CHAPTER – 4 : Price Determination in Different Markets

Unit - 3 Price Output Determination Under Different Market Forms

PERFECT COMPETITION

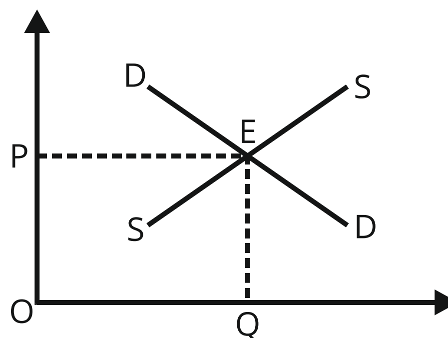
■ Features / Characteristics of Perfect Competition

1. Large Number of Buyers and Sellers	➢ Share of each seller and buyer in market is too small → single buyer & single seller is unable to influence existing price and quantity
2. Homogenous or Identical Producers	➢ Perfect Substitutes ➢ Perfectly elastic demand
3. Free Entry and Exit	➢ There are No legal or market related restrictions to entry and no special costs to exit an industry.
Above 3 Characteristics are conditions for Pure Competition	
4. Perfect knowledge of market condition	➢ Both Buyers and sellers have full information related to their decision to buy or sell
5. Very low transaction costs	➢ No advertisement required
6. All firms individually are price takers	➢ Firms accept price determined by market forces ➢ Price taking applies to consumers as well ➢ If any seller raises his price, he would lose his customers

■ Price Determination Under Perfect Competition

■ Equilibrium of the Industry-

- Competition among goods produced by different units.
- Total industry output/Supply = Total demand
- Market Equilibrium or market clearing : Maximizing its profits; no incentive to expand/contract production.



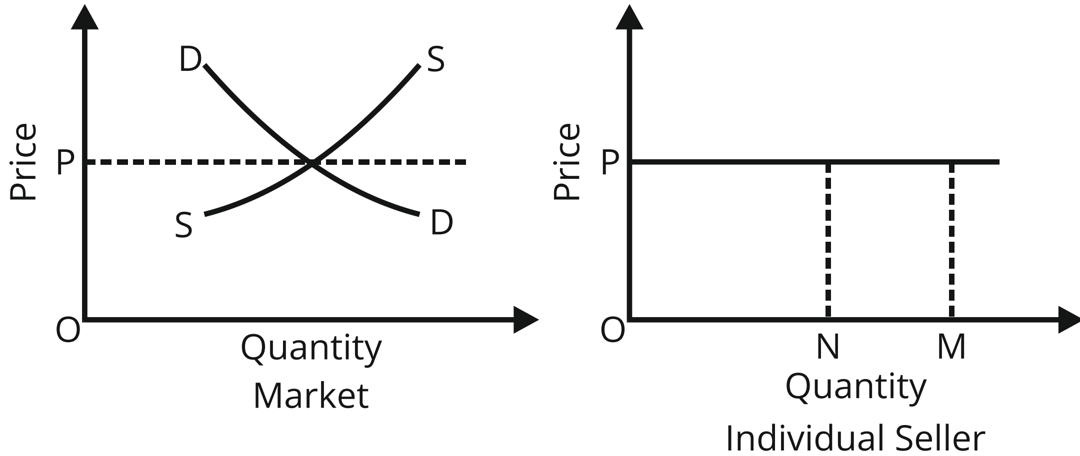
At point E , demand = supply – it is market equilibrium

OP: Equilibrium price

OQ: Equilibrium quantity

Equilibrium of the Firm-

- Equilibrium of a firm is when it maximizes its profit.
- Equilibrium output: Output which gives max. profit to the firm.
- Firm has no incentive to change output.
- Firms are price- takers, and produce homogenous products.
- Price is determined at the equality of demand and supply in market.



(Price line= demand curve/MR/AR)

- Demand curve of an individual forms is perfectly elastic.
- Competitive firms adjust output to market place to earn maximum profit.

