

Market Structures and Pricing

- a. Perfect competition
- b. Monopoly
- c. Monopolistic Competition
- d. Oligopoly / Duopoly

Meaning of Perfect Competition

- Perfect competition is that market structure in which there are a large number of sellers and buyers of homogeneous product and products are perfect substituted of each other.
- It is a market structure characterized by a complete absence of rivalry among individual firms.
- A Industry is a group of different firms producing the same product.
- A single firm cannot affect the price by its individual efforts.
- A firm is a price taker.

Characteristics of perfect competition

1. Large Number of buyers and sellers: their number is so large that no of buyers or sellers is in position to influence on market demand or supply.
2. Product Homogeneity with perfect substitute: homogeneity refers same physical characteristic of the commodity (such as color, size, trademark, taste etc.) and environmental factors(such as location of sellers, sale strategy etc), Technically same product,
3. Free Entry and Exit of Firm:
4. No Government intervention :
5. Profit maximization Goal of firm:
6. Perfect Knowledge/Information:
7. Perfect Mobility of factors of production:
8. Horizontal sloping demand curve:
9. Absence of Transport Cost:

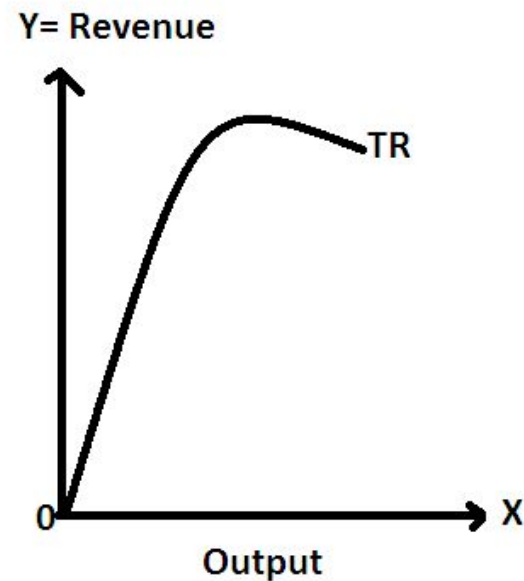
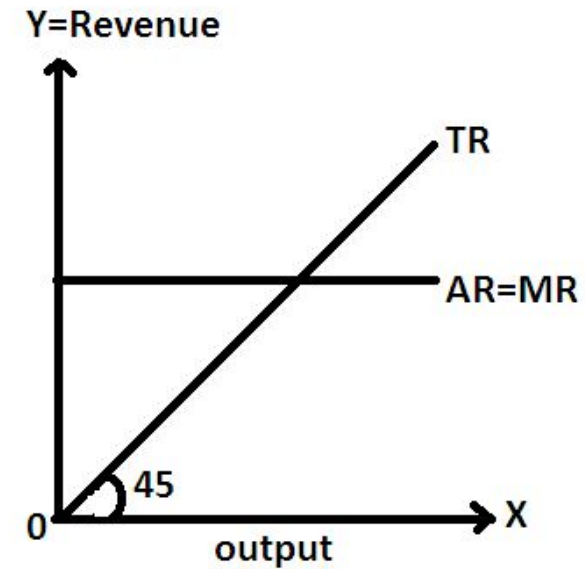
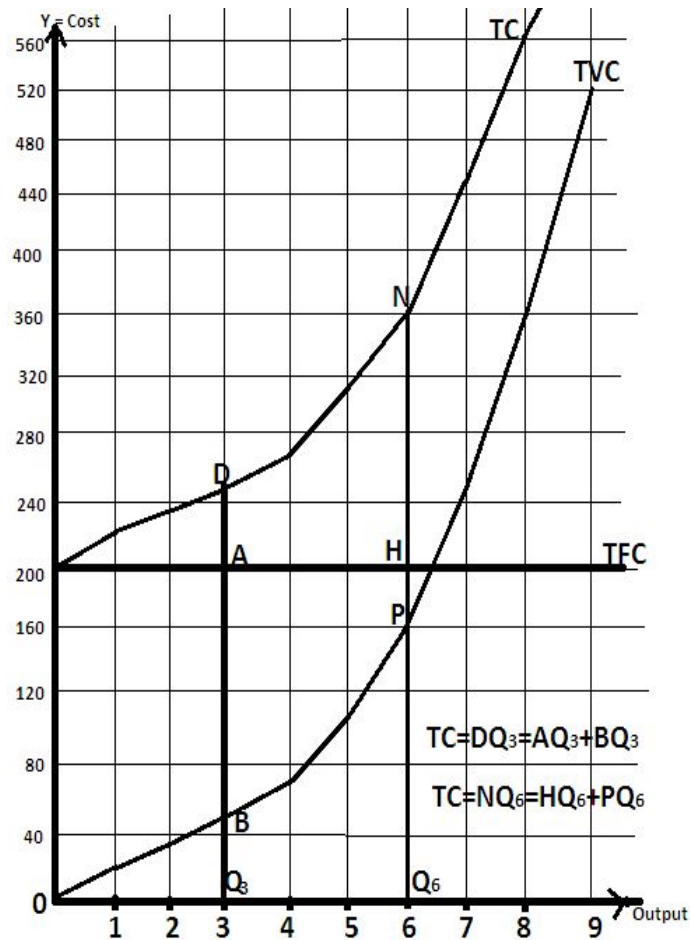
Short Run Equilibrium of A firm

- A firm is said to be in equilibrium if it **maximizes profit** under given price and cost structure.
- Profit is defined as the total difference between TR and TC
- $\text{Profit}() = \text{TR} - \text{TC}$
- To explaining the firm's equilibrium, there are two approaches:
 1. TR-TC Approach
 2. MR-MC approach

1. TR-TC Approach

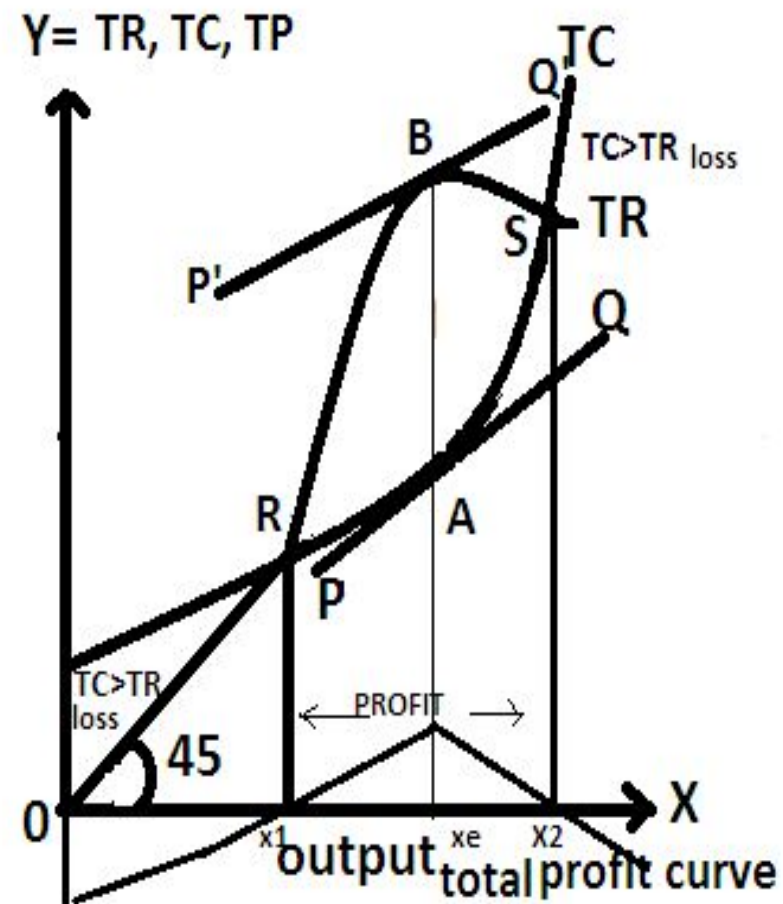
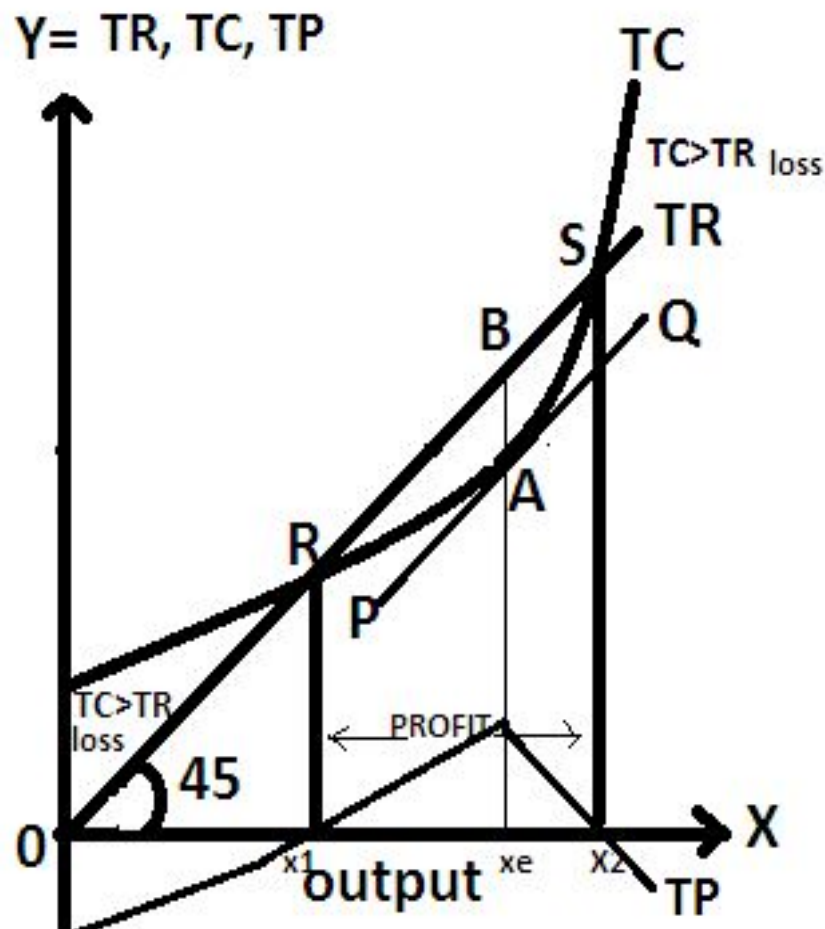
- Under TR-TC approach, the firm is said to be in equilibrium at the particular level of output where **the gap between TR and TC is maximum.**

TC TR Curve shape



A firm's Equilibrium: TR-TC approach

Perfect competitive market, Monopoly market



Explanation of Figures

- In figure of perfect competitive market firm, PQ line is drawn tangent to at point A and parallel to TR line.
- In figure of monopoly market firm, PQ line is drawn tangent to at point A and , P'Q' line is drawn tangent to at point B and parallel to each other.
- AB is Gap between TR and TC, Which is maximum
As TP(total profit) curve is maximum at this gap.

Explanation of Figures TR-TC approach

- In figure Firm should bear loss below X_1 level and above X_2 level of output as $TC > TR$.
- Positive Profit is seen between X_1 and X_2 level of output.
- Total profit is maximum at X_e level of output where Gap between TR and TC is maximum.
- So a firm maximize its profit by producing X_e level of output either in perfect competition market structure or monopoly market.

2. MR-MC Approach: A firm Equilibrium

- Under this Approach the firm's short run equilibrium is defined at a point where the following two condition are satisfied simultaneously:
 1. First order condition: $MC=MR$
 2. Second order Condition: Slope of $MC >$ Slope of MR (MC cuts MR from down to upwards)

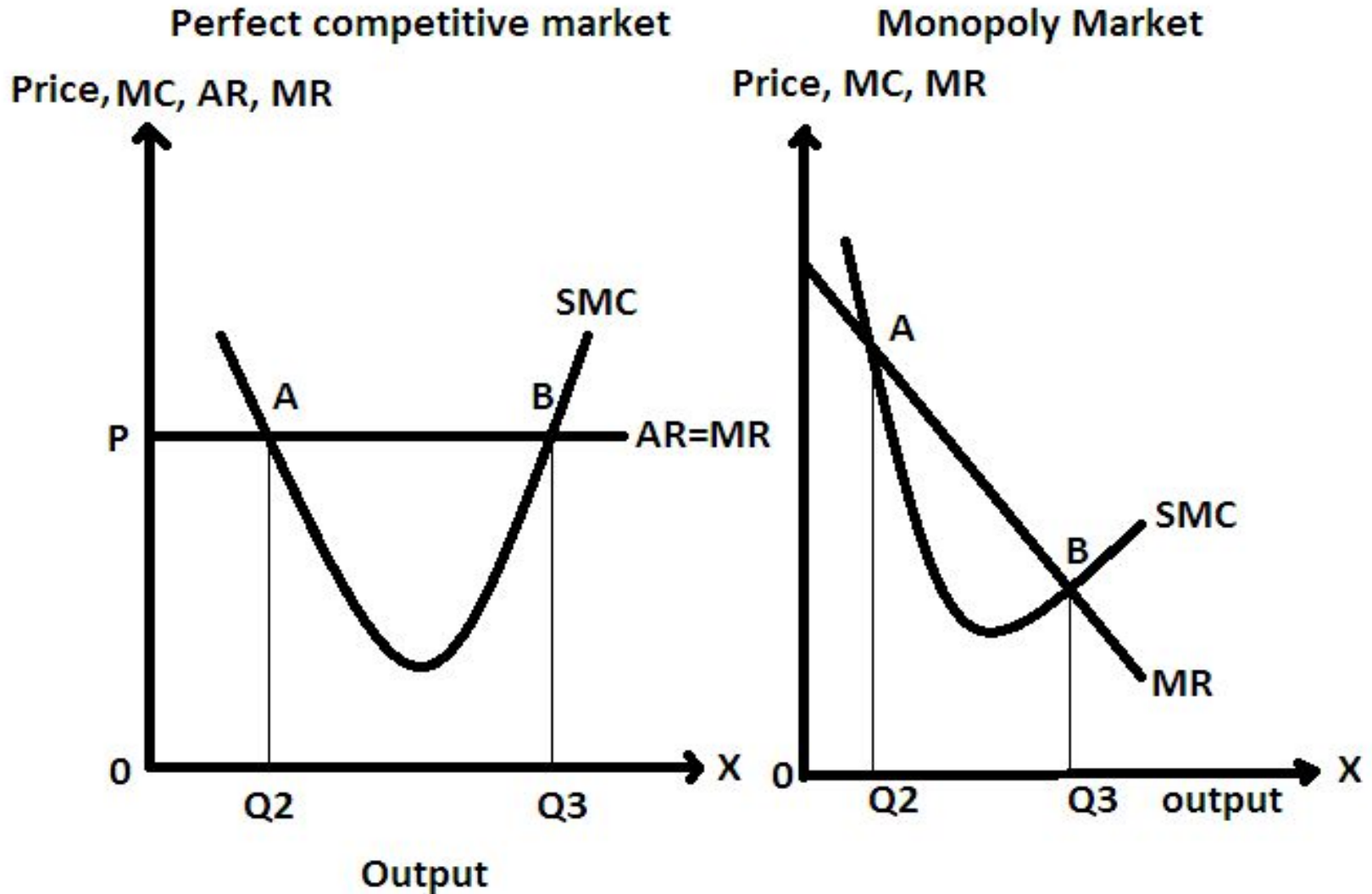
2.MR-MC approach

- Under the perfect competition, TR increases at constant rate as output increases.
- Hence, MR remains constant and then slope of MR is parallel to X axis.
- But under imperfect market structure, TR increases at diminishing rate as output increases.
- Hence, MR decreases continuously as output increases. Slope of MR is downward to the right.

