MARKET :

1.Perfect competition

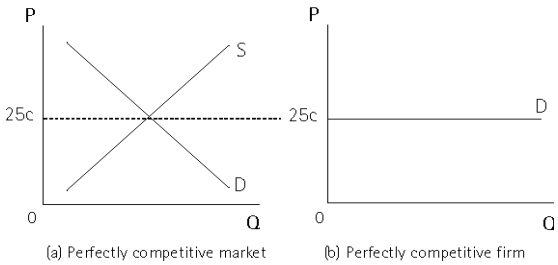
Total and Marginal Revenue:
Total revenue is the amount of revenue the firm takes in from the sale of its product. TR = price x quantity sold and Marginal revenue is the change in revenue to a firm when it changes output by one unit MR = (TR/q). Marginal Revenue is the change in revenue from selling one more, or one less unit. If the firm gets price p* for every unit it sells, as it does in perfect competition, then p* is the marginal revenue at all quantities.

- MR = change in Total revenue / change in Quantity
  - Horizontal Demand Curve means, MR = Price

  Profit for the firm: Total revenue - Total cost

The firm as price taker: The single firm takes its price from the industry, and is, consequently, referred to as a price taker. The industry is composed of all firms in the industry and the market price is where market demand is equal to market supply. Each single firm must charge this price and cannot diverge from it.

Example: In an Industry demand and supply met at price 25 then each firm will accept this price to sell their product at Rs. 25. So the firm is price taker and Industry is Price maker.



In a perfectly competitive market marginal revenue (MR) is equal to price (P) and average revenue (AR).

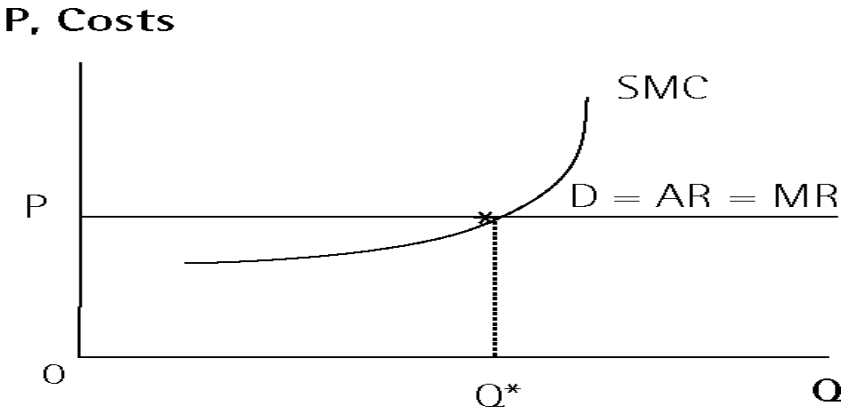
•Example: Firm does not have to lower price to sell more.

Qty	Price	TR	MR	AR
0	10	-	-	-
1	10	10	10	10
2	10	20	10	10
3	10	30	10	10
4	10	40	10	10

Output Decision in the Short-run :

How much quantity to be sold in the market it depends on marginal revenue and marginal cost. Profit-maximising firm will produce or sell the quantity where Marginal revenue intersect marginal cost or MR = MC at Q* in the below figure.

In case of perfect competition quantity is decided where MR = MC = Price at Q*. The above Condition is a necessary but not sufficient condition for producing at profit maximising level.



Now the two conditions for the equilibrium of the firm can be stated as under:

(a) Necessary Condition is MC = MR
(b) Sufficient condition is marginal cost should always cut marginal revenue from below , or Slope of Marginal cost is greater than Slope of Marginal revenue.
SMC: short run marginal cost
One has to understand that it is not necessary for a perfect competitive firm in equilibrium to always enjoy positive levels of profit in the short-run. A perfect competitive firm may earn abnormal profits or incur losses or just get normal profits depending upon the cost conditions.