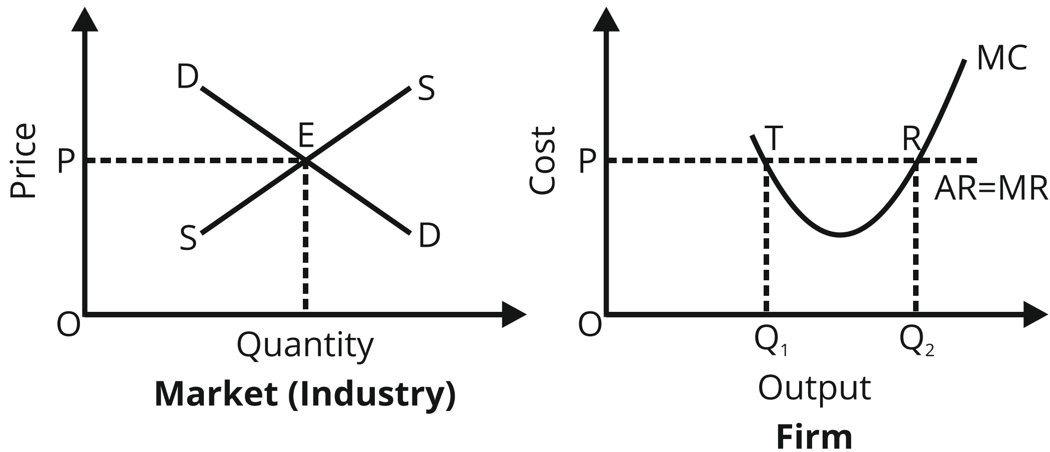
Conditions of Equilibrium of Firm

1. MC = MR
2. MC curve cuts MR from below- MC has a +ve slope

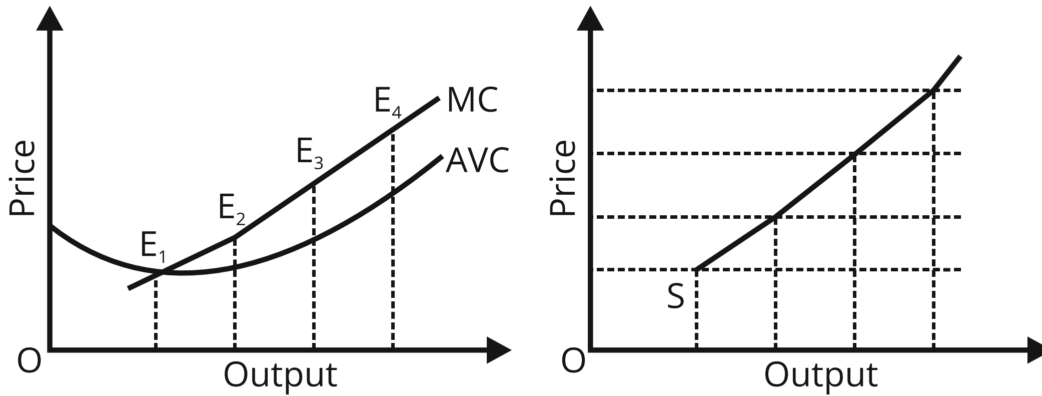
Short Run Profit Maximization

(By a competitive firm)

- In short run there is a fixed amt. of capital, thus firms choose level of variable inputs to max. profit.



- Short Run Supply curve of the Firm in Competitive Market-
  - MC curve of a firm in perfect competition, depicts the supply curve of the firm.
  - For price below AVC, the firm will supply 0 units, as it can't even meet its variable costs.
  - Prices above AVC the firm will equate price and MC.
  - Portion of MC curve above AVC curve is the supply curve of a firm under perfect competition.



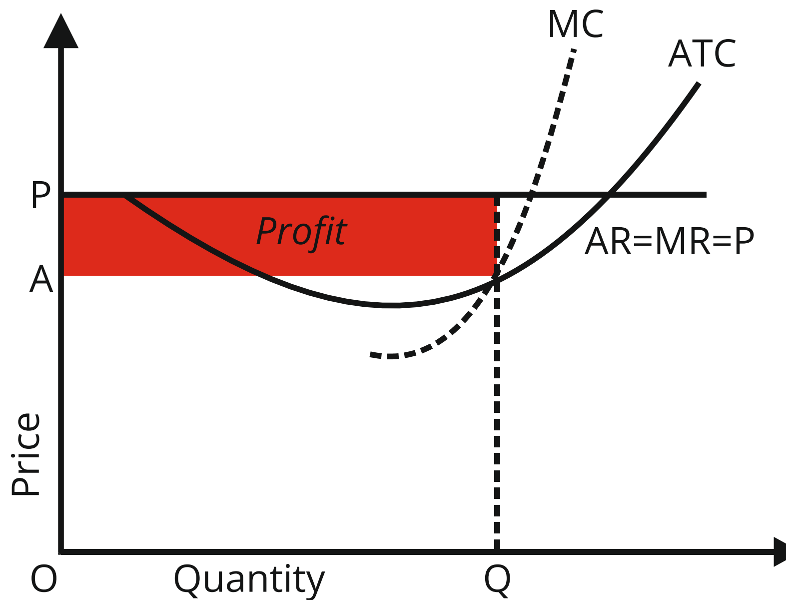
Marginal cost and supply curves for a price-taking firm

- Types of Profits-

Supernormal Profits- When 'AR' is more than the average total cost.

AR > ATC

Thus firms earn normal profit + additional profit.

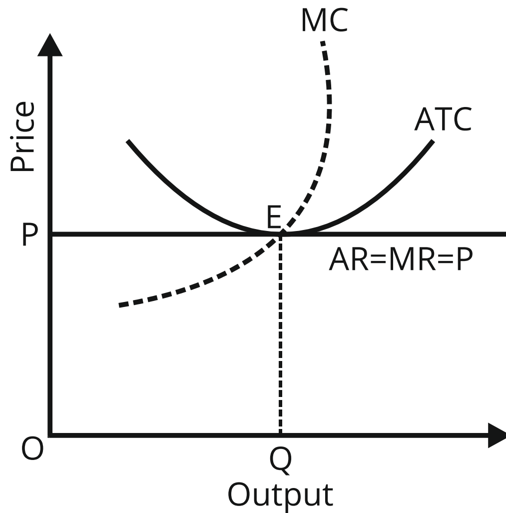


Supernormal Profits

■ Normal Profits-

When AR is just equal to average total costs.