2. MR-MC approach:

- Due to the operation of the Law of Variable proportion in the short run, MC falls initially, reaches minimum and rise later.
- Hence MC curve is U-shaped.

MR- MC approach



Explanation of Figure

1. Output level between Q_2 and Q_3 , $MR > MC$ which reflects profitable environment, so firm expands level of output.(total profit has not been maximized).
2. Output level below Q_2 and above Q_3 , $MR < MC$, which reflects loss environment. If firm is below Q_2 , firm expands its product to increase profit and if firm is above Q_3 level of output firm contracts its product to increase firm's profit.

Explanation of figure

3. At output level Q_2 , $MC=MR$ and MC cuts MR from above. Hence firm is not at its equilibrium. If firm stop its product at Q_2 level, it will lose the opportunity of producing additional Q_2Q_6 level of output without any loss.
4. At output level Q_6 , $MC=MR$ and Slope of $MC > \text{Slope of } MR$, So firm is in equilibrium and satisfies profit maximizing conditions.

Let Revenue function (TR)= $100Q-4Q^2$ and Cost function (TC)= $50-6Q^2$.

- Compute TR, TC and profit at output level range 0 to 10 units and determine profit maximizing output and maximum profit.
- Compute MR and MC function and determine profit maximizing output at output level up to 10 units.

OUTPUT	TR= $100Q-4Q^2$	TC= $50+6Q^2$	Profit=TR-TC
0	0	$50+6 \times 0 = 50$	-50
1	$100 \times 1 - 4 \times 1 = 96$	$50+6 \times 1 \times 1 = 56$	40
2	$100 \times 2 - 4 \times 2 \times 2 = 184$	$50+6 \times 2 \times 2 = 74$	110
3	$100 \times 3 - 4 \times 3 \times 3 = 264$	$50+6 \times 3 \times 3 = 104$	160
4	$100 \times 4 - 4 \times 4 \times 4 = 336$	$50+6 \times 4 \times 4 = 146$	190
5	$100 \times 5 - 4 \times 5 \times 5 = 400$	$50+6 \times 5 \times 5 = 200$	200 profit maximized
6	$100 \times 6 - 4 \times 6 \times 6 = 456$	$50+6 \times 6 \times 6 = 266$	190
7	$100 \times 7 - 4 \times 7 \times 7 = 504$	$50+6 \times 7 \times 7 = 344$	160
8	$100 \times 8 - 4 \times 8 \times 8 = 544$	$50+6 \times 8 \times 8 = 434$	110
9	$100 \times 9 - 4 \times 9 \times 9 = 576$	$50+6 \times 9 \times 9 = 536$	40
10	$100 \times 10 - 4 \times 10 \times 10 = 600$	$50+6 \times 10 \times 10 = 650$	-50

Based on below Schedule,

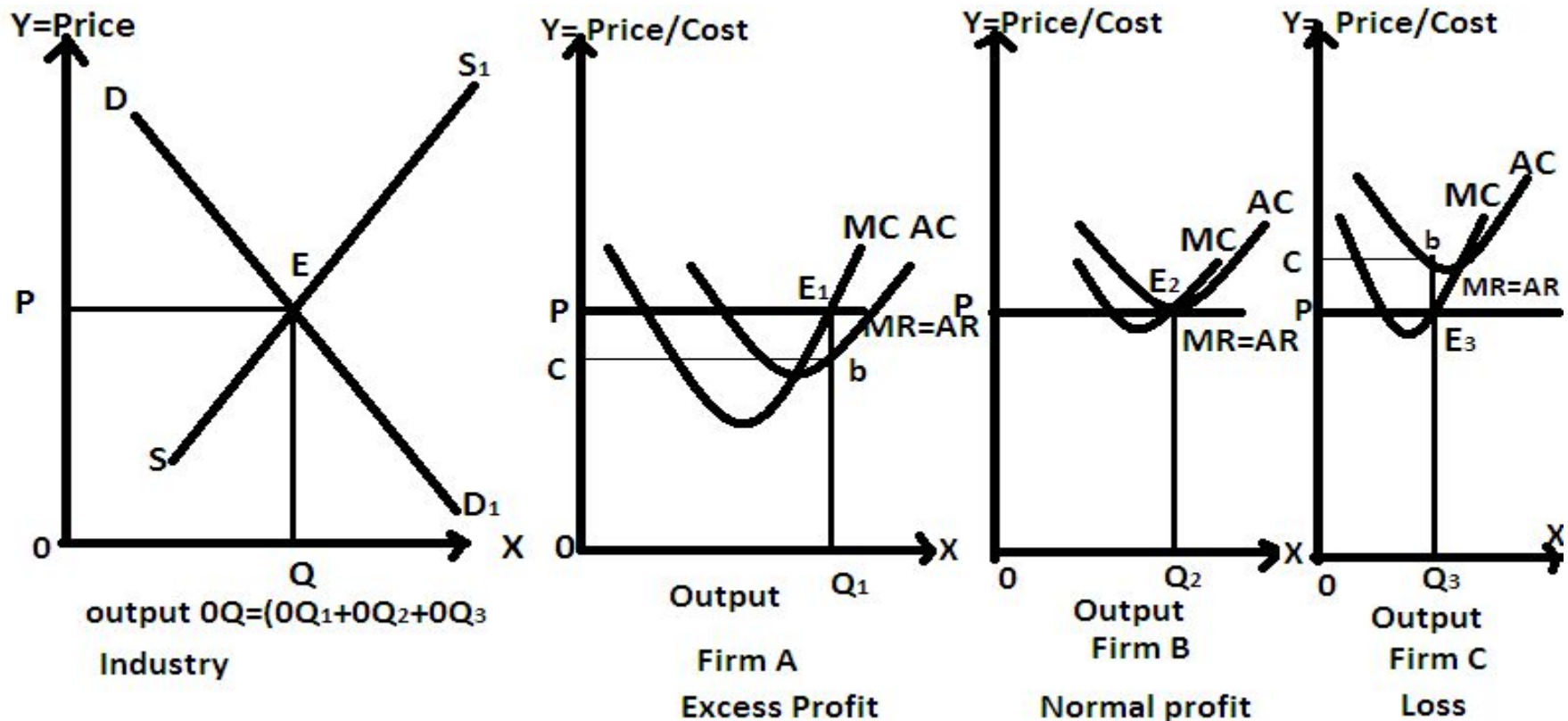
1. At any level of output less than 5 units, $MR > MC$, hence it is profitable to expand production.
2. At any level of output more than 5 units, $MR < MC$, hence it is reasonable to contract production.
3. At output level 5 units, $MR = MC$ and after this output rate in change in $MC >$ rate of change in MR , hence profit maximizing output = 5 units

Output	$MR = 100 - 8Q$	$MC = 12Q$	Marginal profit = $MR - MC$
1	$100 - 8 \times 1 = 92$	$12 \times 1 = 12$	$92 - 12 = 80$
2	$100 - 8 \times 2 = 84$	$12 \times 2 = 24$	$84 - 24 = 60$
3	$100 - 8 \times 3 = 76$	$12 \times 3 = 36$	$76 - 36 = 40$
4	$100 - 8 \times 4 = 68$	$12 \times 4 = 48$	$68 - 48 = 20$
5	$100 - 8 \times 5 = 60$	$12 \times 5 = 60$	$60 - 60 = 0$
6	$100 - 8 \times 6 = 52$	$12 \times 6 = 72$	$52 - 72 = -20$
7	$100 - 8 \times 7 = 44$	$12 \times 7 = 84$	$44 - 84 = -40$
8	$100 - 8 \times 8 = 36$	$12 \times 8 = 96$	$36 - 96 = -60$
9	$100 - 8 \times 9 = 28$	$12 \times 9 = 108$	$28 - 108 = -80$
10	$100 - 8 \times 10 = 20$	$12 \times 10 = 120$	$20 - 120 = -100$

Equilibrium Price and output determination under perfect competition

- Price determination:
- When industry reaches a state of equilibrium, the price of the product is determined.
- Two conditions for the industry equilibrium are (a) Market demand equals to market supply and (b) all firms are in equilibrium.
- Output determination:
- As firm is a price taker, firm determine the level of Output by satisfying two condition: (a) $MC=MR$ and (b) Slope of $MC >$ Slope of MR .

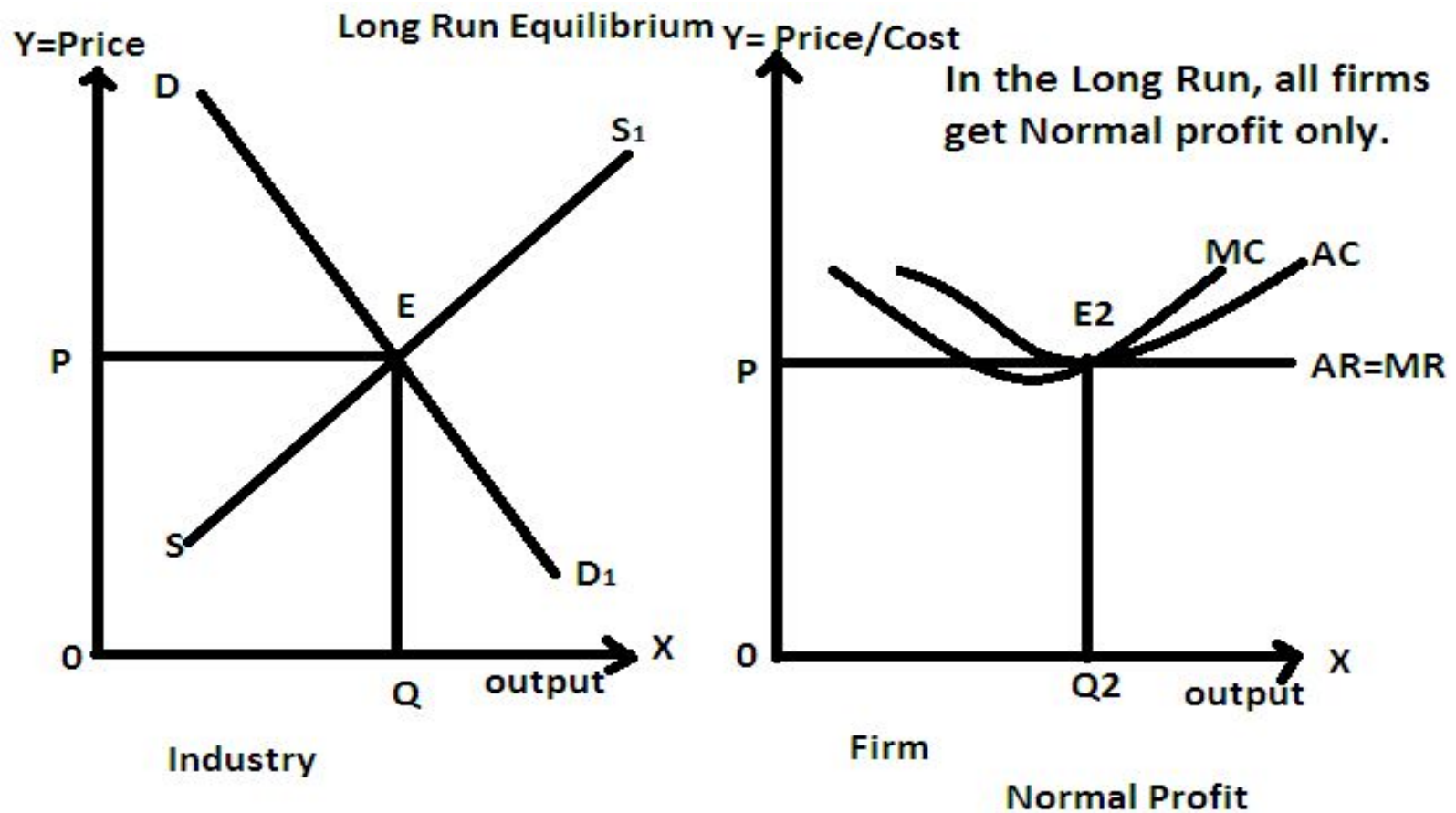
Price and output determination under perfect competition in short run



MC-MR approach Explanation of figure

- Under MR-MC approach, the firm's short-run equilibrium is defined at a point where the following two conditions are satisfied simultaneously:
- First order condition: $MC=MR$
- Second order condition: Slope of $MC >$ Slope of MR
- In the short run equilibrium of perfectly competitive firm may earn excess profit, just normal profit or it may run in loss. This depends on the cost structure of the firm.
- In figure: the firm which operates short-run under perfect competition is in equilibrium at e_1, e_2 and e_3 respectively where $MC=MR$ and slope of $MC >$ slope of MR as well as OP is the price which is determined by the market and OQ is the equilibrium quantity output. Since it is the case of short-run equilibrium of the firm there can be three different cases as shown by figure of Firm A, Figure of Firm B and Figure of Firm C. Firm A is the case of excess profit where price is greater than Short-run AC at equilibrium. Similarly firm B is the case of Normal profit, where price is equal to SAC and figure of Firm C shows the price is less than SAC that means the firm bears loss at short-run.
- Therefore, in the short-run equilibrium of a firm, there can be excess/abnormal profit, normal profit or loss situation.

