

Laxmi Narain Dubey College, Motihari

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

NAAC Accredited 'B+'

Department of Economics

Topic: Perfect Competition

Paper-I: MICROECONOMICS

Part-I

B.A. (Hons.)

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PERFECT COMPETITION

- ✓ Perfect competition is a market structure where there is large number of buyers and sellers of the goods for which there is no close substitute (homogenous), with there being free entry and exit.
- ✓ The *characteristics* of perfect competition are as follows:
 - i. **Large number of buyers and sellers of the goods.** There exist such a large number of buyers and sellers that no single buyer and no single seller can influence the price of the goods. Each is a price taker.
 - ii. **Homogenous goods.** As far as certain goods are concerned, each and every unit of the good is similar to the other unit. For the buyer, each unit of the good is identical to the other unit irrespective of which firm has produced the said goods. Thus, no firm has any control over the price of the specific goods.
 - iii. **Free entry and exit of firms.** Firms are free to enter or exit the industry without there being any restrictions or barriers. Also, there is no cost involved as far as entry and exit are concerned.
 - iv. **Buyers and sellers have perfect knowledge about the conditions in the market.** Buyers and sellers have a complete knowledge about the prices prevailing in the market. There are no uncertainties in the market about the future conditions.
 - v. **Factors of production are perfectly mobile.** All factors of production including land, labour, and capital are perfectly mobile from one place to another and from one occupation to another occupation. There are no legal restrictions or obstacles in the form of trade unions.
 - vi. **There is no government intervention.** Laissez-faire policy is followed by the government in the sense that there are no taxes, subsidies, duties, etc., imposed by the government.
 - vii. **There is no cost of transportation.** Since it is necessary for a single fixed price to exist in all markets, it is assumed that there is no cost related to transport.
 - viii. **The goal of the firm is to maximise the profits.** Every firm in the market aims at maximising its profits.

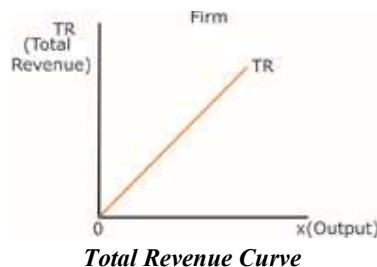
REVENUE CURVES UNDER PERFECT COMPETITION

A firm's revenue under perfect competition is of **three** types.

Total revenue curve: Total revenue can be defined as the total proceeds earned by a firm from the sale of a certain amount of the output. Thus,

$$TR = P \times X$$

where, TR is the total revenue, P the per unit price of the goods, and X the quantity of the goods or the output level. *Since*, under perfect competition, *a firm is a price taker*, the *TR curve* will be *a straight line* through the origin as shown in the following figure.



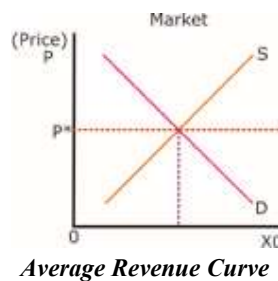
Average revenue curve: Average revenue can be defined as the average proceeds earned by a firm from the sale of a certain amount of the output. Thus,

$$AR = \frac{TR}{X}$$

$$AR = \frac{PX}{X}$$

$$AR = P$$

where, AR is the average revenue.



So the *average revenue is the price of the goods*, which is determined by the market demand and supply of the goods. The *AR curve is also the demand curve for the said good*. It is shown as a *straight line parallel to the X-axis*, depicting that *whatever is the quantity sold, the price of the good will remain the same*.