AR = ATC

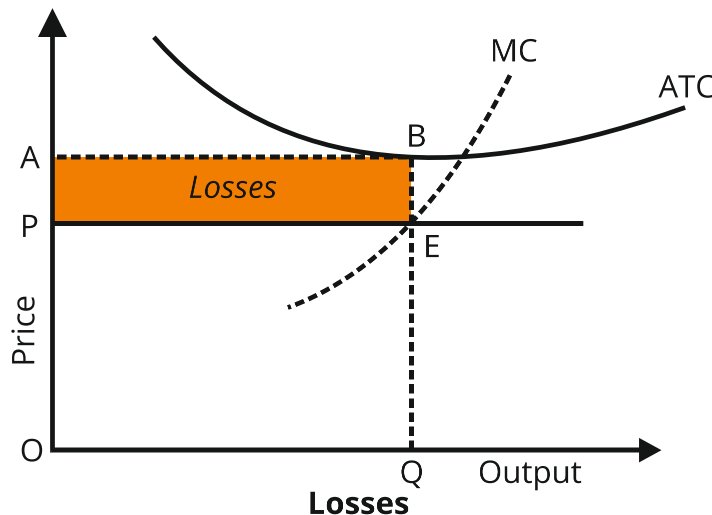


MR= MC at equilibrium
OQ= Equilibrium Output
OP= EQ; AT= ATC
TR- TC= 0 (economic profit)

Normal Profits

■ LOSSES-

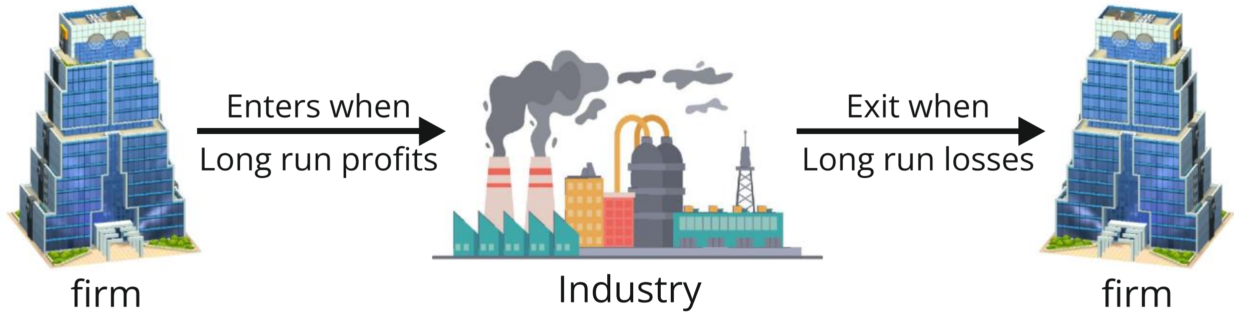
- A firm can make loses even at equilibrium.
- this situation is when firm minimizes losses.
- All points above the minimum point of AVC curve, a firm will produce level of output at which MR= MC.
- After meeting variable cost and part of fixed cost, the firm will continue production in short run.
- When it recovers a part of fixed cost, firms continue production as fixed cost incurred could be recovered then.
- If unable to meet average variable cost, firm should shut down production.



Losses

Long Run Equilibrium of Competitive Firm

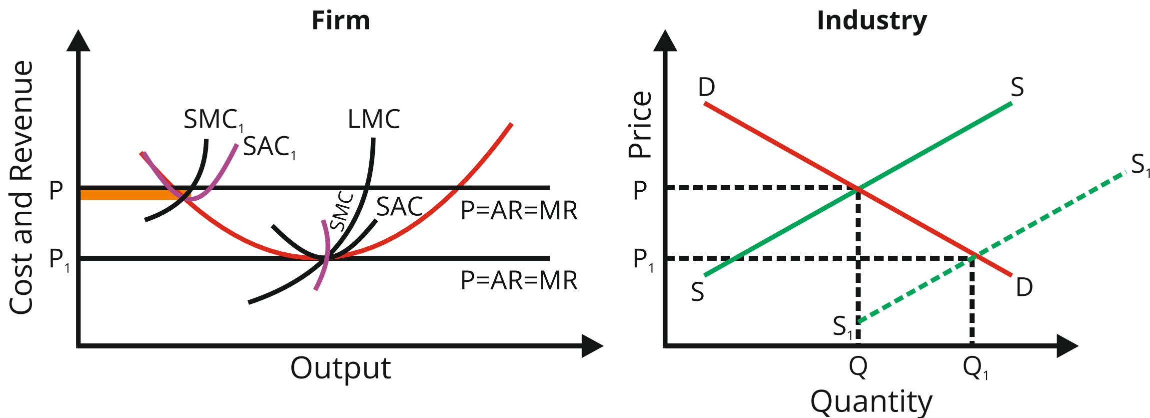
- Unlike in short run, firms can adjust the scale of operations or exit the industry.



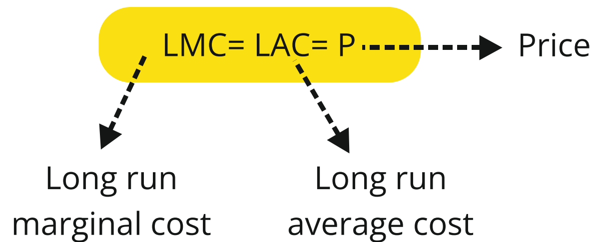
Long run equilibrium- When firm produces at min. point of their Low- run ATC curve tangent to the demand curve.