Short Run Equilibrium of a Competitive Firm (Maximizing Profits):

Figure 6.7 portrays the case of a perfectly competitive firm earning supernormal profits in the short-run. In this case the average cost curve of the efficient firm lies below its average revenue curve. In this diagram, point 'E' is the equilibrium point, where the MC curve cuts the MR curve from below. OQ is the equilibrium output that is sold at the equilibrium price OP. Since this price (OP or EQ) exceeds the average cost (BQ), the firm will earn supernormal or excess profits in this situation. Total profits from the sale of equilibrium output are 'profit per unit of output x quantity, i.e., (EQ-BQ) x OQ= Area (CPEB).

Super normal profits=Total Revenue – Total Cost = Price x Equilibrium Quantity-Average Cost x Equilibrium Quantity = OP × OQ – BQ x OQ = Area (OQEQ -OCBQ) = Area (CPEB)

Area CPEB signifies super normal profits for the firm .

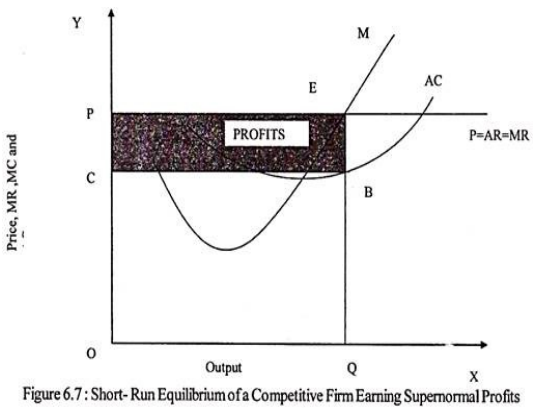


Figure 6.7 : Short- Run Equilibrium of a Competitive Firm Earning Supernormal Profits

Short-Run Equilibrium of a Competitive Firm (Earning Normal Profits):

There is another case, the case of firm earning normal profit. In short-run, some firms of average efficiency earning only normal profits just sufficient to induce them to operate in the short-run. These normal profits are included in the costs. Figure 6.9 illustrates such a case for a competitive firm, which is just able to break-even (no profit-no loss situation at point 'E'.). Here, the AC curve is tangent to the AR curve at the minimum point 'E' of the former. This means that the price of the product is equal to its average cost. A competitive firm, which neither makes excess profits in the short-run is called a marginal firm.

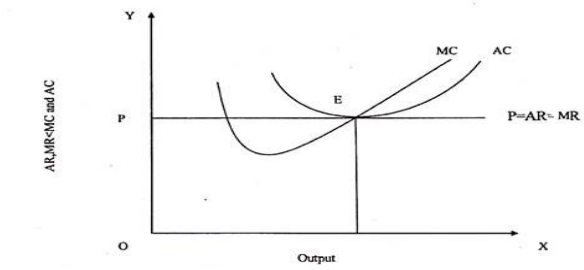


Figure 6.9 :Short run equilibrium of competitive firm with normal profit.

The competitive firm in equilibrium always chooses the output for which price (AR=MR) = MC is above the level of average variable cost (AVC). The short-run equilibrium of a competitive firm can be equal to or more than it's AVC, but, cannot be less than AVC. The minimum price which can induce a firm to produce in the short-run is the one, which just equals AVC. The competitive firm closes down the operation, if it is not in a position to cover AVC in the short-run. When price = MC, the price would decrease its profits, if, it either increased or decreased its output. For any point to the left of this equilibrium, price is greater than the marginal cost and it pays to increase output. Similarly, for any point to the right of its equilibrium, price is less than the marginal cost and it pays to reduce output.

2. monopoly : Market with only one seller.

Monopsony : Market with only one buyer.

Market power: Ability of a seller or buyer to affect the price of a good.

Defining Monopoly - A monopoly is a market structure in which a single seller of a product with no close substitutes serves the entire market - One practical measure for deciding whether a firm enjoys significant monopoly power is to examine the cross-price elasticity of demand for its close substitutes - The difference between perfect competition and monopoly often goes down to the question of which type of buyer we have - The important distinction between monopoly and competition is that the demand curve facing the individual competitive firm is horizontal (irrespective of the price elasticity of the corresponding market demand curve), while the monopolist's demand curve is simply the downward-sloping demand curve for the entire market

Reasons for Existence of Monopolies

Ownership of a Key Resource: When one company exerts sole control over a resource that is necessary for the production of a specific product, the market may become a monopoly. For example, the only medication deemed acceptable to treat a disease comes from a particular ingredient X, and knowledge of this ingredient X is owned by a single family owned company. The company can, therefore, be said to have a monopoly over ingredient X that is needed to cure the disease because it is the only company that can produce a product deemed acceptable.