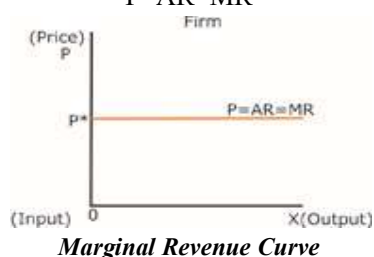
Marginal revenue curve: Marginal revenue is the change in the total revenue when the output increases by one unit.

$$MR = \partial TR / \partial X$$

$$\text{or, } MR = TR_N - TR_{N-1}$$

Thus, in the following figure, the *MR curve* is shown as a *straight line parallel to the X-axis*. It is important to note that *it coincides with the AR curve*. Thus,

$$P = AR = MR$$



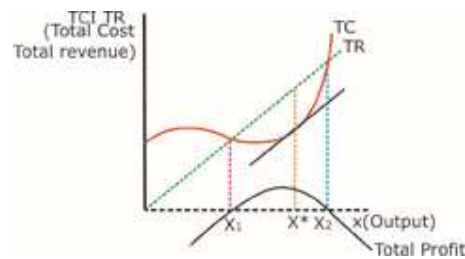
SHORT-RUN EQUILIBRIUM OF THE FIRM

Two approaches-

1. TR-TC approach and
2. Marginal approach.

TOTAL REVENUE - TOTAL COST APPROACH

- ✓ A firm is said to achieve the equilibrium when its profits are the maximum.
- ✓ Profits can be defined as the difference between TR and TC. Thus, $\pi = TR - TC$
- ✓ In the following figure,
 - The TR curve is a straight line through the origin.
 - The TC curve is inverse S-shaped due to the law of variable proportions.
 - The profit curve is the difference between the TR and the TC curves.
- ✓ Profits are maximum at the output OX^* while at the outputs OX_1 and OX_2 , the firm breaks even or makes zero profits.



Total Cost - Total Revenue Approach

MARGINAL APPROACH

- ✓ Profits will be a maximum when the *first-order derivative is zero* while the *second-order derivative is less than zero or negative*.

$$\text{Let, } \pi = TR - TC$$

$$\frac{\partial \pi}{\partial X} = \frac{\partial TR}{\partial X} - \frac{\partial TC}{\partial X} = 0$$

$$\text{or, } \frac{\partial TR}{\partial X} = \frac{\partial TC}{\partial X}$$

$$\text{or, } MR = MC$$

But under perfect competition, $P = AR = MR$

$$P = MC$$

$$\frac{\partial^2 \pi}{\partial X^2} = \frac{\partial^2 TR}{\partial X^2} - \frac{\partial^2 TC}{\partial X^2} < 0$$

$$\frac{\partial^2 TR}{\partial X^2} < \frac{\partial^2 TC}{\partial X^2}$$

$$\text{Slope of } MR < \text{Slope of } MC$$

- ✓ This implies that at the equilibrium point the MC curve should intersect the MR curve from below (Fig1).
- ✓ The marginal approach to equilibrium for a perfectly competitive firm has been depicted diagrammatically in the figure:
 - The firm's demand curve, d , is parallel to the X-axis at a height equal to OP^* . It is also the firm's AR and MR curve.
 - The SRAC curve of the firm is represented by the curve SAC. It is U shaped due to the law of variable proportions.
 - The SRMC curve of the firm is represented by the curve SMC. It is also U shaped due to the law of variable proportions. It cuts the SRAR curve, SAC at its minimum point.
 - The firm is in equilibrium at point E, where $MR = MC$ and also the MC curve intersects the MR curve from below. The firm is in a position to earn supernormal profits equal to the rectangle AP^*EB .

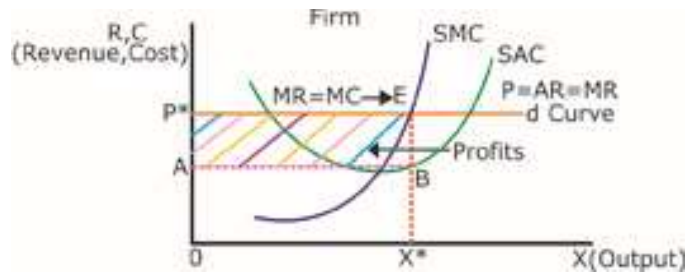
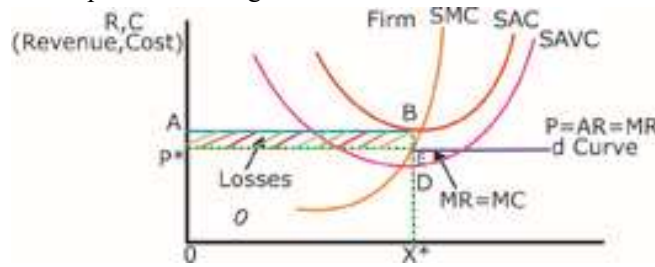