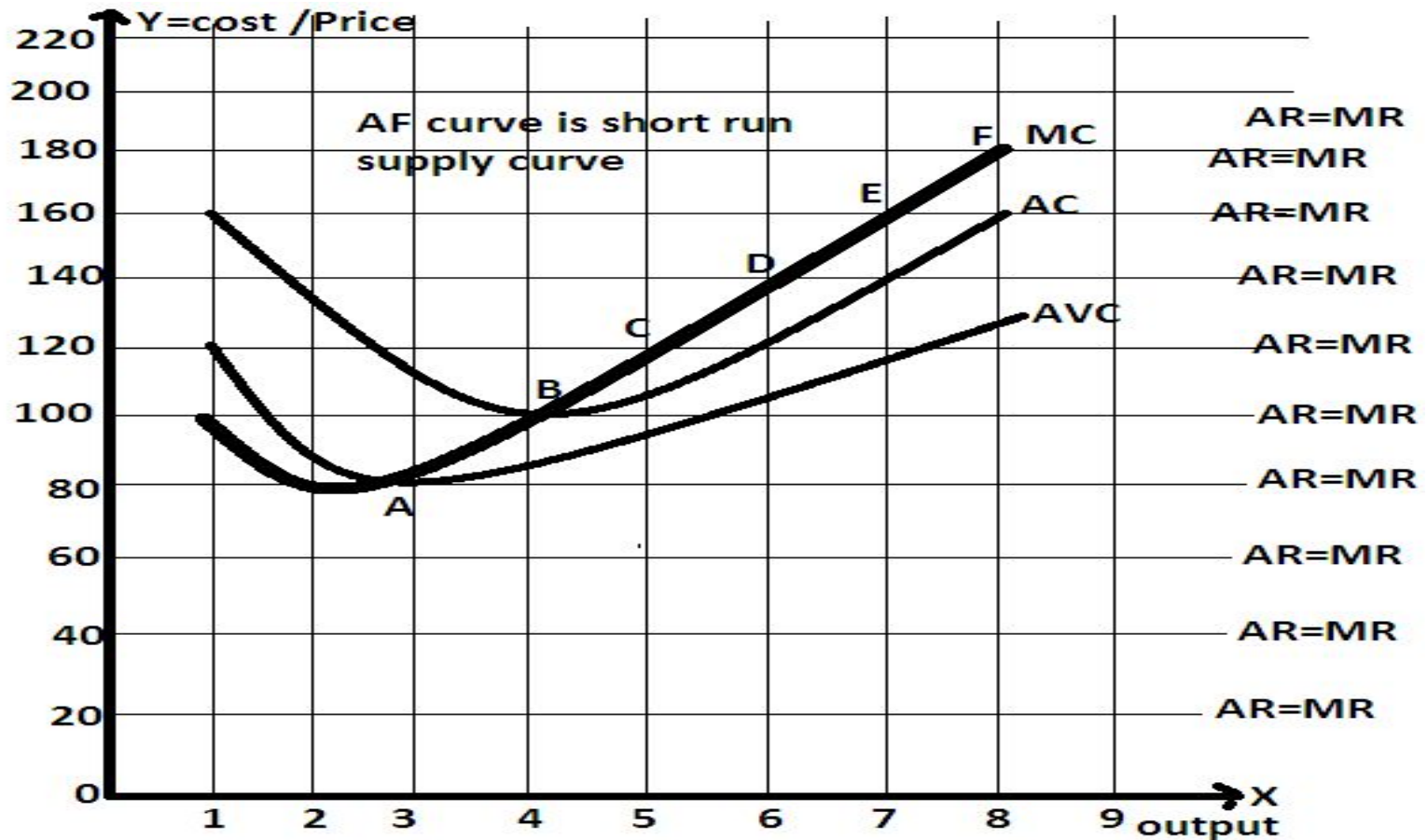
Long run Equilibrium or Price and output determination under Perfect competition in Long-Run



MC-MR approach, Explanation of figure of long run equilibrium

- In the long run, the firm has time to adjust its plants. So as to produce at minimum point of LAC. The firm is in the long run is in equilibrium when it earns just normal profit.
- This is because when there is excess profit, the firm itself expands its size and new firms will be attracted to join the industry. When new firms enter and existing firms expand, market supply will increase. Given the market demand, price will decrease and so the profit. This entry of the new firms will continue unless all the excess profit is wipeout.
- Similarly, the firms bearing loss, they can't survive in the long run so they quit the industry, which reduces the market supply and given demand, price will increase. The exit of the firm will continue when the price will rise at the level so that all the existing firms have just normal profit.

Derivation of Short run Supply curve under perfectly competitive market

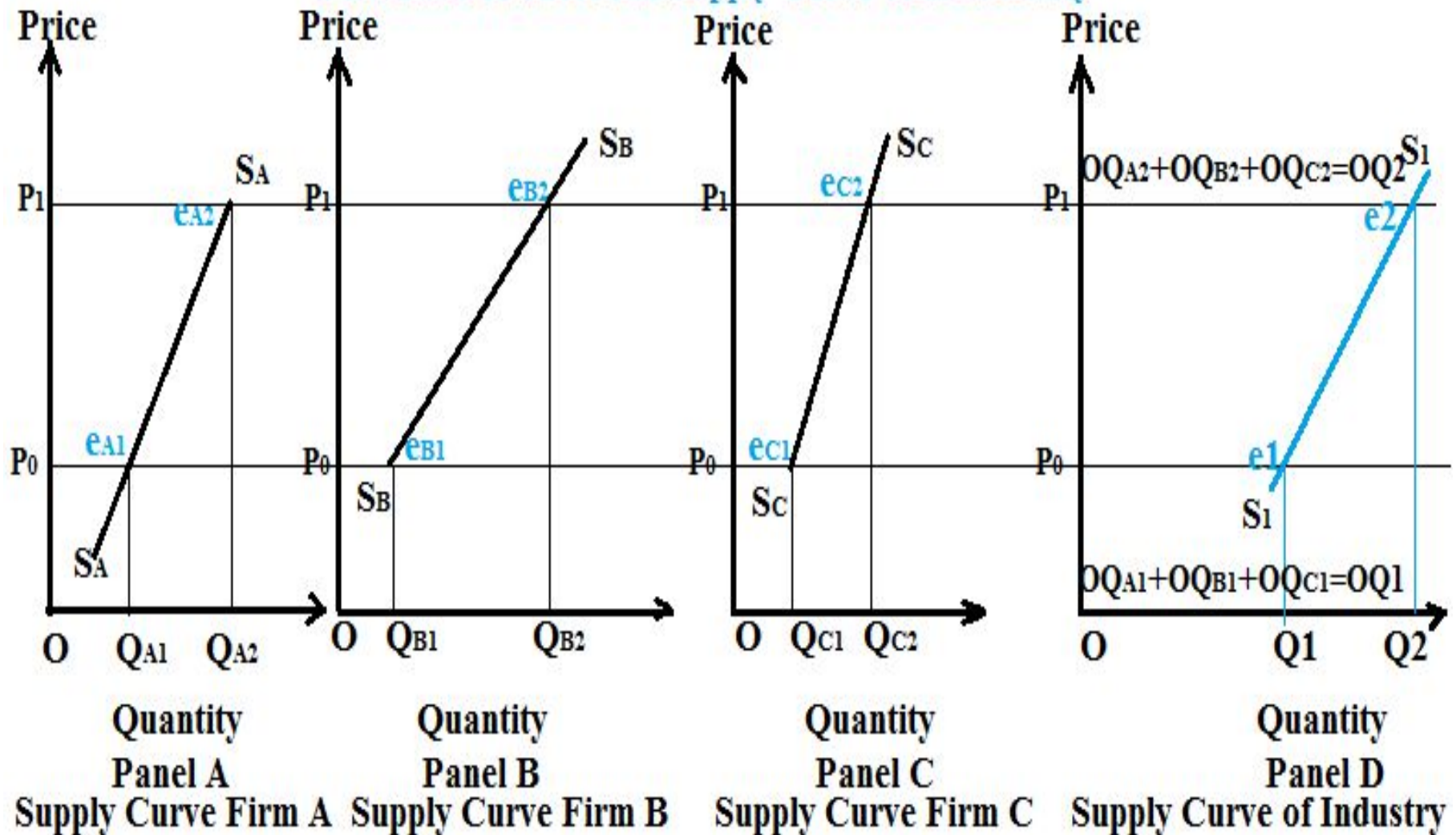


Explanation of the figure

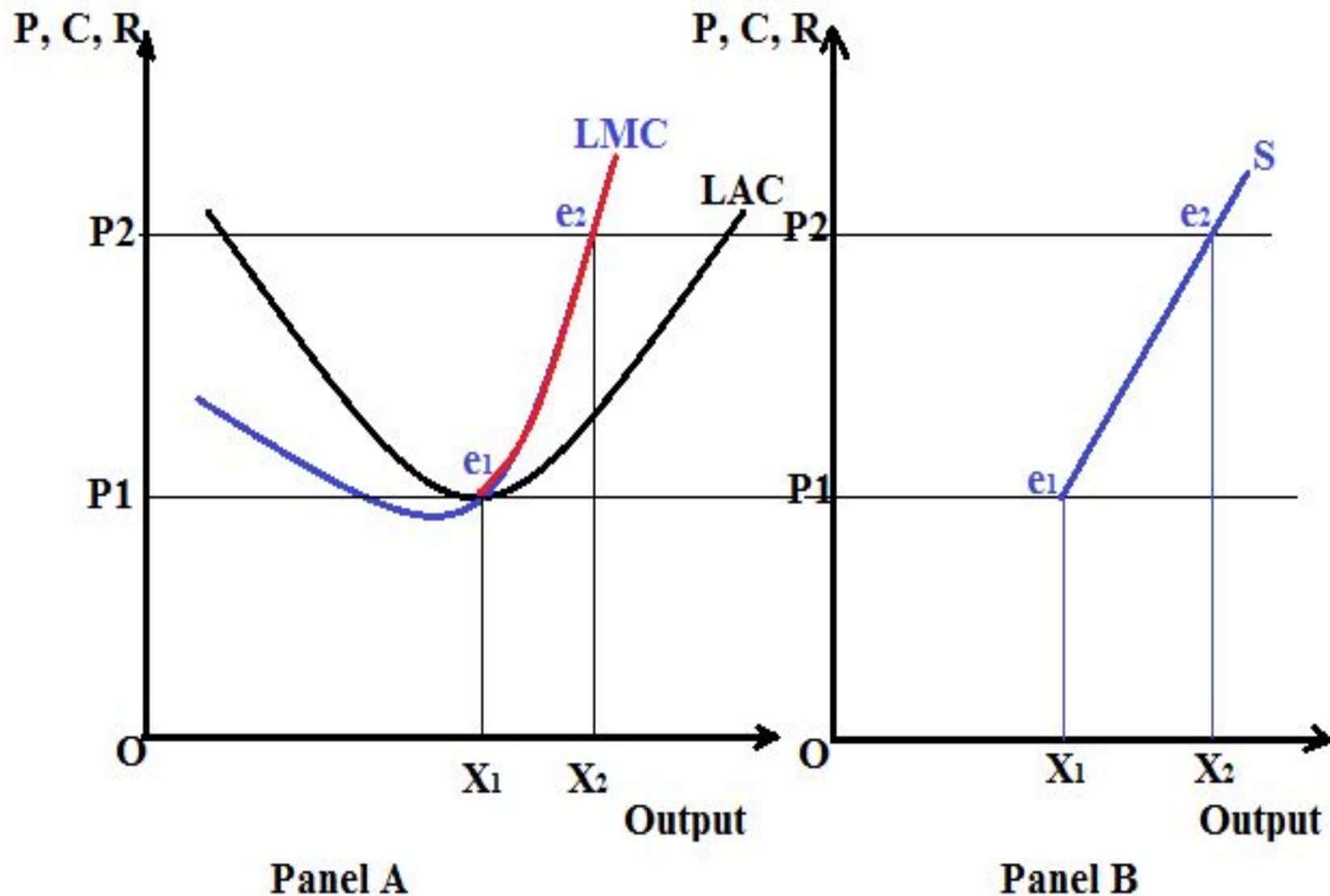
- The short-run supply curve of the perfectly competitive firm is derived by joining the point of intersection between SMC and MR or price line.
- However the intersection between the two below the minimum point of SAVC cannot be a part of supply curve because if P or MR falls below the minimum point of SAVC the firm closes down.
- Since SMC is positively sloped the intersection of successive price line cuts SMC at the right which shows higher equilibrium quantity at higher price .
- In this sense Short-run MC Curve itself represents Short-run supply curve of the firm.
- Part below A (as A is shut-down point) is not part of Supply curve, So Point A to point F Which is AF line is Supply curve of Firm.

Derivation of Short run supply curve of an industry

Derivation of Short run Supply Curve of an Industry



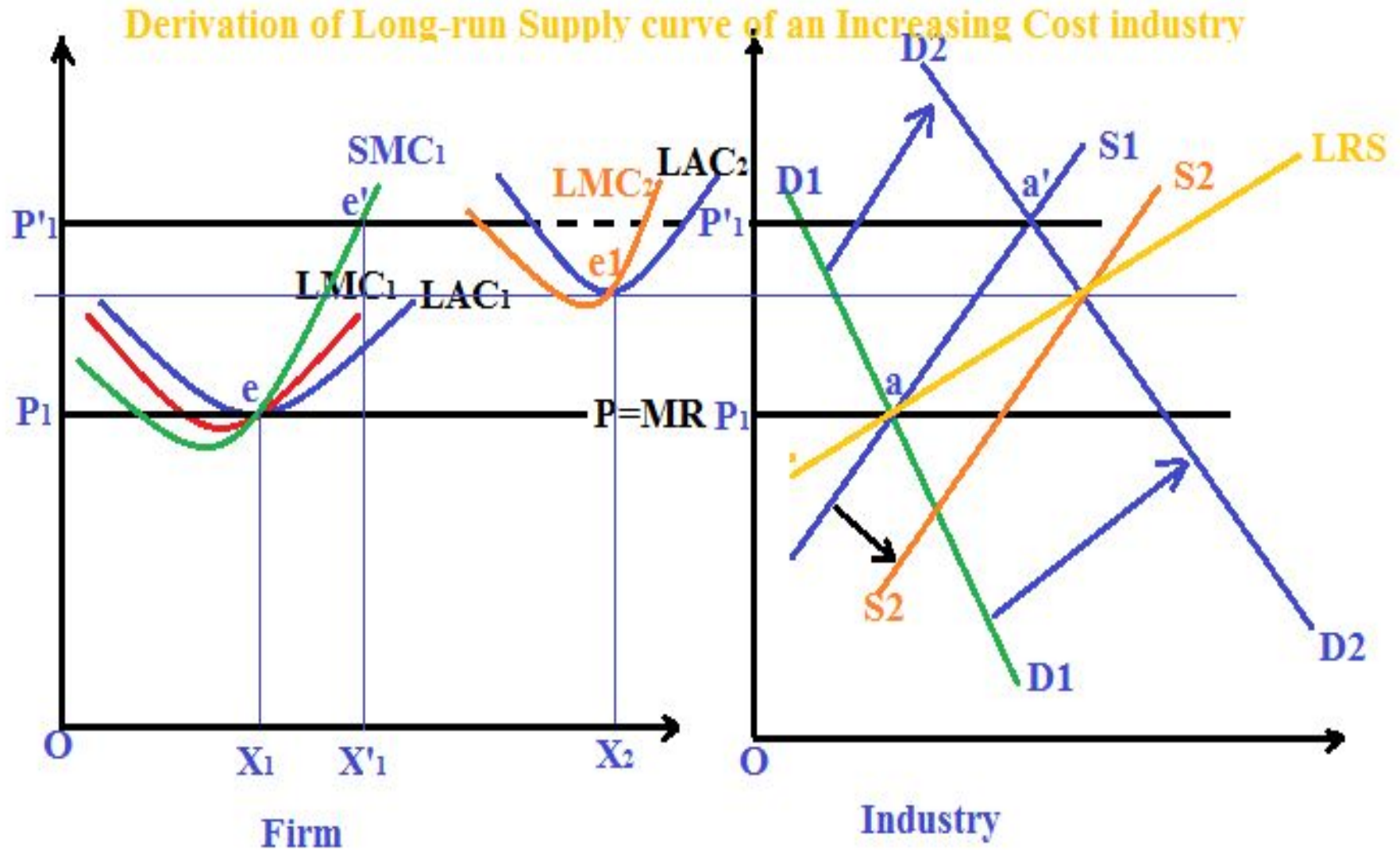
Derivation of Long run Supply curve of a Firm



