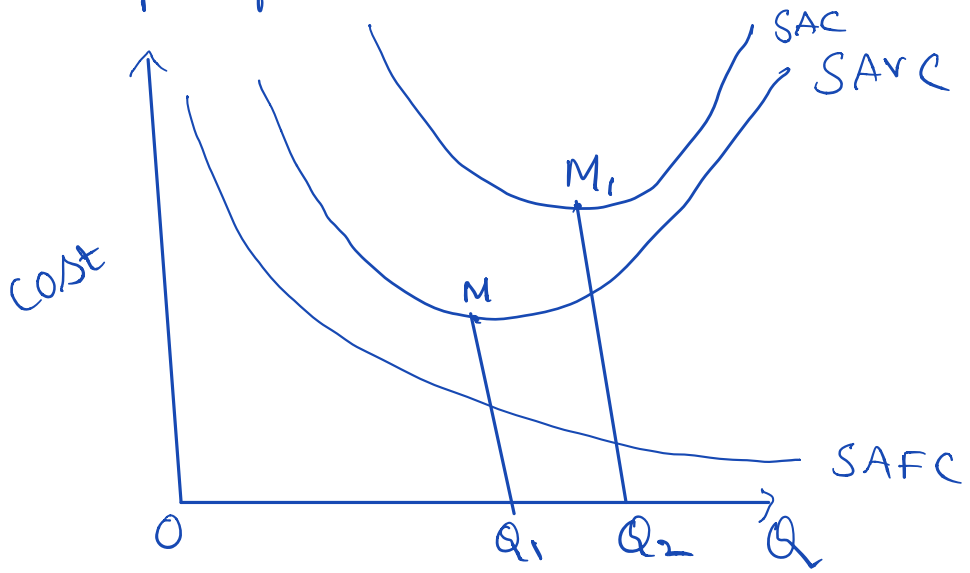
$$MC = \frac{\partial TC}{\partial Q}$$

Let us now look at the short-run cost schedule in order to understand the relation between TC, AC & MC.

Q	TFC(₹)	TVC(₹)	TC(₹)	AC = TC/Q	MC = ∂TC/∂Q
0	6,000	0	6,000	–	–
100	6,000	4,000	10,000	100	40
200	6,000	6,000	12,000	60	20
300	6,000	9,000	15,000	50	30
400	6,000	14,000	20,000	50	50
500	6,000	22,000	28,000	56	80



Shape of the short-run cost curves:



Why the short-run average cost curve is 'U' shaped?

Reasons:

① Graphical

② Logical

Graphical reason:

AC = AFC + AVC

Up to 'OQ_1' level of output both AFC and AVC fall and hence AC will also fall.

After OQ_1, AVC is rising and AFC is still falling.

The rise is AVC < the rate of fall in AFC and hence between OQ_2 & OQ_1, SAC is falling.

After OQ_2, the rate of rise in AVC is > the rate of fall in AFC & hence SAC starts rising.

This is how SAC curve becomes 'U' shaped.

Logical reasoning:

AC = TC / Q

In the short-run, TP (Q) curve initially rises so AC falls, when TP is maximum, AC is minimum and in stage III, TP falls & this causes AC to rise. Hence SAC curve becomes 'U' shaped.

Relation between MC & AC.

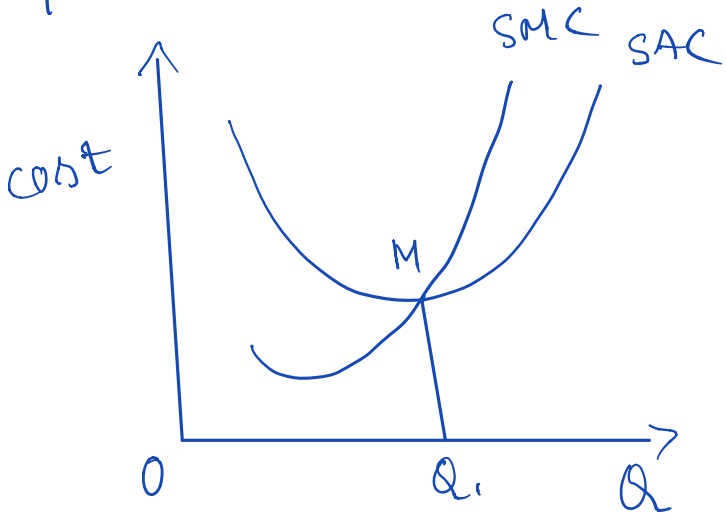
MC intersects AC from below.

when

MC < AC, AC will fall

MC > AC, AC will rise

MC will intersect AC at its minimum point.



Proof

$$MC = \frac{\partial TC}{\partial Q} = \frac{\partial (AC \cdot Q)}{\partial Q} = AC + Q\frac{\partial AC}{\partial Q}$$

MC will change according to the slope of AC i.e $\frac{\partial AC}{\partial Q}$.

Relation between short-run costs and production:

$TVC = \tilde{\omega} \cdot l$ $\omega \cdot l$ is the wage of the labour & this is the variable cost in the short-run.

$TFC = i \cdot K$

$TC = TFC + TVC$

$SMC = \frac{\partial TC}{\partial Q} = \frac{\partial TVC}{\partial Q}$ (TFC is constant)

$$\text{or } SMC = \frac{\partial (\tilde{\omega} \cdot l)}{\partial Q}$$

$$= \tilde{\omega} \frac{\partial l}{\partial Q} \qquad MP_l = \frac{\partial Q}{\partial l}$$

$$SMC = \frac{\tilde{\omega}}{MP_l}$$

Similarly

SAVC → Short-run average cost

$$SAVC = \frac{TVC}{Q} = \frac{\tilde{\omega} \cdot l}{Q} = \tilde{\omega} \cdot \frac{l}{Q}$$

$$\frac{Q}{l} = AP_l$$

Thus $SAVC = \frac{\tilde{\omega}}{AP_l}$

In the short-run production & cost are inversely related.

Nath.