Fig 1: Perfectly competitive firm making supernormal profits in the short run

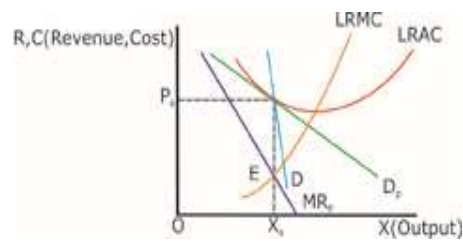
- ✓ It is *not necessary* that a perfectly competitive firm will make super normal profits in the short run.
- ✓ The following figure depicts a firm which is making losses in the short run.
 - The firm's demand curve, d, is parallel to the X axis at a height equal to OP'.
 - The firm is in equilibrium at point E'.
 - The equilibrium price is OP' and the quantity is OX'.
- ✓ This market price covers only a part of the AFC. It does not cover the AFC.
- ✓ Thus, the firm will incur losses equal to the rectangle P'ABE'.
- ✓ The firm will continue to produce as long as it covers the AVC.



Perfectly competitive firm incurring losses in the short run

FIRM'S EQUILIBRIUM IN THE LONG RUN

- ✓ A firm remains in the LR equilibrium when it is earning normal profits.
- ✓ This implies that to reach equilibrium in the long-run, a firm will have to make adjustments as depicted in the following figure.

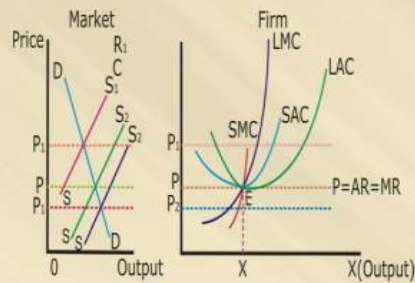


Long-Run Equilibrium of the Firm

Situation 1

In the first figure DD' and $SS1$ intersect to determine the equilibrium price at $P1$. In the second figure, the firm is in short-run equilibrium at this price earning super normal profits.

Since, in the short run, there is free entry and exit, new firms are attracted to the industry because of these profits. There will be an increase in the market supply of the goods and thus the market supply curve shifts rightwards to $SS2$ resulting in a decrease in the equilibrium price to OP . At this price, the firm will reach long-run equilibrium at point E earning only normal profits as shown in the figure.

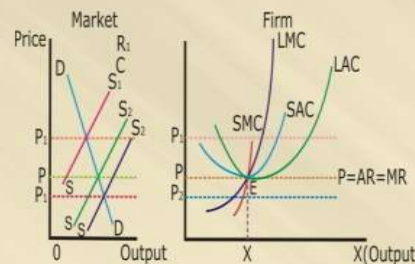


Situation 2

In the first figure above DD' and $SS3$ intersect to determine the equilibrium price at $P2$.

In the second figure, the firm is in short-run equilibrium at this price incurring losses. Since, in the short run, there is free entry and exit, the marginal firms will leave the industry. There will be a decrease in the market supply of the goods and thus the market supply curve shifts leftwards to $SS2$ resulting in an increase in the equilibrium price to OP . At this price, the firm reaches long-run equilibrium at point E earning only normal profits as shown in the figure.

At the price OP , the firm in the industry will be in long-run equilibrium earning normal profit. Thus, there is neither incentive for new firms to enter the industry nor for existing firms to quit the industry. Both the individual firm and the industry are in long-run equilibrium.