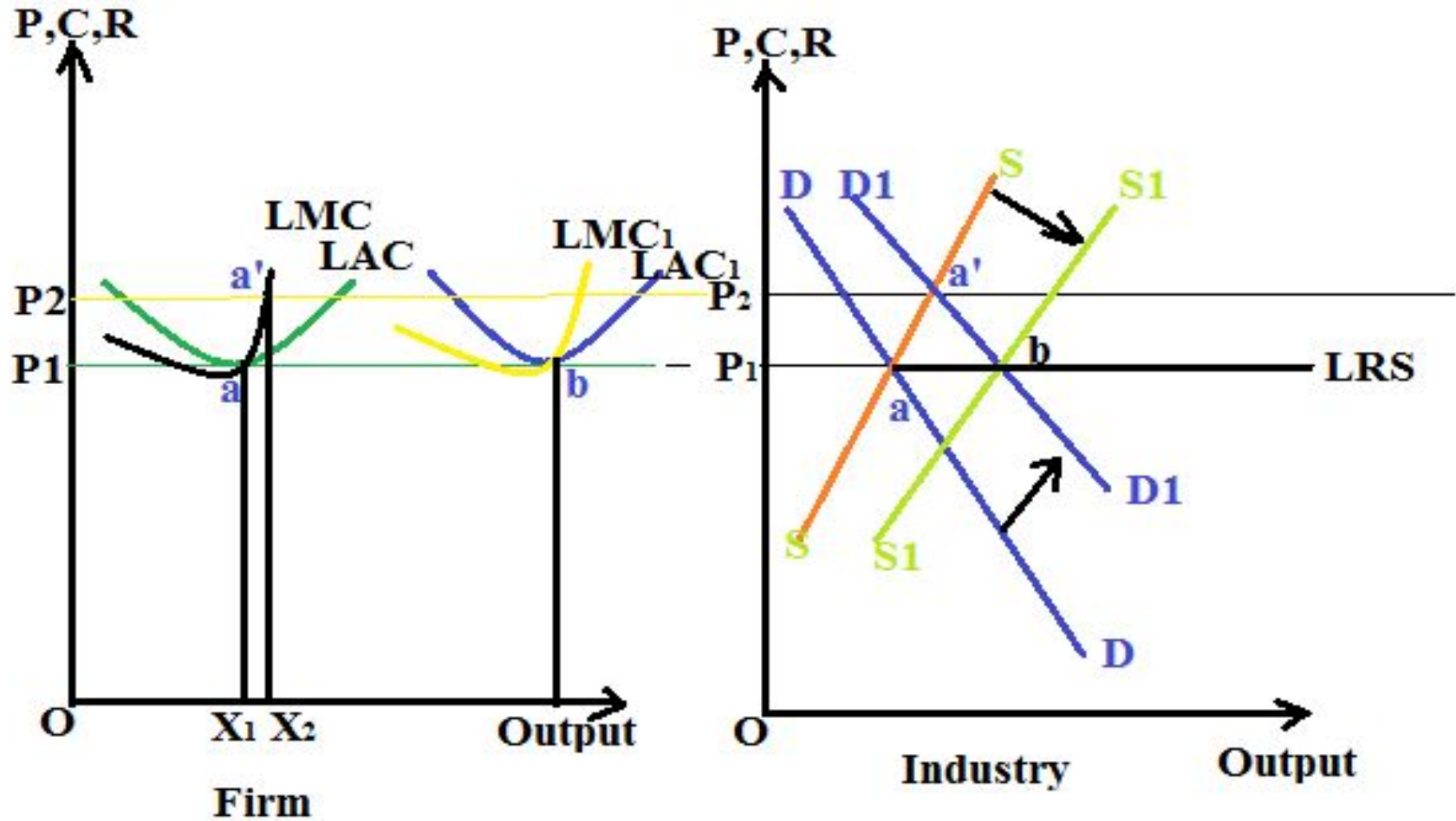
Explanation of figure

- The long run supply curve of a firm under perfect competitive market is represented by that portion of LMC which is above the minimum point of LAC, which can be seen in figure.
- In the Figure of Panel A, e_1 is the long run equilibrium where LAC is minimum and LAC is intersected by LMC from below. Thus, at e_1 point, Output is OX_1 and price is OP_1 , with help of e_1 point of equilibrium, e_1 of Panel B can be found. If price is increased to OP_2 the e_2 of LMC is equilibrium as OX_2 Output hence, e_2 of panel B can be found with the help of e_2 of panel A. Thus Red part of LMC above e_1 represents the supply curve of firm in panel A which can be exactly drawn in panel B e_1e_2 curve .

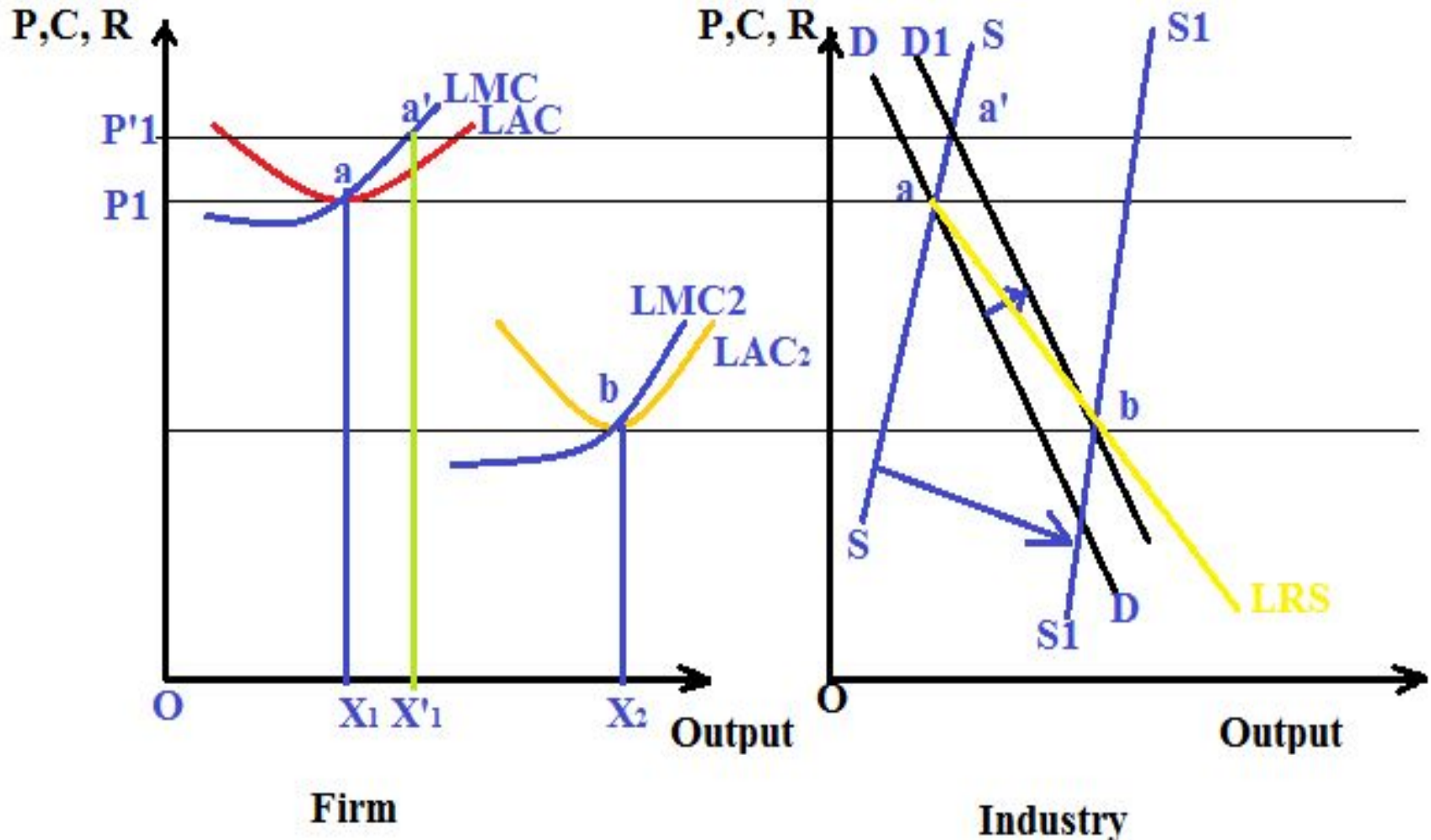
Derivation of Long run supply curve of an increasing cost industry



Derivation of Long run supply curve of an Constant cost industry



Derivation of Long run supply curve of an Decreasing cost industry



Equilibrium Price and output Determination in Monopoly

- Greek word “Mono” which means one or single, Poly=seller
- “Monopoly is a market structure in which there is a single seller, there is no close substitutes for the commodity it produces and there are barrier to entry.” A koutsoyanis.
- “Pure monopoly is a market situation in which a single firm sells a product for which there is no good substitute.” Leftwitch.

Causes for Raising Monopoly

1. Strategic Raw Materials
2. Patent right
3. Limit Pricing policy
4. Existence of Goodwill
5. Legal restrictions
6. Local monopolies
7. Optimum scale of Plant

Feature of Monopoly

1. Single sellers and Larger Number of Buyers
2. No close substitutes
3. Barrier to Entry of New firms
4. Imperfect Knowledge about Market
5. Price Maker
6. Nature of Demand curve
7. Objective of Firm

Job of Firm

- To determine level of output
- To determine Price

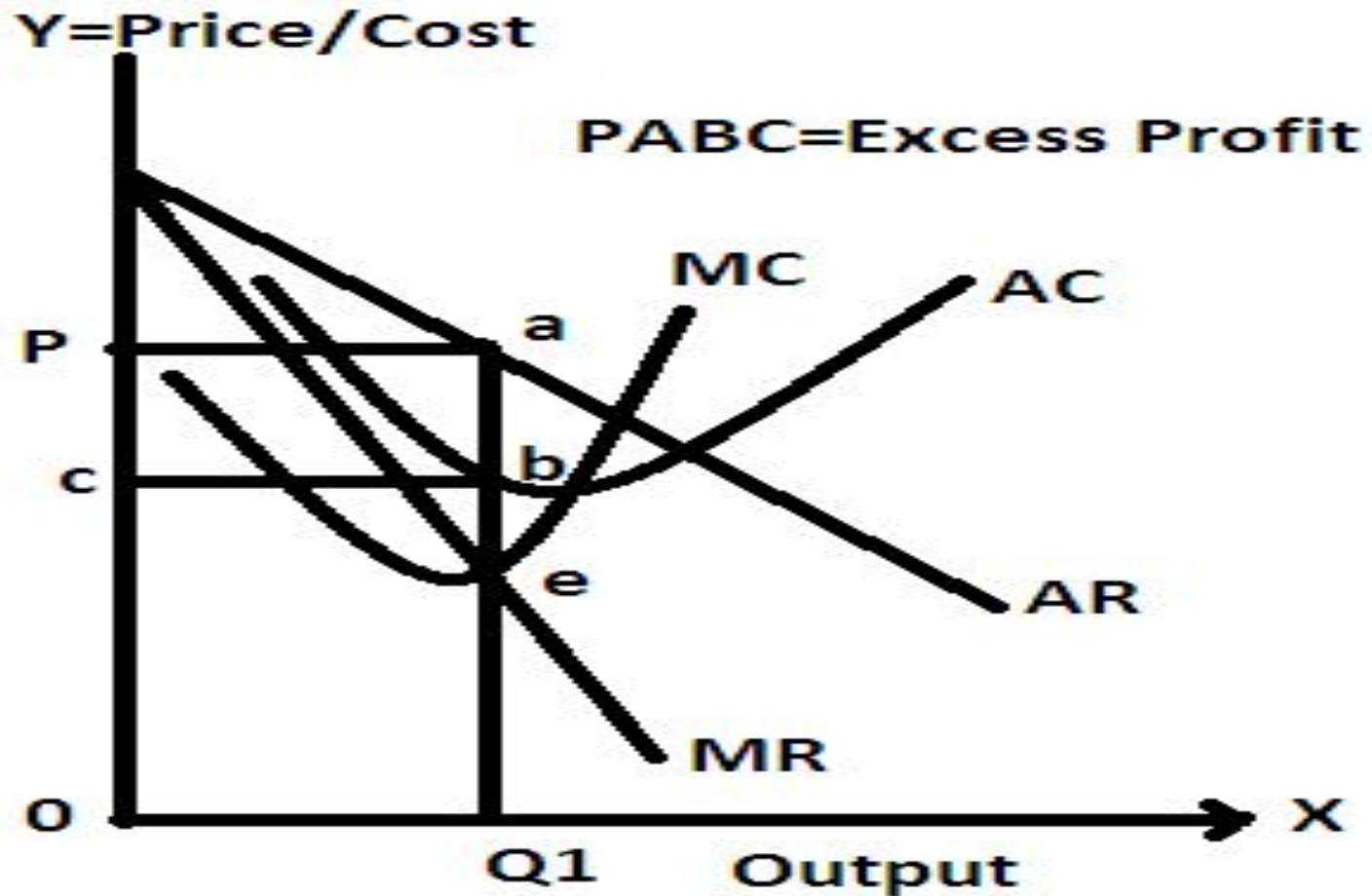
Short Run Equilibrium in Monopoly

- In short run, the Monopolist has not sufficient time to expand its plant size or capacity.
- Market supply can not be adjusted according to the market demand in the short run.
- Generally, Monopoly enjoys excess profit at the short run ($AR > AC$). But this is not always happened.
- Monopolist,s profit or loss situation depends upon following condition
 - Its cost and revenue condition
 - Threat of potential competition or presence of remote substitutes .
 - Government policy in respect of monopoly
 -