Supranormal profits- Attracts firms Leading to price reduction cost curve shifts right Reaches equilibrium.

Short run Losses- Firm exit market Price increases Potential cost reduction Remaining firms cover TC (including normal profit).



Conditions-

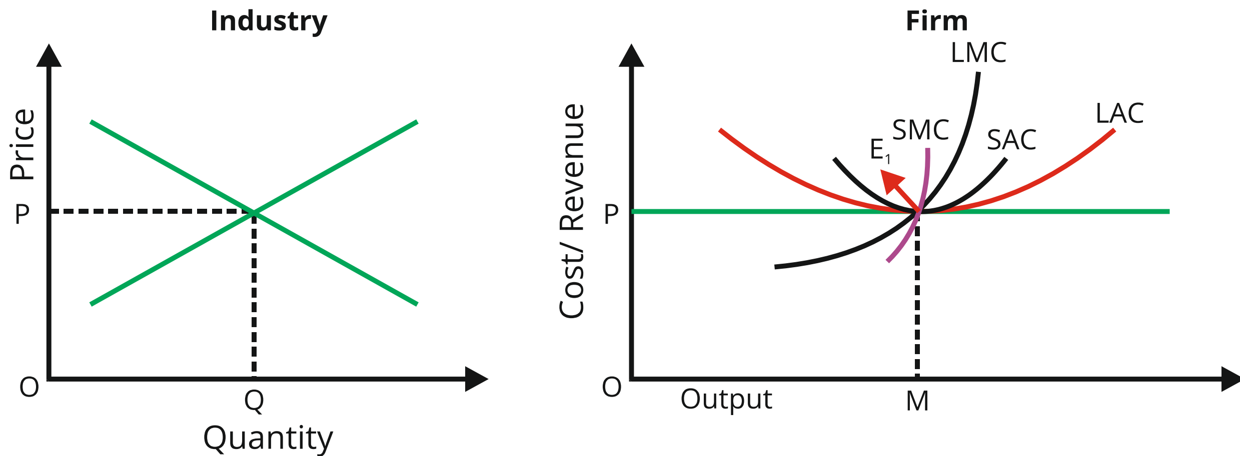


Long Run Equilibrium of Industry

Conditions-

- All firms in the industry are in equilibrium (maximizing profits).
- No firm has an incentive either to enter/ exit the industry (all firms earn 0 economic/normal profit).

- Price is such that the quantity demanded = quantity supplied.
- Long run AR = MR= LAC= LMC at E_1.
- Equilibrium output= OM
- Optimum output = Producing output at minimum cost.
- Market mechanism leads to proper allocation of resources.



- Optimality can be shown by–

1. Output produces at min. feasibility cost.
2. Consumer pay min. possible price (marginal cost) MC=AR (P= MC).
3. Plants used in full capacity, no wastage; AC= MC.
4. Firms earn only normal profits; AC= AR.
5. Firms maximize profits; MC= MR (normal profit)
6. No optimum no. of firms in industry.

LMR= LAR= P= LMC= LAC

- Monopoly

Alone to sell i.e there is a single seller of a product which has no close substitutes.

- Features-

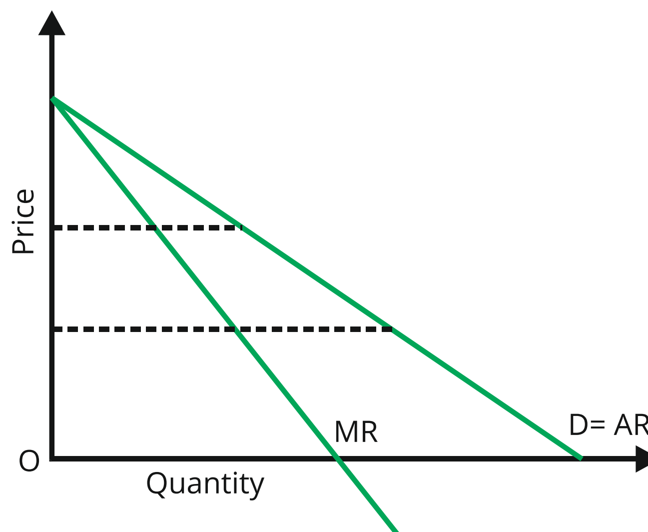
- Single Seller- firm and industry are same .
- Barriers to entry- Economic, legal, institutional etc. barriers exist
- No close substitute- The firm has full control over the market, Thus a price maker, not a price taker. In such a case, the cross elasticity of demand for the monopolist's product and any other product is zero or very small. The price elasticity of demand for monopolist's product is also less than one
- Market Power- Has the ability to change price above MC and earn a positive profit.

How Do Monopolies Arise ?

- Strategic control over scarce resources, technology inputs.
- Developing/acquiring control over unique products.
- Government grants exclusive rights (to produce/sell).
- Patents and copyrights (exclusivity).
- Business combinations/cartels (illegal in most countries) where former competitors cooperate on pricing or market share.
- Extremely large setup cost, to enter market.
- When single firm can produce industries output at low unit cost than 2/more firms could.
- Enormous goodwill enjoyed by the firm.
- Stringent legal and regulatory requirements effectively discourage entry of new firms without specifically prohibited.
- Firms use anti- competitive practices (predatory tactics) to discourage potential competition.