APPLICATIONS OF PERFECT COMPETITION

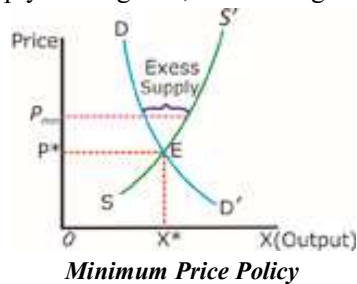
- ✓ The equilibrium price of certain goods is determined by the intersection of the market demand and market supply curves of the said goods.
- ✓ This can often be applied to analyse the effects of different government policies and is also often of use to the individual firm when they are involved in making the decisions.
- ✓ They include the following:

Price controls

Often the government has to intervene in the market through controls on the price using tools like monetary policy and fiscal policy.

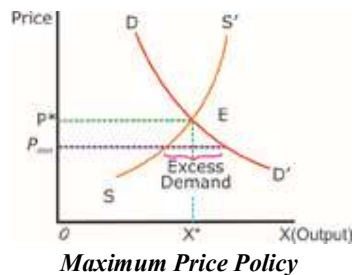
➤ *Minimum price policies:*

- ✓ It aims at keeping the market price above the equilibrium price.
- ✓ In the following figure, the equilibrium is determined by the market demand and supply curves, DD' and SS' , respectively, at point E.
- ✓ The equilibrium price is OP^* while the equilibrium output is OX^* .
- ✓ Often, for example, in the case of some agricultural goods and also under the minimum wage laws, the government may fix minimum price for the goods at P_{Min} , which is above the equilibrium price OP^* .
- ✓ This will result in an excess supply of the goods, which the government will have to purchase.



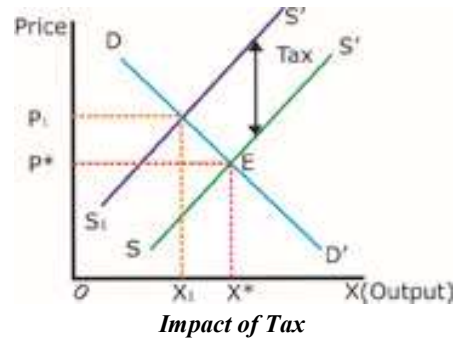
➤ *Maximum price policies:*

- ✓ It aims at keeping the market price below the equilibrium price.
- ✓ In the following figure, the equilibrium is determined by the market demand and supply curves, DD' and SS' , respectively, at point E. The equilibrium price is OP^* while the equilibrium output is OX^* .
- ✓ Often, for example, when the government wants to control the production of specific goods, the government may fix a maximum price for the goods at P_{Max} , which is below the equilibrium price OP^* .
- ✓ This will result in an excess demand for the goods, which, if not satisfied, may result in black marketing.



IMPACT OF TAXES AND SUBSIDIES

- ✓ Taxes, like excise tax adds to the costs leading to a leftwards (inwards) shift of the supply curve.
- ✓ Subsidies or negative tax leads to a rightwards (outwards) shift of the supply curve.
- ✓ In the following figure, the equilibrium is determined by the market demand and supply curves, DD' and SS' , respectively, at point E.
- ✓ The equilibrium price is OP^* while the equilibrium output is OX^* .
- ✓ An indirect tax on the goods adds to the costs leading to a leftwards (inwards) shift of the supply curve to S_1S_1' .
- ✓ There occurs a change in the equilibrium price and the equilibrium output of the goods.
- ✓ The price of the goods increases from OP^* to OP_1 while the equilibrium output decreases from OX^* to OX_1 .



- ✓ Subsidies or negative taxes also have an impact on the equilibrium price and the equilibrium output of the good.
- ✓ There are many other applications of perfect competition like to analyse the stable equilibrium and the unstable equilibrium and also for understanding the break-even analysis, where the total approach can be used.
- ✓ An understanding of perfect competition and determination of price in the short run and the long run is of immense help if one wishes to apply it to solve some of the problems one faces in reality.