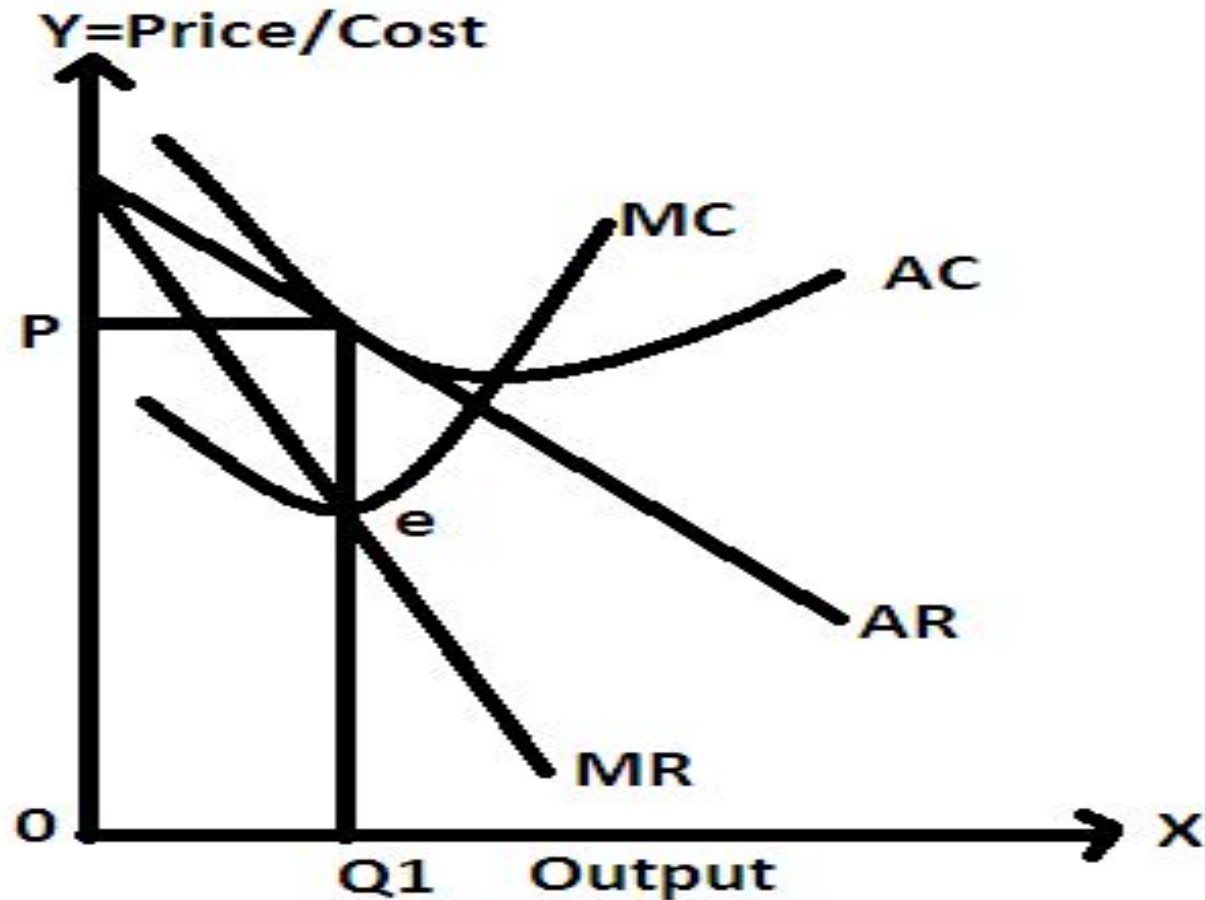
A monopoly firm has to realize 3 possibilities in the Short-Run

1. If $AR > AC$, firm get access profit
2. If $AR = AC$, Firm get normal Profit
3. If $AR < AC$, firm bears Loss

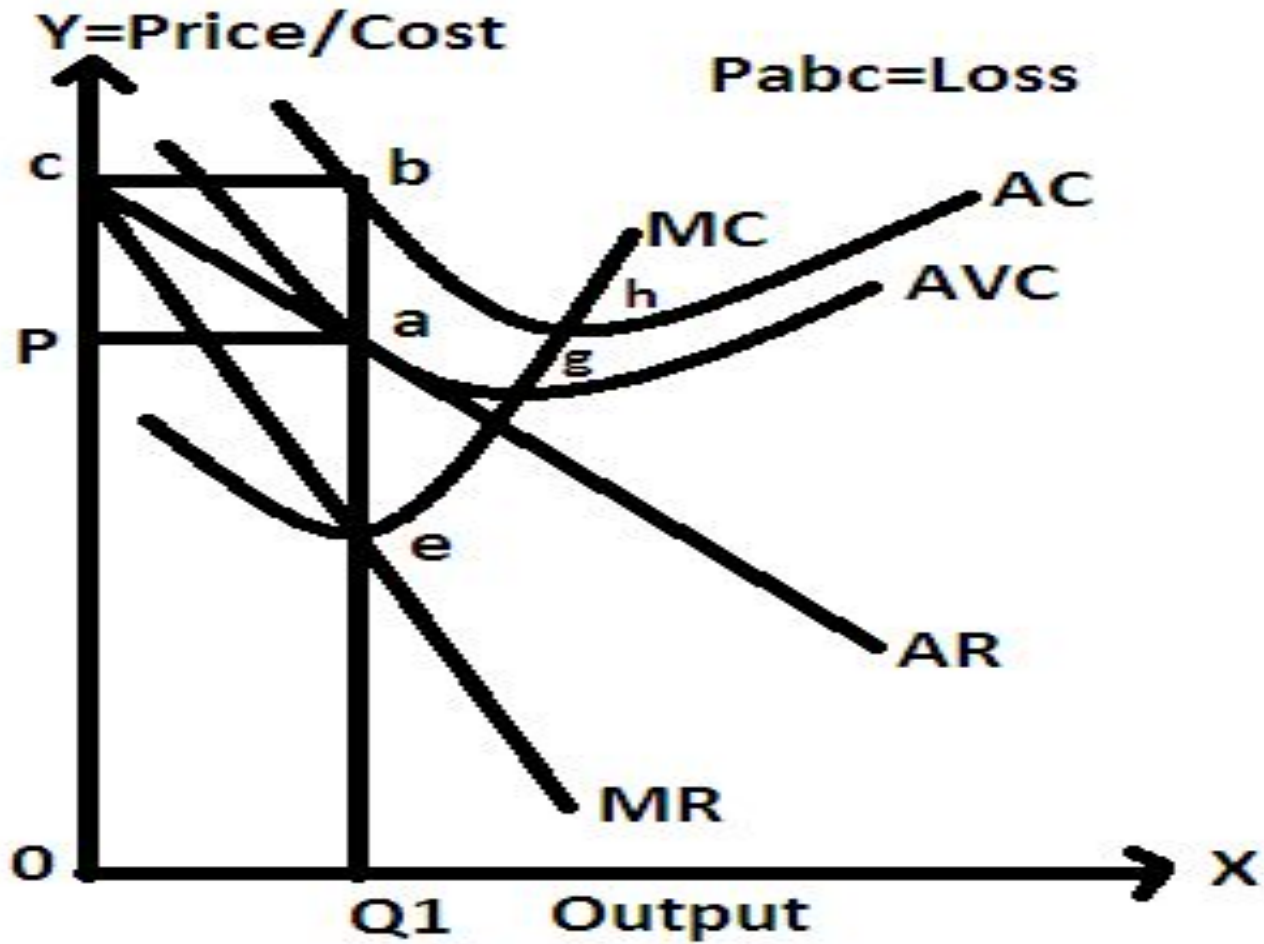
Excess Profit Case in Monopoly



Normal Profit Case in Monopoly



Loss in Monopoly



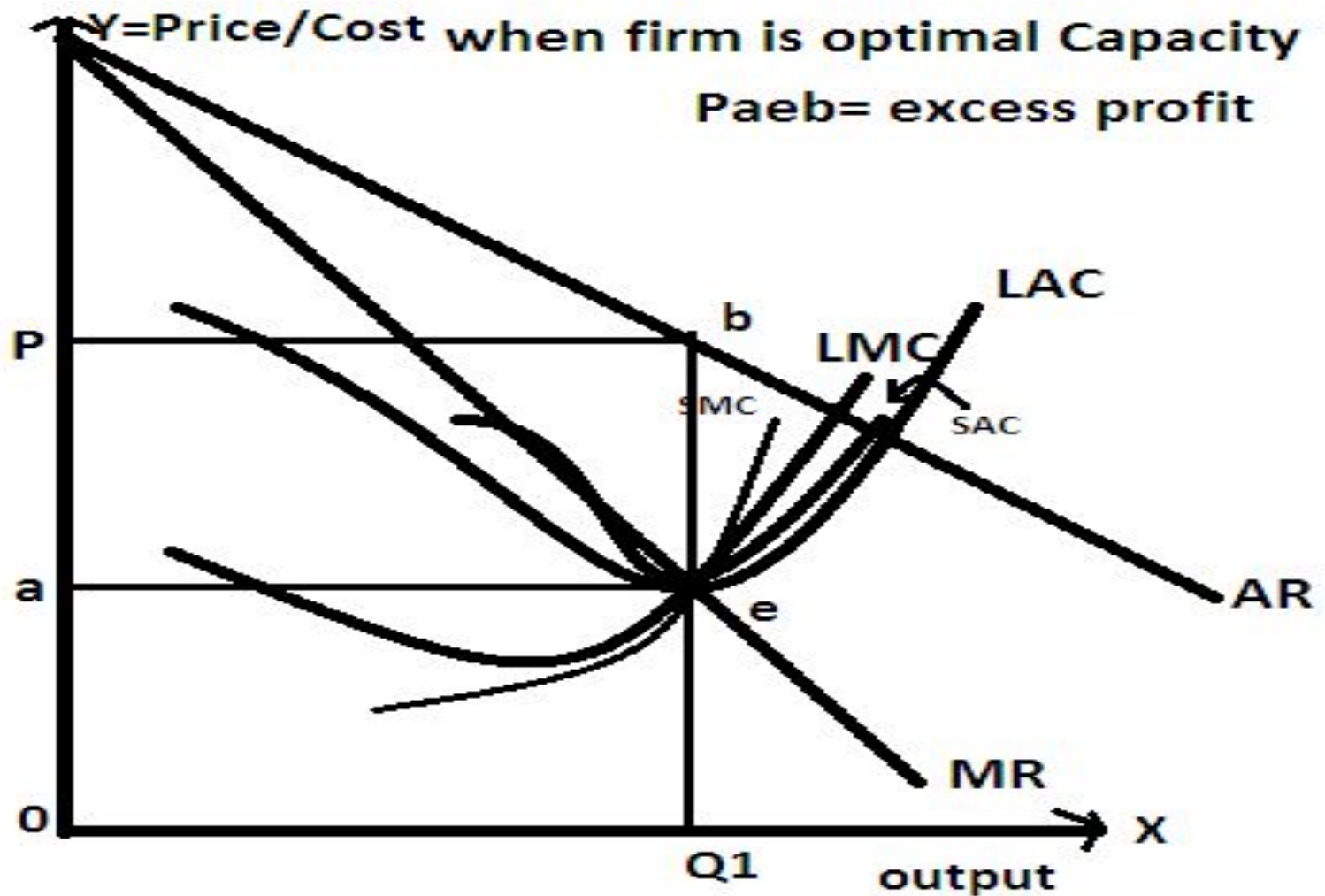
Long Run Equilibrium

- Market supply can be adjusted according change in the market demand in the long-run.
- Monopolist has sufficient time to expand its plant size or use existing plant at any level, which maximize profit.
- Due to Block in the entry for new firm under monopoly, hence it get excess profit normally.
- Excess profit is the normal phenomenon in the long run

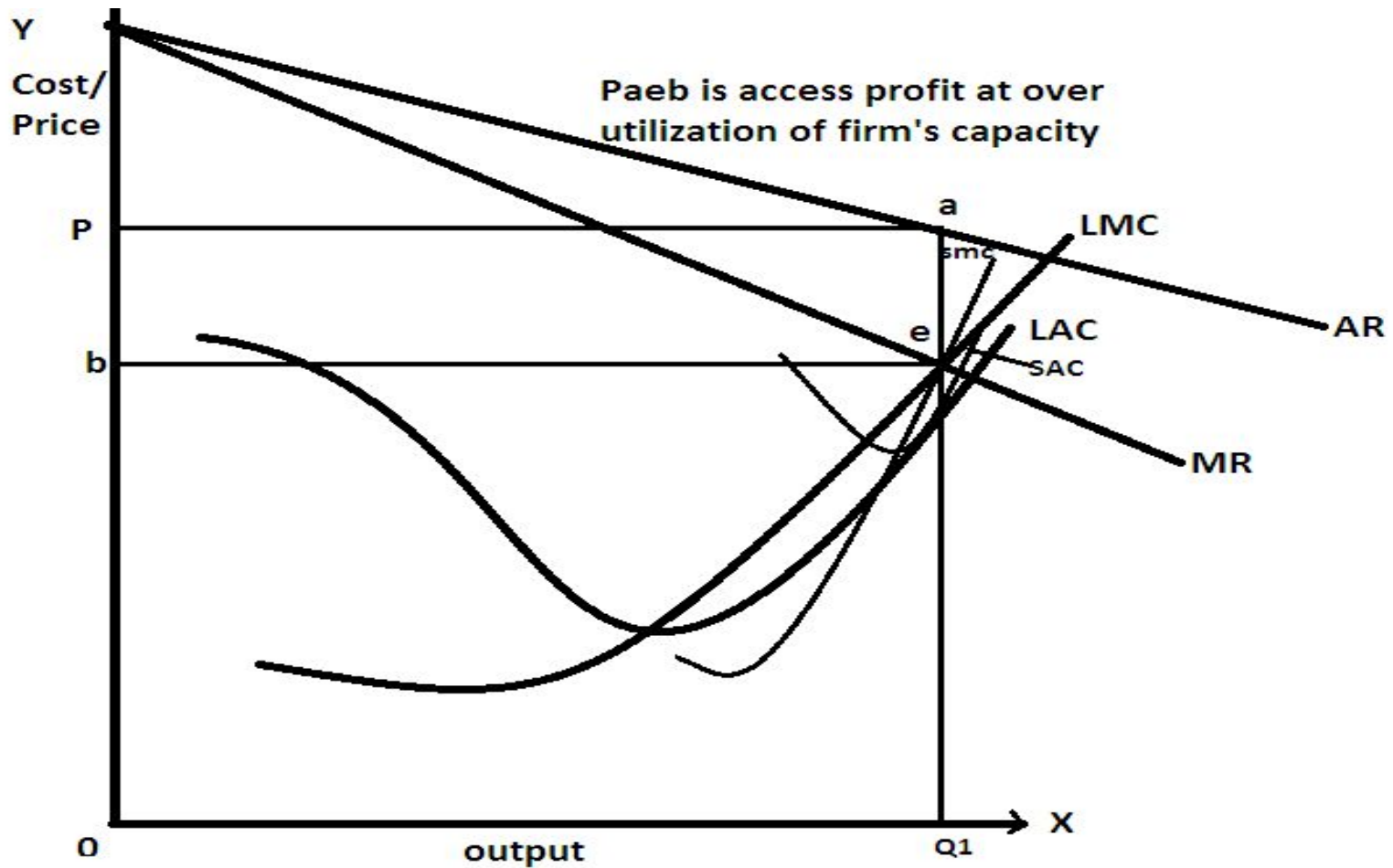
3 possibilities in Long run

- If the market demand for the product is enough to meet the output produced at optimal capacity by the monopolist, he obtains rational excess Profit
- If the market demand is less or if market size is small he operates his plant only on a sub-optimal scale and obtains less excess Profit.
- If the market demand is more or its size of market is large , he operates his plant at more than optimal capacity and obtains more excess Profit