Government Franchise: In certain instances, a monopoly may be explicitly created by the government if it grants a single company, whether private or government-owned, the right to conduct business in a particular market. For example, when a national railways transportation service is created by the government, in most cases they are granted a monopoly on the operation of passenger trains in the country. As a result, other firms are only able to offer passenger train services with the cooperation and/or permission of the government-owned provider.

Intellectual Property Protection: Extending intellectual property protection to a company in the form of patents and copyrights is yet another way in which monopolies are created. When a government does this, it is in fact giving a single company an exclusive right to provide a particular product / service to the market. Patents and copyrights work in providing owners of intellectual property with the right to act as an exclusive provider of a new product for a specific length of time. This creates a temporary monopoly in the market with regards to new products and services.

Natural Monopoly: A market may also become a monopoly simply because it may be more cost-effective for one company to serve the whole market than to have several smaller firms in competition with one another. A company

with virtually unlimited economies of scale is referred to as a natural monopoly. Such firms become monopolies due to their position and size, which makes it impossible for new entrants in the market to compete price-wise. Natural monopolies are common in industries with high fixed costs and low marginal costs of operation such as providers of television, telephone, and internet services.A natural monopoly can also occur when an industry has high fixed costs. Utility industries such as electric companies have high fixed costs that make it difficult to profit unless they have a lot of customers. Energy is expensive and the infrastructure needed to provide it is expensive. It is unlikely many corporations would enter the market for utilities such as water, electricity, and cable television because the high fixed costs make it too difficult to ensure a profit.

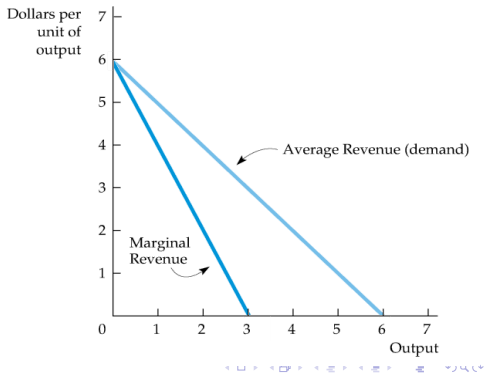
Economies of Scale: Economies of scale, wherein products made in larger quantities become cheaper and products made in smaller quantities are more expensive, create barriers to entry when average total costs are high. a single large firm is more efficient than many firms. This is because firms in these markets have economies of scale in production. **Economies of scale** is the observation that a firm's long run average total costs decrease as production levels increase, which lowers the **break-even price** (the lowest price that the firm needs to charge in order to cover its costs). This usually leads to the creation of **natural monopoly**, which is preserved because economies of scale make production by a single large firm the most cost-effective way of producing. In this case, the nature of the market itself gives one producer a big cost advantage. This can happen when the market has few consumers and there is not enough buyers for more than one firm to make a profit.

Average Revenue and Marginal Revenue in case of imperfect competition:

To see the relationship among total,average,and marginal revenue, consider a firm facing the following demand curve Average and marginal revenue are shown for the demand curve: $P = 6 - Q$

Marginal revenue is drastically falling as total revenue is increasing at quantity 5 the marginal revenue becomes negative as -3. Marginal revenue is below average revenue in case of monopoly market. Average revenue cannot go negative , it will remain positive .

		Total	Marginal	Average
Price (P)	**Quantity (Q)**	**Revenue (R)**	**Revenue (MR)**	**Revenue (AR)**
$6	0	$0	---	---
5	1	5	$5	$5
4	2	8	3	4
3	3	9	1	3
2	4	8	-1	2
1	5	5	-3	1



The Monopolist's Output Decision shown in below figure:

We can also see algebraically that $Q^* = 10$ maximizes profit. Profit π is the difference between Revenue and cost, both of which depend on Q:

$$\pi(Q) = R(Q) - C(Q)$$

(R) is Total revenue = Price * quantity

(C) is Total Cost = Fixed cost + total variable cost

As Q is increased from zero, profit will increase until it reaches a maximum and then begin to decrease. Thus the profit-maximizing Q is such that the incremental profit resulting from a small increase in Q is just zero (i.e., $\Delta\pi / \Delta Q = 0$).Then

$$\Delta\pi / \Delta Q = \Delta R / \Delta Q - \Delta C / \Delta Q = 0$$

But $\Delta R/\Delta Q$ is marginal revenue and $\Delta C/\Delta Q$ is marginal cost. Thus the profit-maximizing condition is that

MR – MC = 0

MR is marginal revenue and MC is marginal cost

Part **(a)** shows total revenue R, total cost C, and profit, the difference between the two.

Part **(b)** shows average and marginal

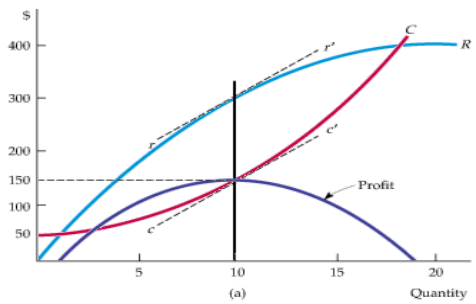
revenue and average and marginal cost.

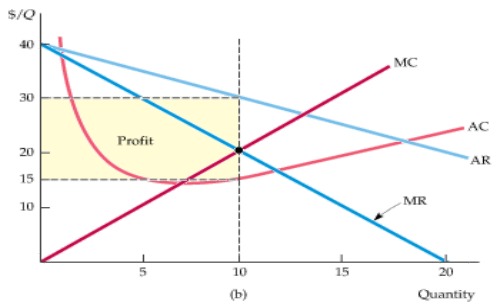
Marginal revenue is the slope of the total revenue curve, and marginal cost is the slope of the total cost curve.

The profit-maximizing output is $Q^* = 10$, the point where marginal revenue equals marginal cost.

At this output level, the slope of the profit curve is zero, and the slopes of the total revenue and total cost curves are equal.

The profit per unit is $15, the difference between average revenue and average cost. Because 10 units are produced, total profit is $150.





Measuring Monopoly Power:

Remember the important distinction between a perfectly competitive firm and a firm with monopoly power: *For the competitive firm, price equals marginal cost; for the firm with monopoly power, price exceeds marginal cost.*

Lerner Index of Monopoly Power Measureofmonopolypowercalculatedas excessofpriceovermarginalcostasafraction of price.

Mathematically:

$$L = (P - \mathrm{MC}) / P$$

Thisindexofmonopolypowercanalsobeexpressedintermsoftheelasticity of demand facing thefirm.larger the difference between price and marginal cost then more is the monopoly power enjoys by the monopolist. The difference between price and MC should be less then only it will benefit the society as a whole. Social welfare and allocative efficiency is ensured only when the difference between price and marginal cost is less. As social welfare is always ensure in perfect competition because in this market price is always equals to marginal cost.

Price Discrimination - Monopolists often charge different prices to different buyers, a practice known as price discrimination - When price discrimination is possible, monopolists can shift some of the consumer surplus to its own profits.