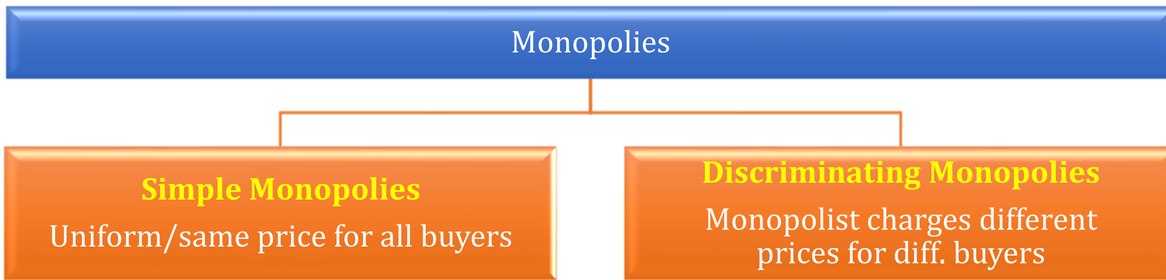
Monopolist's Revenue Curve

- In absence of govt., monopolies sets prices that yields highest possible profits.
- Assumption- Monopoly sells at a single price & supplies all buyers who wish to buy at that price.



Relation between AR and MR of monopoly firms-

1. AR and MR are downward sloping (negative slope).
2. Slope of MR curve is twice than that of AR.
3. AR cannot be 0, but MR can be 0 or negative.



- Profit Maximization in a Monopoliesed Market

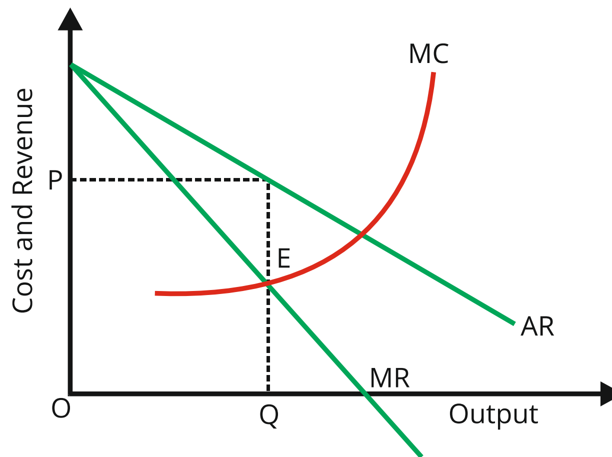
  How a monopoly firm decides its output and price in short run and long run.

- Short run equilibrium-

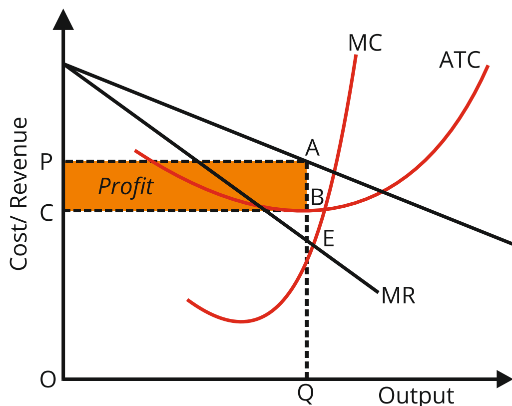
  Conditions: MR= MC and MC curve cuts MR curve from below

- Conditions for equilibrium-

  Twin conditions for equilibrium in monopoly market can be grammatically depicted as-



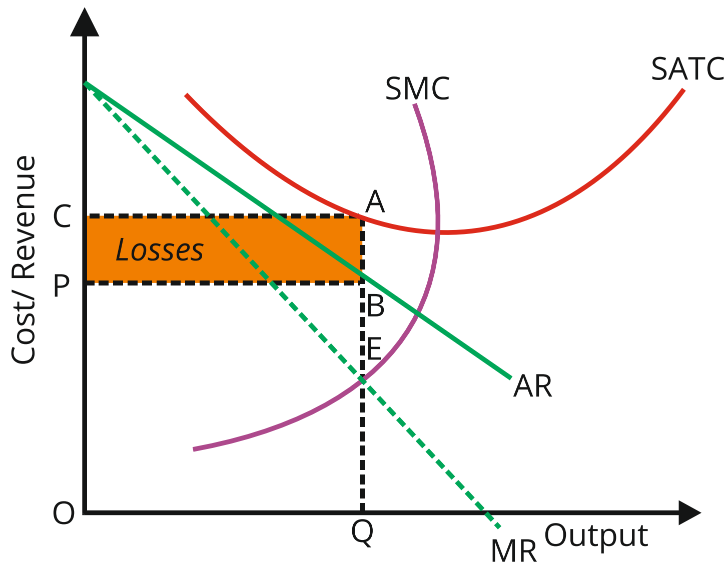
ATC curve (to identify profit/ losses in short run)–



- **MC cuts MR at E**
- **Equilibrium output= OQ**
- **At OQ, Price charge is OP**
- **At OQ, Avg. total cost= QA**
- **Cost per unit= BQ**
- **Economic Profit/ unit= AR- ATC= AB (AQ-BQ)**
- **Total Profit= ABCP**

Can Monopolist Incur Loss? YES

- In cases, when the demand for their product is very low, cost conditions are such that- ATC>AR.