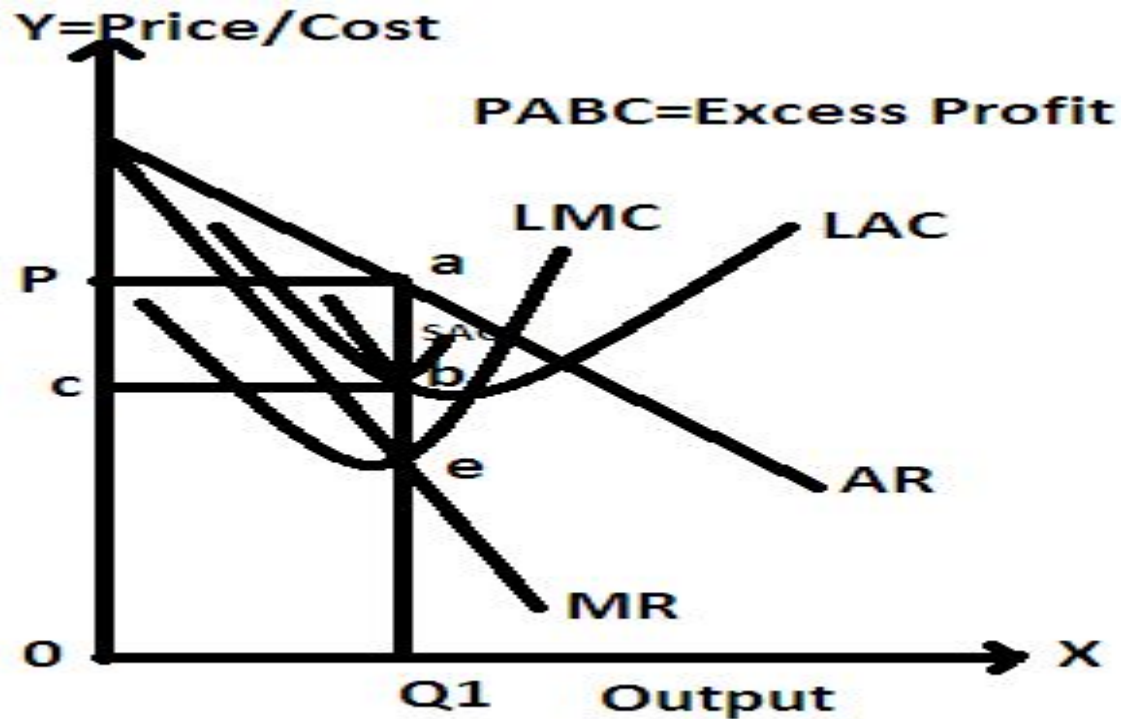
Excess Profit Case in Monopoly in Long-Run



Excess Profit Case in Monopoly in Long-Run



Excess Profit Case in Monopoly in Long-Run



Equilibrium price and output determination under discriminating Monopoly

Meaning of price discrimination:

- Under price discrimination, the seller divides the buyers into two or more than two sub-markets and charge different prices in these sub markets.
- Buyers may be discriminated on the basis of income or purchasing power, geographical location, age, sex, quantity they purchased, frequency of visit to the shop, purpose of the use of the commodity etc.
- Price discrimination refers to a situation when a producer sells the same product to different buyers (or at different sub-market) at different prices.

Example of Price discrimination in daily life:

- A Doctor checks the patient in OPD with low price ticket in TU teaching Hospital and A same doctor charges in high price ticket to check patient in Paying clinic after 3 or 4 o'clock in TU teaching Hospital Maharajgunj.
- Airplane charge different price: Airplane charges high price to passenger for its service in the name of business class and low price to passenger in the name of economy class.
- A Cinema hall charges different price: higher price for special seat like balcony and dress circle and low charge for first or second class.
- Electricity authority like Nepal Electricity authority charges different price to its customers: 5A single phase meter
 - 0-20 units ... minimum Rs.30 only, no energy price per unit
 - 21-30 units.... Minimum Rs.50 + energy price: Rs.6.5/unit
 - 31-50 units.... Minimum Rs.50+ energy price: Rs. 8/ Unit
 - 51-100 units.... Minimum Rs.75+ energy price: Rs. 9.5/ Unit
 - 101-250 units.... Minimum Rs.100+ energy price: Rs. 9.5/ Unit
 - Above 250 units.... Minimum Rs.150+ energy price: Rs. 11/ Unit

Condition

Equilibrium price and output determination under discriminating Monopoly

- Following necessary condition are to be fulfilled
 1. Market power: seller has control in supply.
 2. Different customer group : market divided into sub-markets with different price Elasticities
 3. Resale is not possible: Product buying from low-price market and resale in high-price market is not possible.

Degree of Price Discrimination

- AC Pigou, an English economist, created the idea of degree of price discrimination and imperfect discrimination
- 3 degree of price discrimination.
- First degree discrimination
- Second degree Discrimination
- Third degree Discrimination

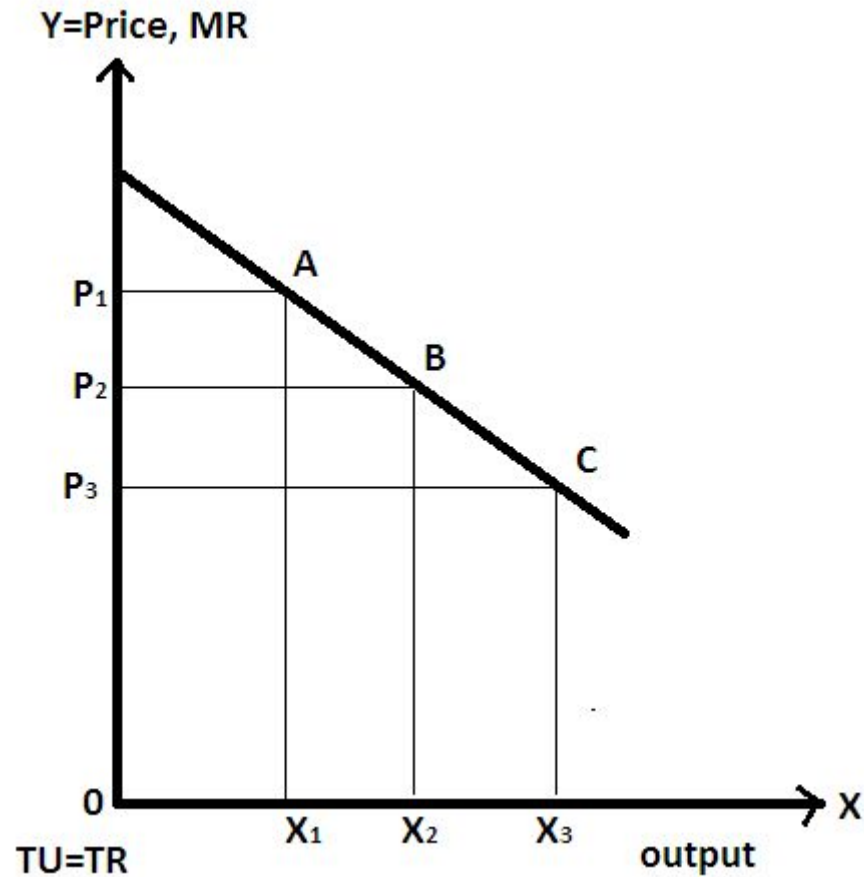
Price and output Under First degree Discrimination

- Monopoly knows the maximum amount of money each consumer will pay for any quantity and s/he will set the price that equals to their willingness to pay and take from each consumer the entire amount of his/her consumers surplus.
- Monopoly charges highest price for each consumers that s/he will be ready for each unit rather than go without it.
- Mrs. John Robinson calls this situation as perfectly discriminating monopoly.

Price and output Under First degree Discrimination

- All consumer surplus is taken by Monopolist.
- Price discrimination of First degree is extreme/imaginary.
- It is very difficult to find a single consumer being offered a number of units of and identical good, each at different prices.

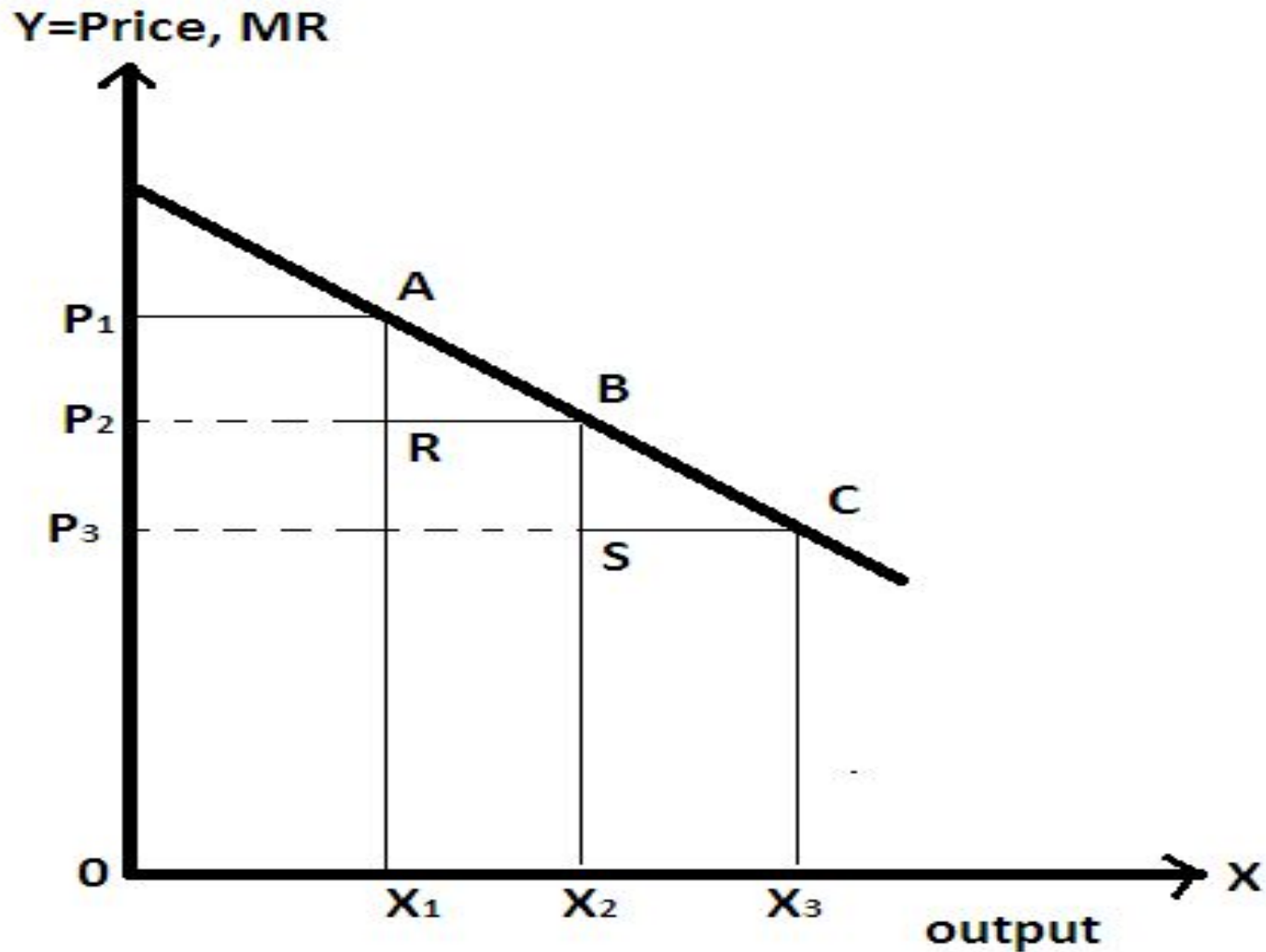
First degree Discrimination



Second degree Price discrimination

- Under the second degree price discrimination, the monopolist is able to get a part of consumer's surplus but not entire consumer's surplus.
- Monopoly charges different prices from different consumers and different prices for different units of the same product but lesser price from imaginary price.
- The monopoly sells several units of product at same price for a group of consumer.