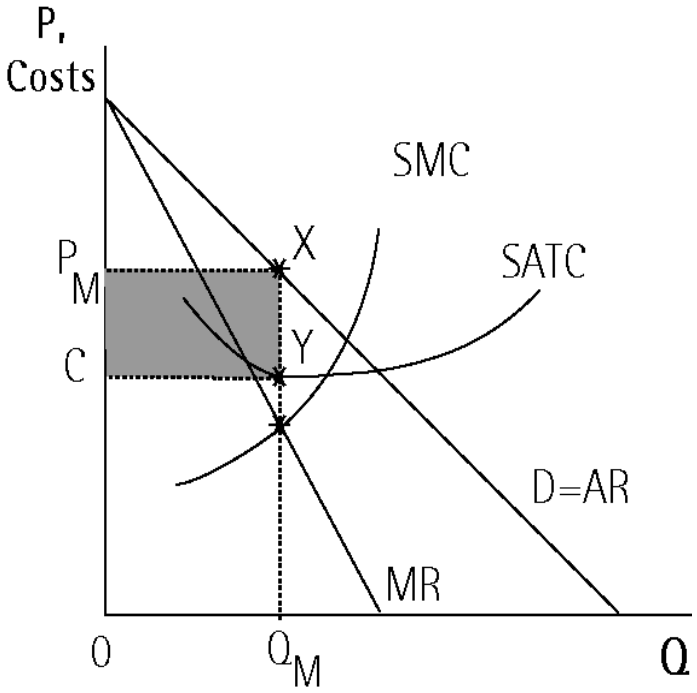
The Perfectly Discriminating Monopolist: - First degree price discrimination is the term used to describe the largest possible extent of market segmentation. When a producer is able to charge different prices for each unit, he captures all the consumer surplus. The consumer pays the maximum he would have been willing to pay for each unit, and as a result receives no surplus. The marginal revenue curve of a perfectly discriminating monopolist is exactly the same as is demand curve - Because he can discriminate perfectly, he can lower his price to sell additional output without having to cut price on the output originally sold, thus price and marginal revenue are one and the same - Perfect discriminators produce a higher level of output because they don't need to be concerned with the effect of a price cut on the revenue from output produced - There is generally a positive consumer surplus under non discriminating monopolists, but none under the perfect discriminator.

Second-Degree Price Discrimination -The second degree discriminator offers the same structure to every consumer, which means that they make no attempt to tailor charges to elasticity differences among buyers - The limited number of rate categories tends to limit the amount of consumer surplus that can be captured under second degree schemes.charges separate prices for different blocks or quantities of a commodity .Takes away a part of the consumer surplus.

Third-Degree Price Discrimination - Third-degree Price discrimination defines a producer selling his goods in two different markets at two different prices - The markets where the producer sells his goods should not be able to communicate with each other, otherwise all consumers will buy in the cheapest market - If the monopolist cannot sell his goods at different prices in the different markets, then he must see the markets as one big one. In market where demand is less elastic, price will be set higher and where demand is more elastic then price will be set lower. Example In market A elasticity of demand is 2 and in market B elasticity of demand is 0.2 then producer will charge high price in market B and lower price in Market A.

Short-run equilibrium

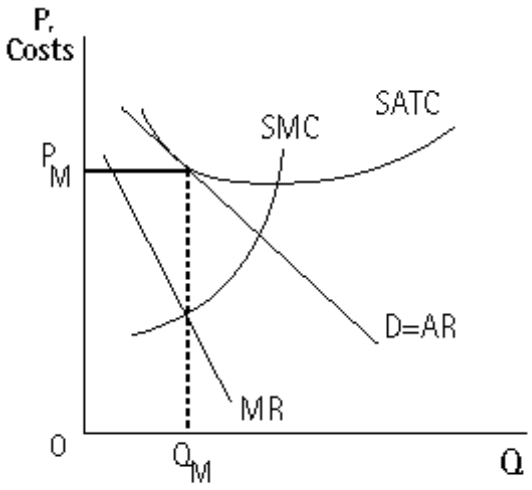
- 1st condition: marginal Revenue is met with marginal cost at output level Qm.
- 2nd condition: Price should be above short run average total cost to ensure more profit to the monopolist, (P>SATC)
- XY is supernormal profit per unit (difference between price and SATC)
- Total profit for the monopolist is area; PmXYC
- Supernormal profits can be sustained in the long-run for the monopolist. However, no guarantee that monopolist will earn supernormal profits always because it depends on the cost conditions in the short run and longrun.



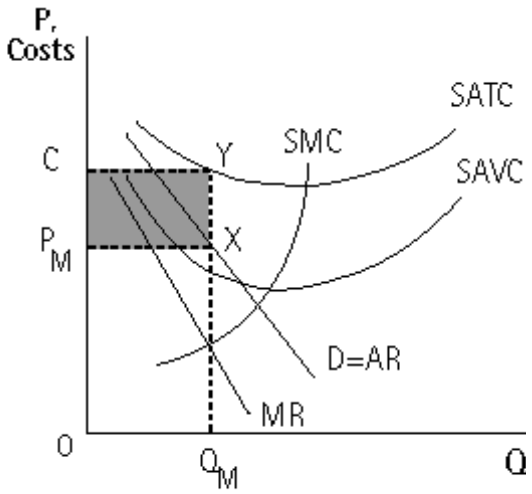
Monopolist earning a normal profit and sustaining a loss situations:

- However, no guarantee that monopolist will earn supernormal profits always. For a given level of demand, it depends on the structure of costs, Or maybe price is kept artificially low by a regulator.
- In figure (a) at Qm the average revenue curve is tangent to the average total cost curve and so a monopolist is earning only normal profit
- In figure (b) Monopolist will produce at a loss as price is greater than Short run average variable cost (SAVC) but lower than short run average totalcost (SATC). In short run the firm will continue to produce as it is able to cover variable cost but not fixed cost. The firm will shutdown if price falls below short run average variable cost (SAVC). the firm may remain in the market if the monopolist getting subsidy by the government as it happens in case of many public sector undertakings.

We expect monopolist to exit market if not making a normal profit in the long-run, unless the commodity of the monopolist is subsidised by the government.



(a) Monopolist earning a normal profit



(b) Monopolist sustaining a loss

Consumer Surplus : Consumer surplus is the amount a buyer is willing to pay for a product minus the amount the buyer actually pays. Consumer surplus is the area below the demand curve and above the market price.

A lower market price will increase consumer surplus (provided that the product is still supplied, of course).

A higher market price will reduce consumer surplus.

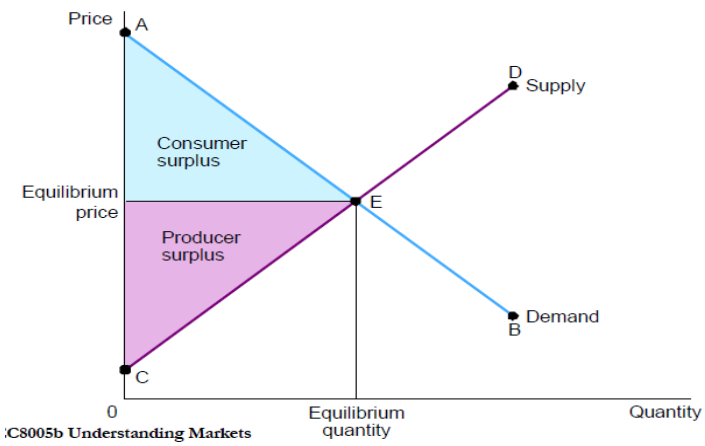
Producer Surplus :Producer surplus is the amount a seller is paid for a product minus the total variable cost of production.

A higher market price will increase producer surplus (provided that the product is still demanded, of course).

A lower market price will decrease producer surplus

Economic Welfare: Economic welfare is (generally) quantified as the sum of consumer surplus and producer surplus, i.e. equal weights are generally assumed. Price should be determined according to the demand and supply conditions in the market . Price should not be manipulated by the producer. AS economic welfare is ensure in perfectly competitive market but in monopoly it get reduced as consumer surplus is given less to the consumer by the monopolist.

Consumer Surplus and Producer Surplus: Market Equilibrium



Characteristics of an Oligopoly:

- **Firms have market power derived from barriers to entry**
- **However, a small number of firms compete with each other**
- **Each firm doesn't have to consider the actions of other**
- **Firmsbehavior is interdependent**
- **Assumes that firms pursue profit maximizing Strategies based on assumptions about rivals' behavior and the impact of this behaviour on the given firm's strategies.**

Kinked Demand Curve Model:

- **Assumes that a firm is faced with two demand curves, assuming that other firms will not match price increases but will match price decreases,**
- **If the firm considers raising the price above P1, its quantity demanded will depend upon the behavior of rival firms.In the below figure the demand curve is kinked at price P1. the demand curve is elastic above P1 it means if firm raises prices above P1 then it will loose its customers, its rivals will not follow his strategy of price rise. And the demand curve D1 at below is inelastic it means if the firm reduces prices then its rivals will also reduce prices and so it will not be able to attract more customers and finally firms revenue will get reduced, so it is better for the firm to continue selling at prices P1. There is Price rigidity in case of Kinked demand curve.**