- **Loss at extent of AB**
- **Total loss= ABPC**

Long Run Equilibrium

In long time period that allows adjustment of plant size/ to use existing plant at any level to maximize profit.

Price Discrimination

- It's a method of pricing adopted by a monopolist to earn abnormal profits.
- It changes prices for different units of same commodity.
- Eg- Doctors, Lawyers, consultants etc., charging different fees, prices
- Price discrimination cannot persist under perfect competition (seller has no influence).

Conditions for Price discrimination

(a) Full control over supply:

(b) Division of market into two or more sub-markets:

(c) Different price elasticity under different markets:

(d) No possibility to resale:

Thus,

1. Monopolist charges higher prices from relatively inelastic demand markets.
2. Highly responsive market is charged less.

$$\text{MR in market} = AR\left[\frac{e-1}{e}\right]$$

Objectives of price discrimination

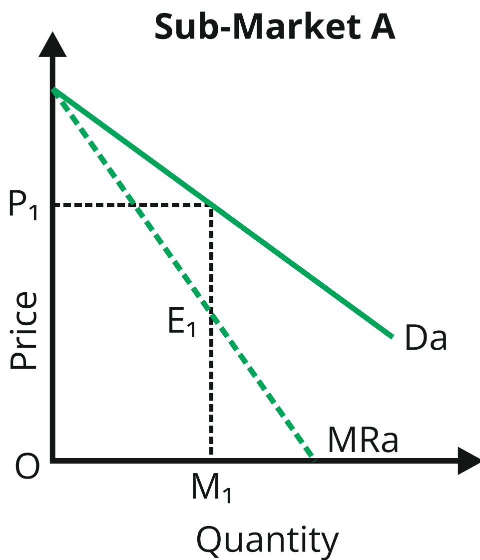
- Earn max. profit.
- Dispose off surplus stock.
- Enjoy economics of scale.
- Capture foreign markets.
- Secure equity through pricing.

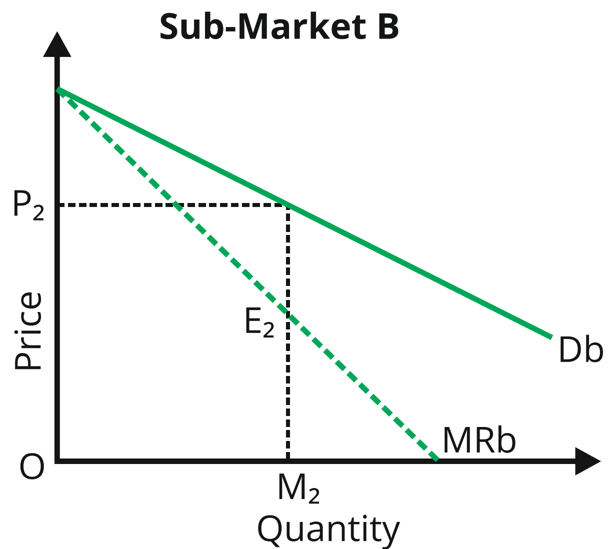
Equilibrium Under Price Determination:

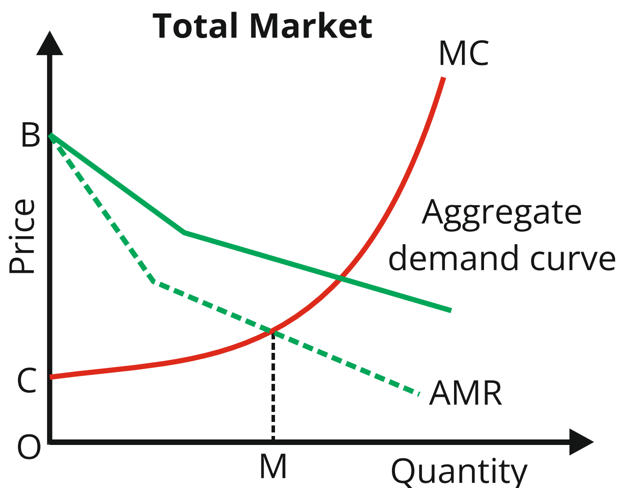
Monopolist has to make 3 decisions for equilibrium–

1. How much total output should he produce?
2. How the total output is distributed b/w 2 sub- markets?
3. What prices should be charged in the 2 markets?

- Discriminating monopolist compares the MR with the marginal cost of the output.
- Aggregate MR = Sum of MR curves.







Observations-

-OM_1: Sold in sub- Market A

-OM_2: Sold in sub- Market B

$$OM = OM_1 + OM_2$$

- Profits maximizes when they produce the level of output when MC intersects AMR
- MR in the 2 markets should be equal (He would distribute output in a way that the different sub-markets will give equal marginal revenue).
- Marginal cost (MC) should be equal for the sun-markets too.

Economic Effects of Monopoly

- Reduces aggregate economic welfare through loss of productive and allocative efficiency.
- Change higher price, produces lower output.
- Earn economic profits in long run, which is unjustifiable Prices exceed MC, therefore reduces consumer surplus.
- Restricts consumer sovereignty/opportunities.
- May use unjust means to restrict entry in market.
- Monopolist are powerful to influence political process, hence, obtain favorable legislation.
- Monopolies are unable to pay low prices to supplies.
- Loss of management efficiency in limited competition market.