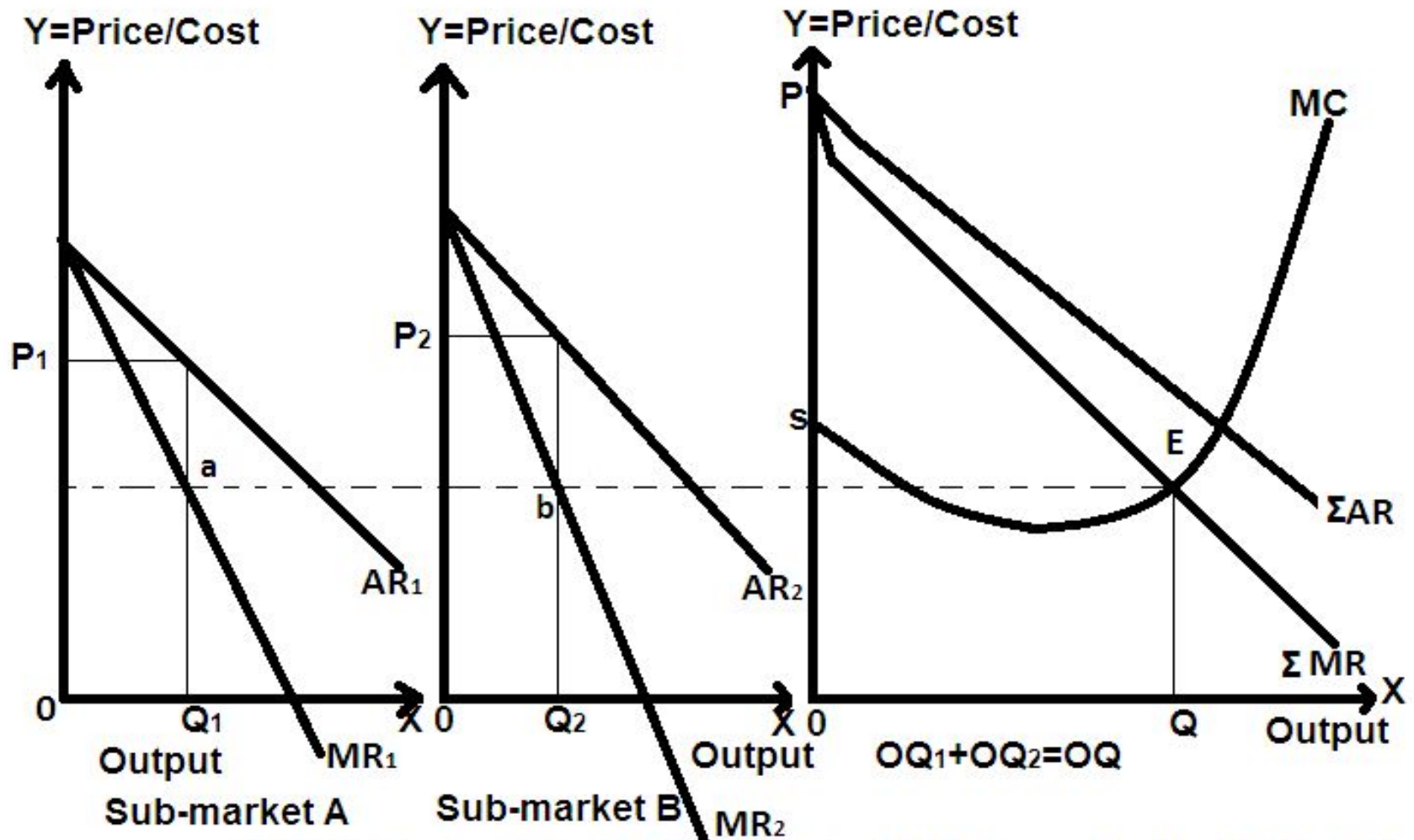
Second degree price discrimination



Third degree price discrimination

- Under Third degree price discrimination, the monopolist divides his consumers into two or more classes or groups or market.
 - Monopolist charges different prices at different market to sell the product determined based on MR-MC approach.
1. To determine level of output:
 - $MC = \sum MR$
 - Slope of $MC >$ slope of $\sum MR$
 2. To determine the price and sales quantity at each submarket
 - Based on price elasticity.... Price is determined
 - Determine **low price in elastic market** and **high price in inelastic market**.
 3. Profit maximizing output division in two sub market by monopolist is based on MR, which is equal in two market
 $MR_1 = MR_2 = MC$ (MC has equal to MR in each of two market)

Third degree Price Discrimination



$TR = \Sigma MR = \text{Region OPEQ}$; $TC = \Sigma MC = \text{Region OSEQ}$; Excess Profit = Region PES

Explanation of figure

- Monopolist divides his/her market in two : Sub-market A and Sub-market B.
- Profit maximizing output is determined by intersection of MC curve and ΣMR curve at E point, where E gives equilibrium output OQ and EQ as combined marginal revenue(ΣMR).
- Output is distributed in the both sub market in such a way that $MR_1=MR_2= \Sigma MR$, for that we draw the perpendicular from E point to Y-axis in the figure and extended to both sub market's figure so that we get point a and b equilibrium point with OQ_1 and OQ_2 equilibrium level output respectively.($aQ_1=bQ_2=EQ$)
- Price at which two quantities will be sold by corresponding AR Curve. Less quantity will be sold in Less elastic market sub-market B at high price. More quantity sold in less price in elastic market(Sub market A).

Economic Effect of Price discrimination

1. According to Mrs. Joan Robinson, Total output under price discrimination is higher than a simple monopoly with a price policy.
2. Total profit Under Price discrimination is higher than simple monopolist. A Price discrimination monopolist gains at least by converting the consumer's surplus into a profit.
3. Price discrimination helps to increase sales and output.(it helps to produce in large scale with minimization of cost)
4. It is socially justified if low price is charged to poor and higher price to rich class people.(welfare maximization in society)
5. Price discrimination under first and second degree obstruct the maximization of utility.
6. Price discrimination leads to inefficient allocation of resources in the market.
7. Price discrimination can be inequitable when richer consumers are benefited as the cost of the poor.
8. In a widening market, in the case of dumping, export firm can get advantage of economies of large plant size.

Is monopoly price always higher?

- Monopoly as a single seller can control the supply in the market, so that it can influence the price. Thus Monopoly charge generally higher price with low output in comparison to perfect competitive market.
- There are certain case or reason when monopoly price may lower than perfect competitive market:
 1. Investment on Research and Experiments
 2. Internal Economies of Scale
 3. Restraints on Monopoly Price Fixation (low price fixation by following two reasons)
 1. Afraid of Boycott by consumers if it fixed price high.
 2. Govt. Regulation.

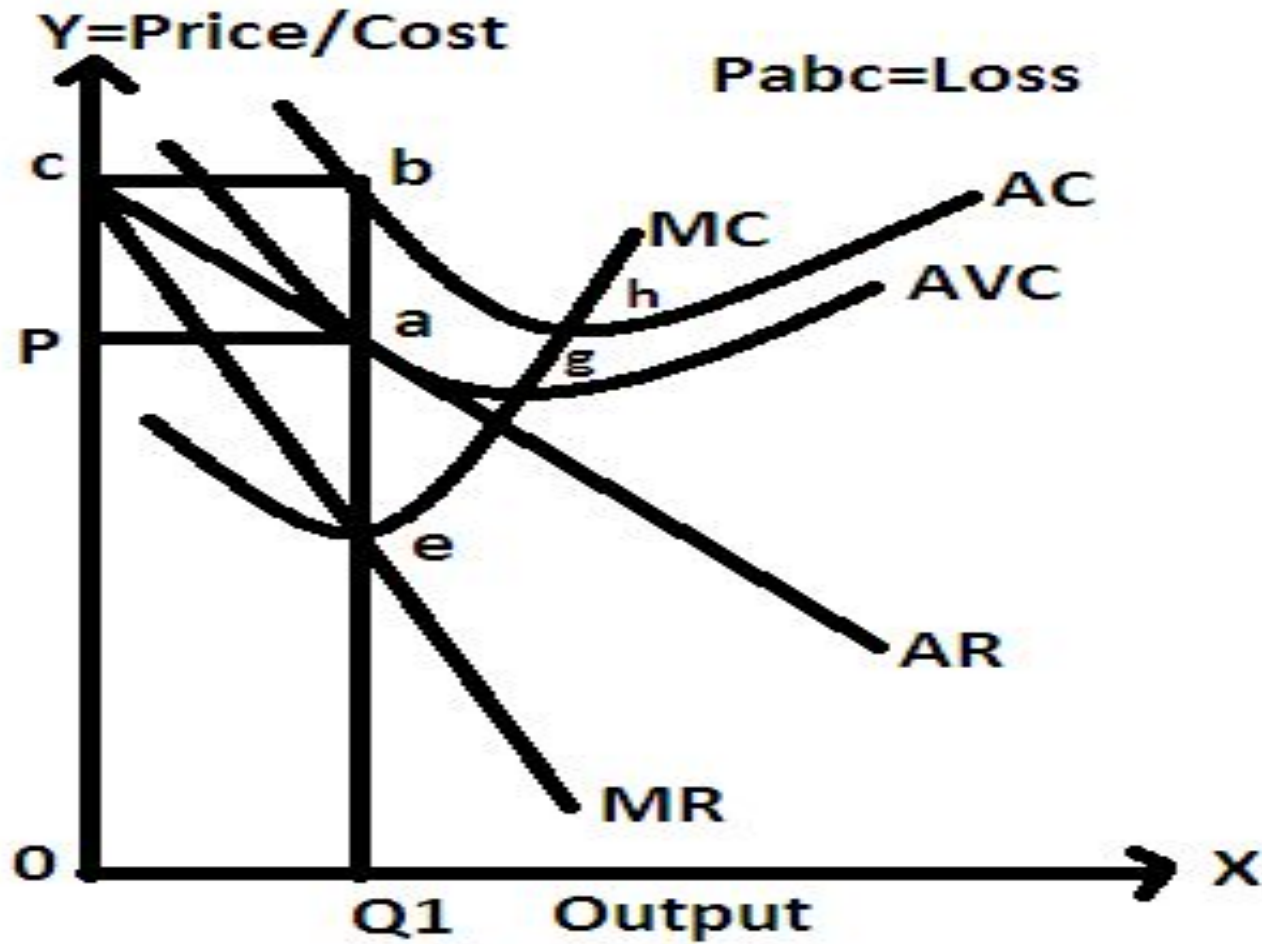
Short run Equilibrium in Monopolistic competition

- The concept of monopolistic competition was introduced by Professor E.H. Chamberlin, an American Economist.
- Monopolistic competition is that form of the market in which there are many sellers of a particular product but each seller sells somewhat differential product.

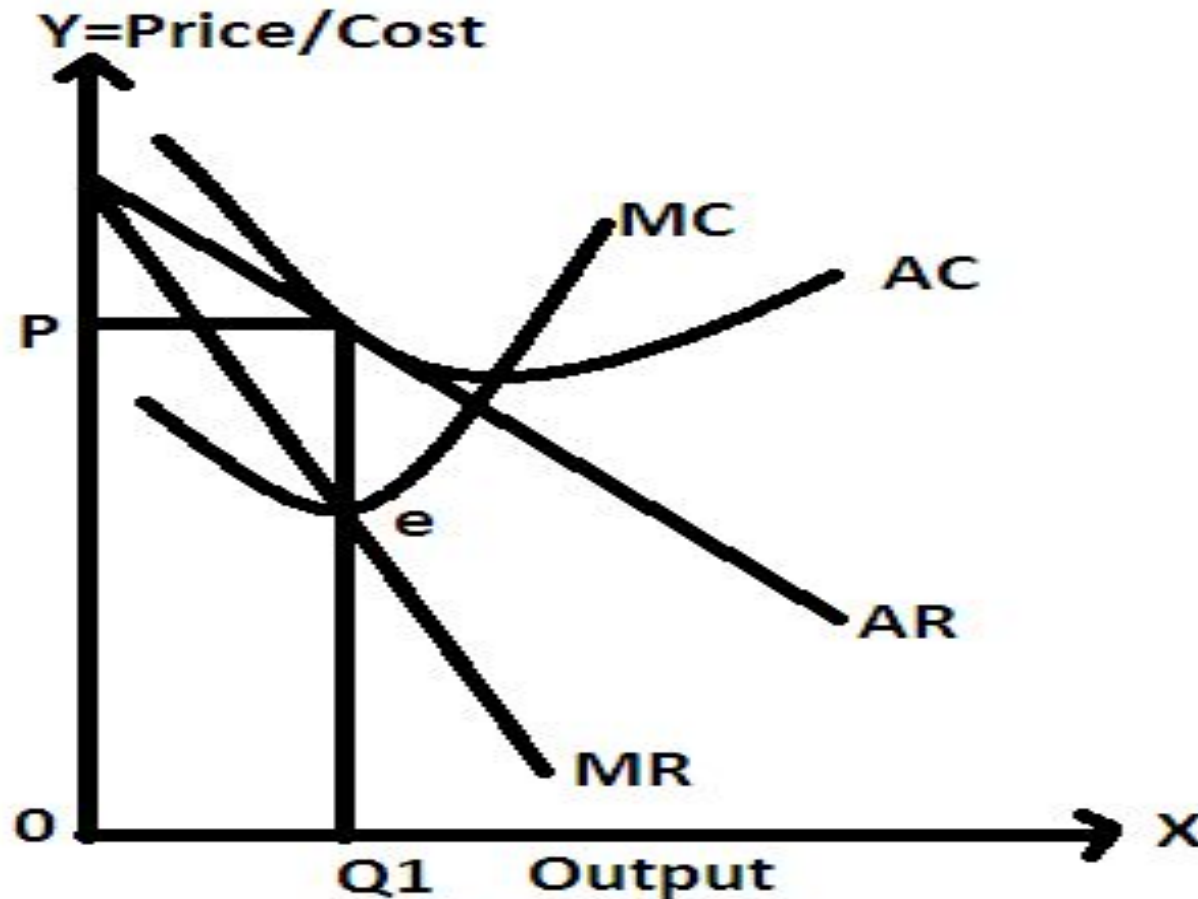
Characteristics of Monopolistic competition

1. Large number of Buyers and many sellers
2. Differentiated products(or product variation)
3. Imperfect Knowledge about market
4. Free Entry and exit of firms
5. Non-price competition and selling costs
6. Negative sloping Demand curve
7. Goal of the firm is profit maximization
8. The price of factors and technology is given
9. Heroic assumption: both demand and cost curves for all products are uniform throughout the group.

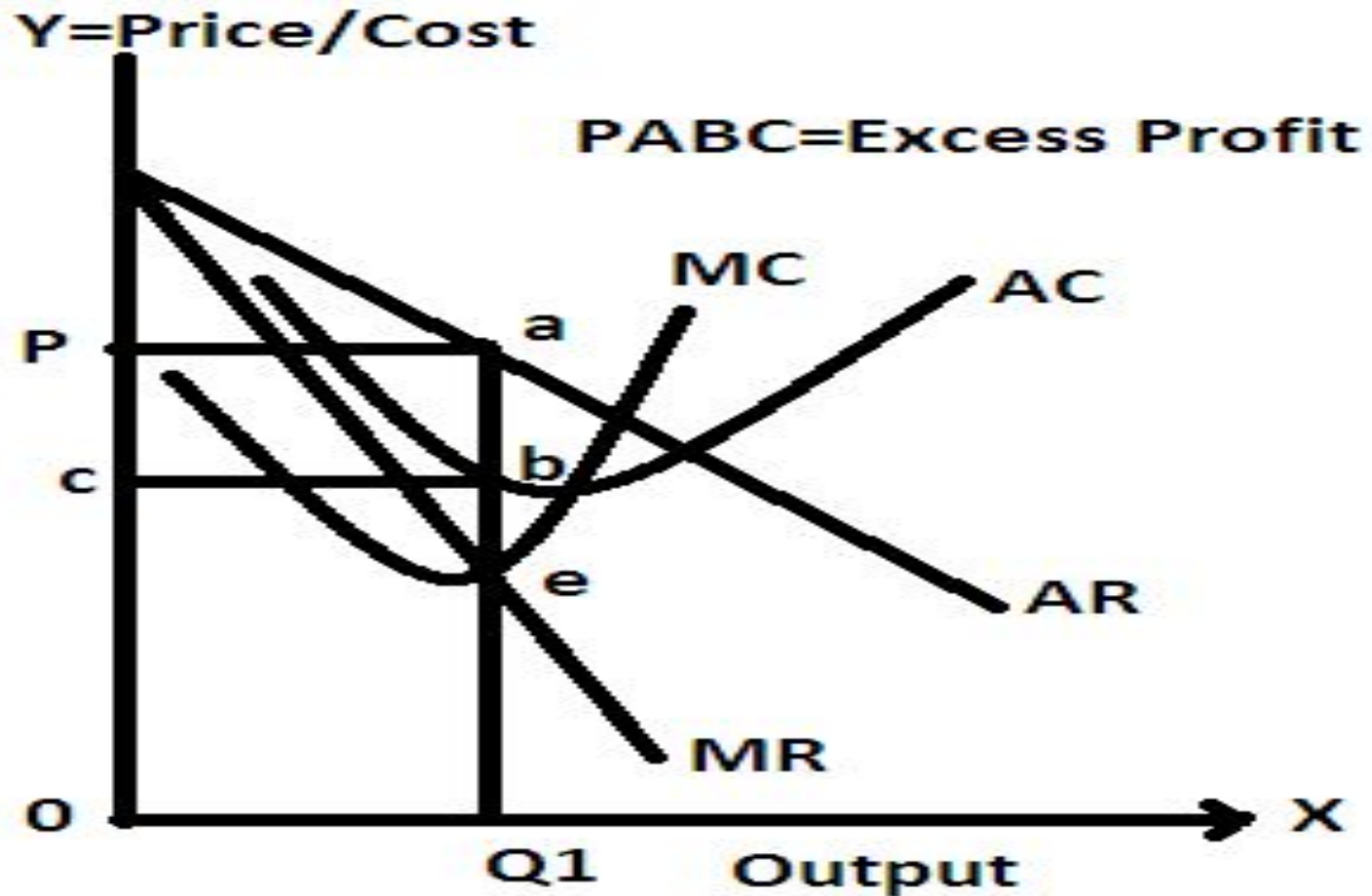
Loss in Monopolistic competition ($AR < AC$)



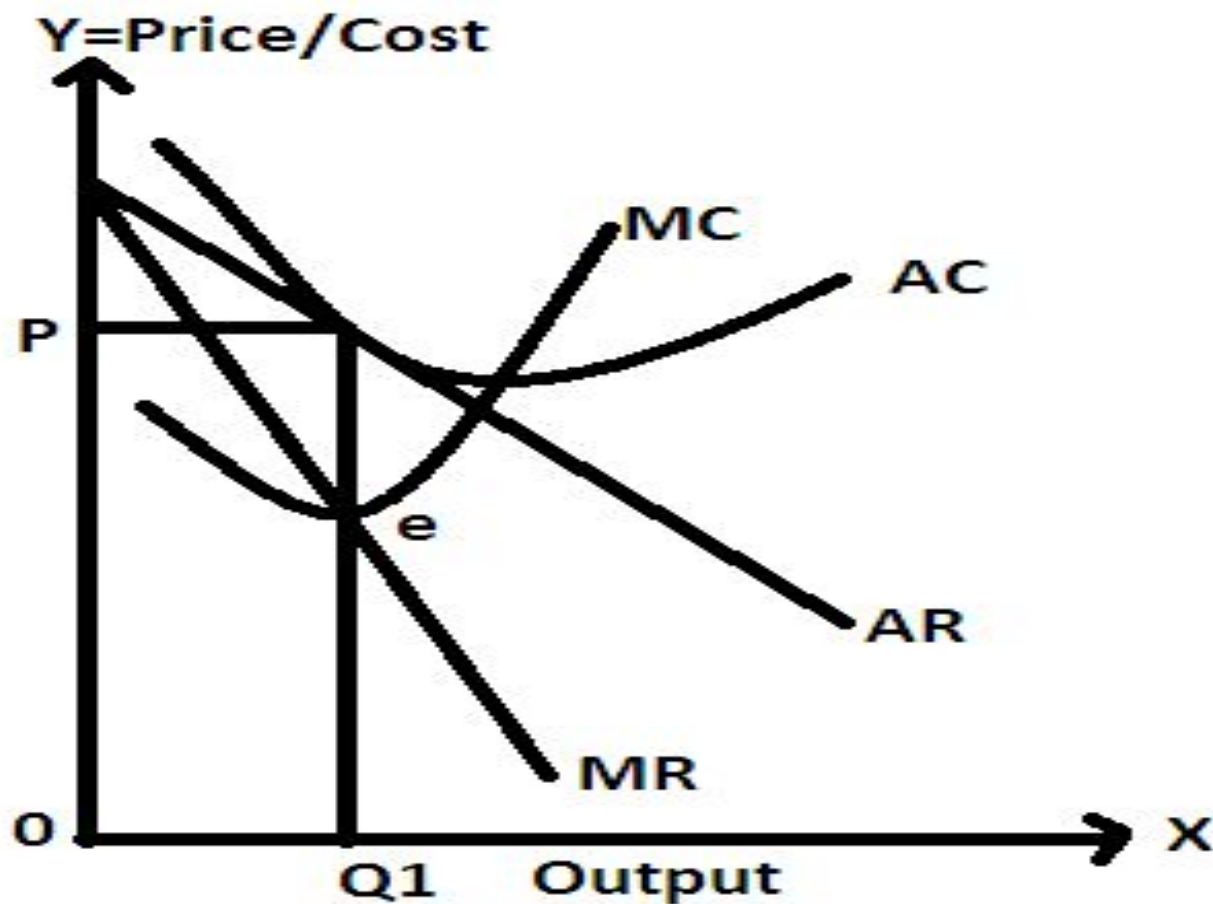
Normal Profit Case in Monopolistic competition (AR=AC)



Excess Profit Case in Monopolistic competition($AR > AC$)



Excess Profit Case in Monopolistic competition in Long-Run

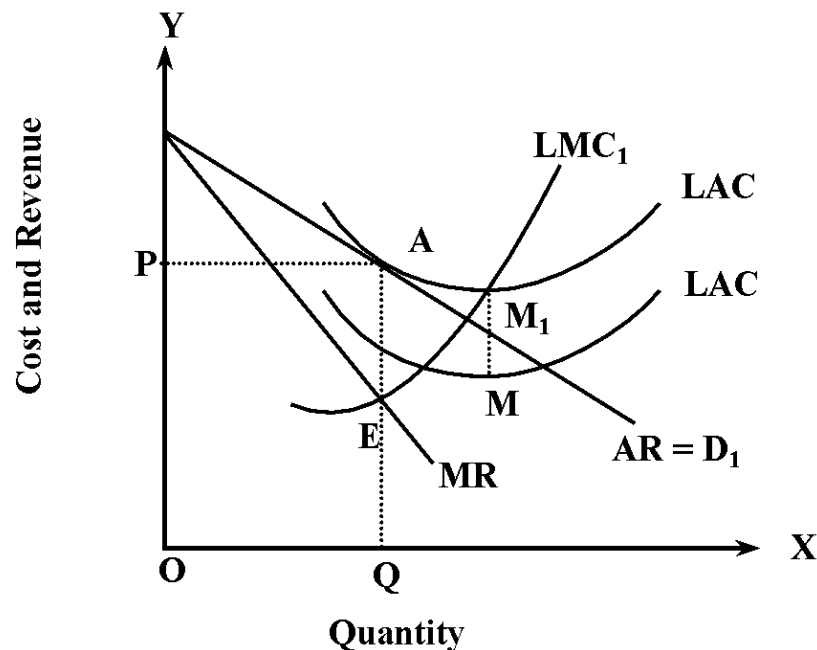


Equilibrium of firm under Product Variation and Selling Cost

Product Variation and Selling Cost

Under monopolistic competition, a firm can increase the demand for its product and make it more price inelastic through product variation and selling efforts. These efforts increase the total cost of the production. As a result, both revenue and cost curves move upward. Adopting these methods (non-price competition), the firm can increase profit in short run but in long run it will be in equilibrium at normal profit due to entry of new firms and imitation of that innovations.

Equilibrium of firm under Product Variation and Selling Cost



- In the figure D_1 (AR) and MR_1 are demand and marginal revenue curves which are higher than before the use of product variation and selling effort. Similarly, LAC_1 and LMC_1 are long run average and marginal cost curves resulting from these efforts. The vertical distance ($M_1 M$) shows the additional cost per unit incurred for product variation and selling efforts.

Oligopoly

Oligopoly derived from 2 Greek words “Oligo”=Few “Pollein”=to sell

- Oligopoly is a form of market organization in which a few sellers (or firms) produce either homogeneous or differentiated products.
- Mainly two type of oligopoly: Non-collusive oligopoly and Collusive oligopoly.
- Non-collusive oligopoly
 - Cournot’s Duopoly model
 - Bertrand’s Duopoly model
 - Chamberlin’s oligopoly model
 - Sweezy’s kinked-demand model
 - Stackelberg’s duopoly model
- Collusive Oligopoly: joint
 - Cartels:
 - Joint profit maximizing cartels
 - Market sharing cartels
 - Non price competition
 - Determination of Quota
 - Price leadership.
 - Price leadership by low cost firm
 - Price leadership by dominant firm
 - Barometric price leadership

Factor causing Oligopoly

1. Huge Capital Investment: Capital-intensive some firm need huge capital investment (requirement) may work as natural barrier to entry.
2. Economies of Scale: large scale production may get benefit (comparative advantage) in purchase of industrial inputs : raw materials, marketing
3. Patent Rights: monopoly power can be achieved by patent right in differentiated oligopoly... limited firm can existed in the industry.
4. Control over Certain raw materials:
5. Merger and Takeover: Merger and Takeover/Acquire can reduced firm in the market.

Features of Oligopoly

1. **Interdependence of Decision-making:** decision of one firm affect other firm's profit/ market share. **price and output policy of one firm has a significant impact on the price and output policy of the rival firms in the market.**
2. **Small Numbers of sellers:** The number of seller is not given, however, the number of sellers is so small that the market share of each firm is so large that a firm can influence the market price and business policy of its rivals.
3. **Barrier to entry:** (by Huge capital requirement, Economies to scale, Strong consumer loyalty to the products of the established firms based on their quality and services, limit-pricing theory, patent right and Merger and takeover)
4. **Excessive Expenditure on Advertisement:** purpose is to to shift demand curve or increase market share, to stop price-war, make less elastic of their own product.
5. **Indeterminate Price and output:** not determined by market force but by collusive between firms.

Collusive Oligopoly : Collusive oligopoly is a situation in which firms under the same industry decide to join together as a single unit to maximize their joint profit and to negotiate to share the market.

Aspect of Non-Price competition

- Differential may be physical and non-physical
- Differentiated product: by quality, color, style, safety feature, taste, packaging, purchase terms, warranties, guarantee.
- Operation hours
- Location differentiate their product
- Brand name creates loyalty to product and reduce the information searching cost.

Selling cost

- Cost of advertisement
- Expenditure on promotion schemes
- Salary and commission paid to sales personal
- Allowance to retailers

Cartels

According to **P.A. Samuelson's**, *"A cartel is an organization of independent firms, producing similar products, that work together to raise prices and restrict outputs."* Cartel is an agreement among the independent firms within the same industry. The cartel is a common policy related to prices, outputs, sales and profit maximization and distribution of products. The main objective of cartel is gain maximum profit.

The cartel was first introduced in Germany to increase prices by controlling the supply of the independent firms. Cartels are illegal in most countries but it exists in the form of trade associations, professional associations etc.

A general purpose of cartel is to centralize certain managerial decisions and functions of individual firms in the industry in order to promote common benefits. Out of different types of cartel, the centralized cartel is at one extreme. It sets the monopoly price for the commodity, allocate the total output and profit among the member firms.

Cartels Aiming at Joint-Profit Maximization (Perfect Cartel)

Cartels imply direct (although secret) agreements among the competing oligopolistic with the aim of reducing the uncertainty arising from their mutual interdependence. This situation is identical with that of multi-plant monopolist who tries to maximize profit.

In sum, the board appointed by the members firms has following authorities:

- a. to determine the common price of the product
- b. to determine the total industry's output
- c. to determine output quota for its member firms
- d. to distribute the industry's profits among the member firms

Assumptions:

1. There are only two firms A and B under collusive oligopoly.
2. Each firm produces and sells a homogeneous product that is a perfect substitute for each other.
3. The cost of production of the two firms is different.
4. The board has perfect knowledge about the market demand and cost conditions of the firms.

The joint profit will be maximum when the MR and MC of an industry are equal. Since there two firms under perfect cartel, marginal cost of each firm should be equal to marginal revenue.

i.e. $MC_1 = MC_2 = MR$.

Cartels Aiming at Joint-Profit Maximization

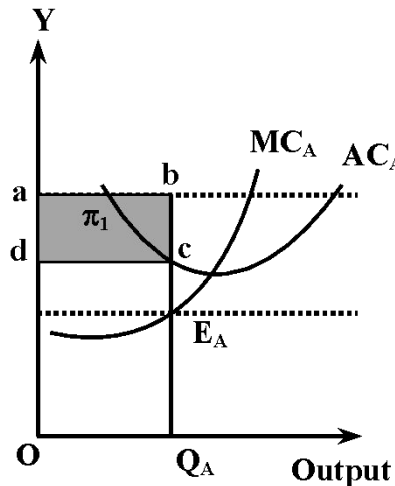


Fig (a) firm 'A'

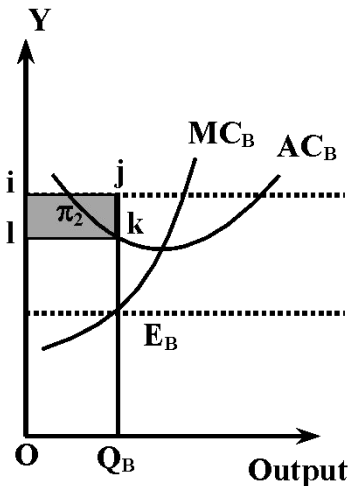


Fig (b) firm 'B'

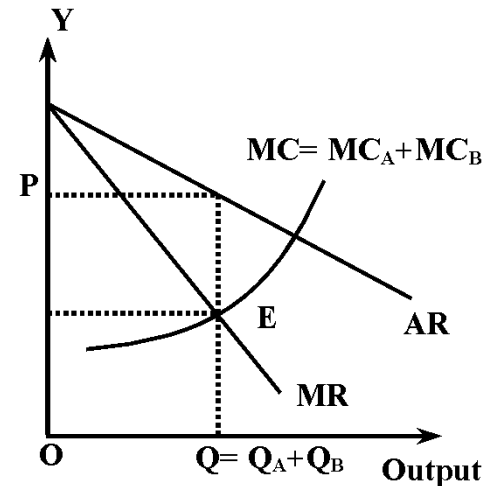


Fig (c) Industry 'C'

- In the figure, DD shows the total demand of the firms A and B and MC curve is derived by horizontal summations of MC_A of firm A and MC_B of firm B. i.e. $MC = MC_A + MC_B$. The industry is in equilibrium at point E where MC is equal to MR which determines equilibrium output OQ. The total output (OQ) is sold at OP price. Like monopoly firm, the cartel board will allocate the total output in such a way that MC of each firm is equal to MR of the industry i.e. $EQ = E_A Q_A = E_B Q_B$. At the price OP, the total output is distributed between firm A and B in the ratio of $OQ_A : OQ_B$.

Unit 5 Market Structure

- IF you have any Quarries.....
 - Thank you for your cooperation.
 - End of Unit -5