Imperfect Competition- Monopolistic Competition

- It is a mixture of monopoly and perfect competition markets.
- This means features of both markets exist.
- Eg- Dettol, Lux, Dove all produce the same product, but differentiate them on basis other than price.

1. Dove- for young, smooth skin.
2. Lux- for beauty soap.
3. Dettol- for antiseptic use.

FEATURES-

- Large no. of sellers.
- Product differentiation (size, design, color; i.e. factors other than price).
- Freedom of entry and exit.
- Non-price competition (advertising, after sale service etc.)

Price Output Determination Under Monopolistic Competition- Equilibrium of a Firm

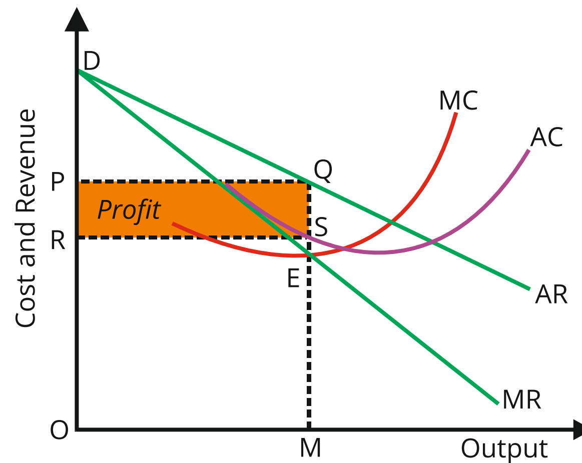


Fig- Supernormal Profits

- Each firm makes decisions about price and output.
- Each firm is a price maker.
- As such the curve is download sloping, for its demand.
- Less the differentiation of product, more elastic is the curve.

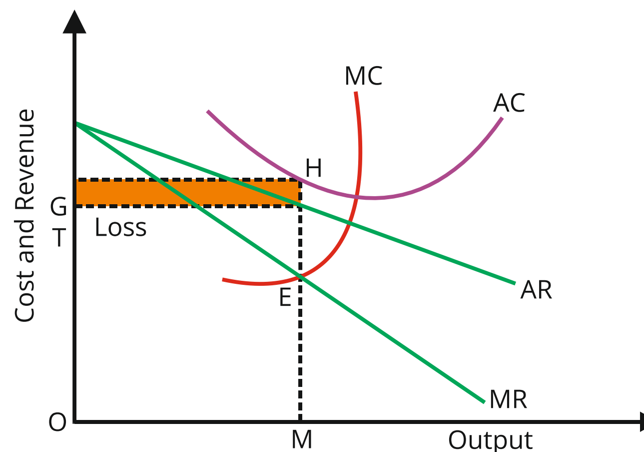
Conditions for Equilibrium of Individual Firm

- MC= MR
- MC must cut MR curve from below.

Short run-

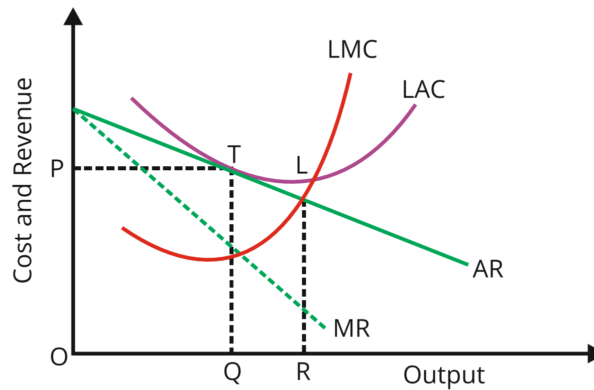
According to previous figure,

- MC cuts MR at E.
- Equilibrium price= OP.
- Equilibrium output= OM.
- Supernormal profits= PQSR.
- Per unit cost= SM



- Firm can incure losses in short run too.
- Per unit cost= HN
- HN> OT (or KN)
- Loss= KH (HN-KN)
- Total loss= GTKT

Long run-



- Average revenue curve touches average cost curve at T.
- Equilibrium quantity= Q
- Equilibrium price= P
- Supernormal profit= O (AR= AC)
- If company is facing loses, it will exit the market
- Monopolistically firm- at equilibrium- has excess capacity

Perfect Competition	Monopoly	Monopolistic Competition
Large No. of Buyers, firms in Industry.	Single seller (no diff. b/w firm & industry).	Large no. of firms, buyers in industry.
Homogenous products (perfect substitutes)	NO close substitutes.	Differentiated products are close substitutes.
Insignificant market share.	Command over whole market.	Each firm is small relative to market.
Monopoly- absent	High monopoly	Some monopoly
Free entry, exit	Strong barriers to entry	Free entry, exit
Price taker	Price maker	Has control over price
Price lesser than market forms. (equal to marginal cost)	High equilibrium price. (higher than marginal cost)	Price higher than competition. (higher than marginal cost)
Demand curve-elastic	Downward sloping, inelastic	Downward sloping, elastic
MR, AR represented by same curve.	MR, AR start at same pt.; MR is 2x steep than AR.	MR, AR start at same pt.; MR is 2x steep than AR.
TR- Straight line, +vely sloping, through origin.	TR inverted U- shaped.	TR inverted U-shaped.
NO price M discrimination.	Price discrimination can be done.	Depends on extent of monopoly power.
No supernormal profits in long run.	Supernormal profits in short and long run.	No supernormal profits in long run.
No selling cost.	Low selling cost.	Selling cost vital to persuade buyers.
Decides output, on given price.	Decides both price and output.	Decides both price and output.
Product produced at min. avg cost.	Produced at declining portion of avg. cost curve.	Produced at declining portion of avg. cost curve.
Equilibrium quantity is highest (produced at least cost).	Equilibrium quantity is less than other market forms.	Equilibrium quantity less than optimal (excess capacity)
No customer exploitation.	High prices can lead to customer exploitation.	Customers influenced through price and non-price competition.
Efficient resource allocation (no wastage)	Inefficient allocation (wastage happens)	Inefficient allocation (huge wastage)

Oligopoly

- Oligopoly → 'competition among few sellers'
- Examples - Airlines, telephone connection, petroleum refining, power generation, cold drinks, automobile, & Internet service providers etc.

Characteristics of Oligopoly Market-

- Strategic Independence- Firms have independent in- decision making. Few firms in market have intense competition.
- Importance of advertising and selling cost- Firms employ various aggressive and defensive marketing weapons to gain greater share.
- Group Behavior- Theory of oligopoly is a theory of group behavior, not of mass or individual behavior.

Pure & Impure oligopoly	Pure oligopoly or perfect oligopoly are the firms under oligopoly selling homogeneous product e.g. petroleum, steel, and aluminum industry.
	Differentiated or imperfect oligopoly occurs when goods sold is based on product differentiation, e.g., Talcum Powder.
Open & closed oligopoly	Open oligopoly → new firms can enter market & compete with existing firms.
	In closed oligopoly entry is restricted.
Collusive & competitive oligopoly	When few firms of oligopoly market come to common understanding → deciding price or output or both together, it is collusive oligopoly.
	When there is absence of such an understanding among the firms and they compete with each other, it is called competitive oligopoly.
Partial & Full	Oligopoly is partial when industry is dominated by one large firm → looked upon as leader of group. Dominating firm will be price leader
	Full oligopoly → Absence of price leadership.
Syndicated & Organized oligopoly	Syndicated oligopoly → Firms sell their products through a centralized syndicate.
	Organized oligopoly → Firms organize themselves into a central association for fixing prices, output, quotas, etc.

Oligopoly Models

(1) Ignore firms' inter dependence

(2) (a) Cournot model → firm's control variable is output. They do not collude.

(b) Stackelberg's model leader decides output and rest of firms are followers

(c) Bertrand model, price is control variable

(3) Enter into agreement and try to pursue their common interests. Eg- OPEC

Price Leadership

- Cartels formed in industries with smaller- sized firms, aiming to coordinate activities and gain market power.
- Cartels relay on agreement among produced, leading to monopoly profits, especially with inelastic demand.
- Dominant firms surrounded by small firms.

Kinked Demand Curve/ Sweetzy's Model

It provides an explanation for the observed price rigidity in oligopolistic industries. Acc. to it-

- Kinked demand curve- Demand curve has a 'kink' at prevailing price level. Above it the demand is elastic, while below it is relatively elastic.
- Assumed competitively reaction pattern- Oligopolist believe lowering prices, competitors will follow suit, but on the contrary increasing them, this won't happen. This mentality is crucial in setting prices.
- Price decrease- Change in prices, will lead to competitors change in price, which will make the sales of firm relatively unchanged, which makes lower segment of curve inelastic.
- Price Increase- When an oligopolist increases the price, competitors don't follow the suit and hence leads to loss. Thus, competitors are not motivated, So, upper portion of demand curve is relatively elastic.
- Desire of Price stability- Oligopolists desire price stability as change in price will not make little change in the gains. Thus they are not motivated to change
- Formation of kink at prevailing prices- Due to assumed competitive patterns, such oligopolist adheres/stick to prevailing price.

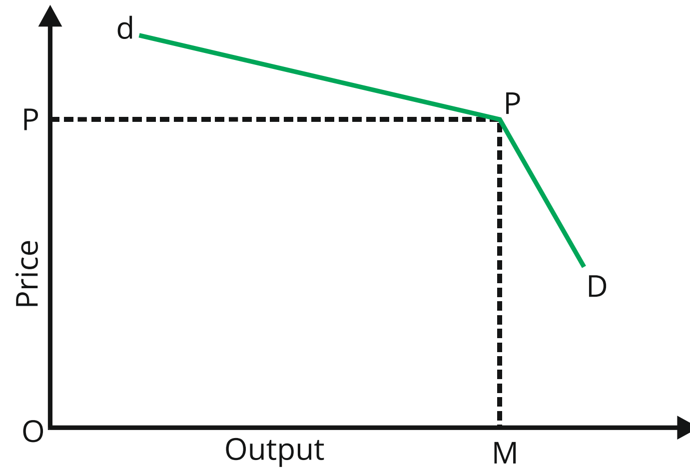


Fig- Kinked demand curve under oligopoly

OTHER MARKETS

- Duopoly- Sub- set of oligopoly; only 2 firms exist in the market.
- Monopsony- It is characterized by a single buyer, usually exist in factor market.
- Oligopsony- Small no. of large buyers, mostly relevant to factor markets.
- Bilateral monopoly- Single buyer and single seller- combination of monopoly and monopsony.