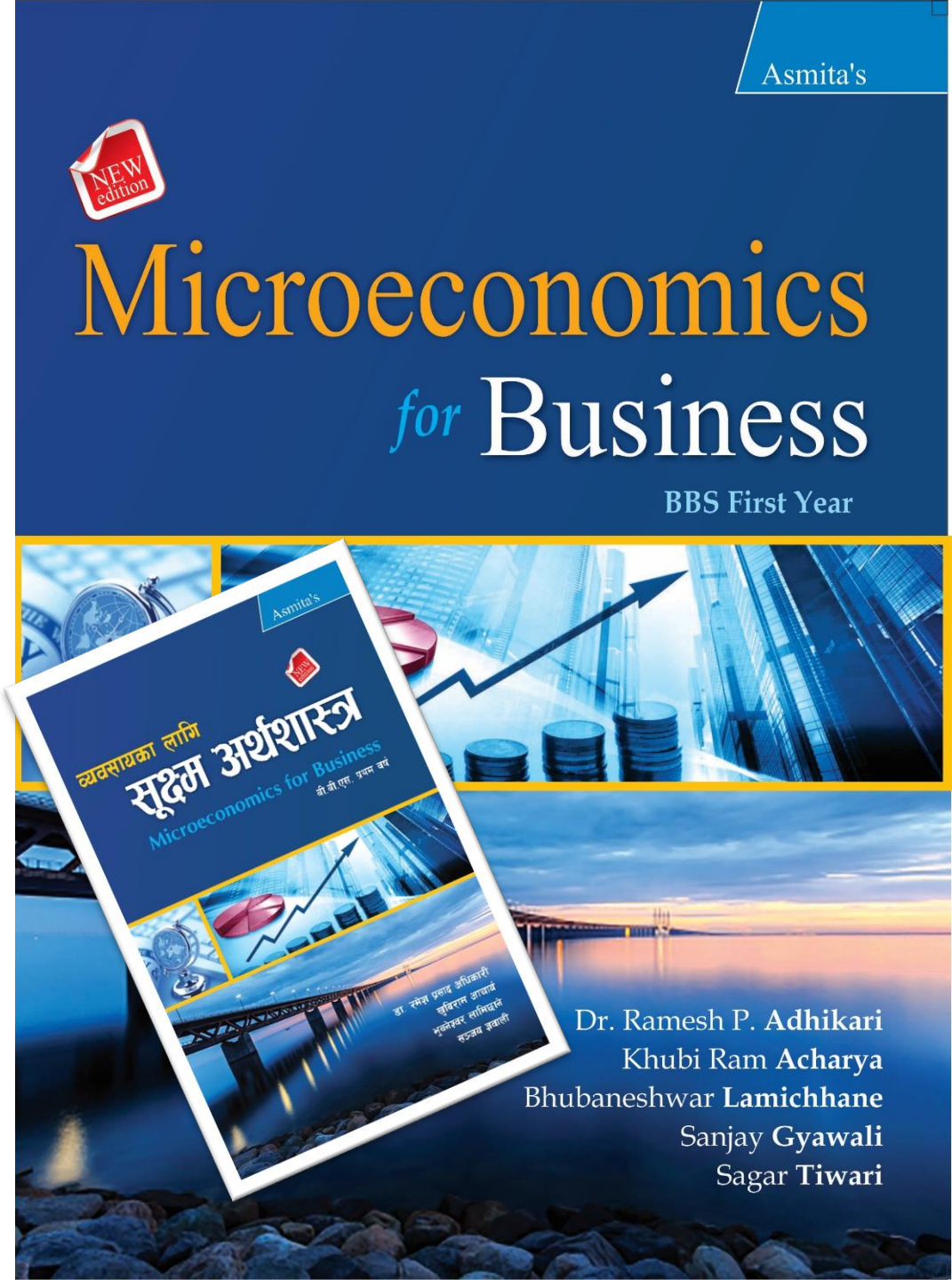
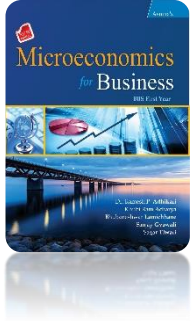
Product Pricing: Theories and Practices

Unit 7



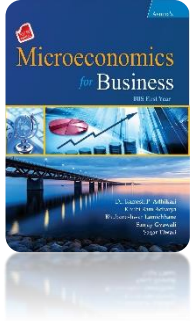


Learning Objectives

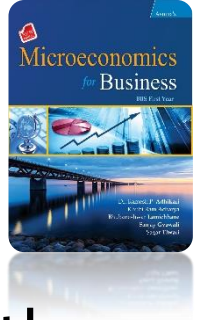
On completion of this unit, students will be able to:

- define different market structures and explain their characteristics
- illustrate the profit maximizing goal of firm
- describe the process of price and output determination under different market structures
- derive short-run supply curve of a firm and industry under perfect competition
- point out the economic effects of monopoly
- explain how a monopolistically competitive firm attains equilibrium under product variation and selling expenses
- define cartel and explain its types
- explain about pricing under joint profit maximization cartel
- give an introduction of various pricing practices in the real world.

Introduction



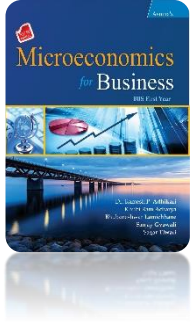
- The theories of product pricing are concerned with the determination of equilibrium price and quantity of the output in the different market structures.
- The way in which price and quantity of output are determined depends on the market structure.
- The determination of price and quantity of output under different market structures is very crucial for business decision making.
- The success of the business also depends on the determined price and quantity of the output.



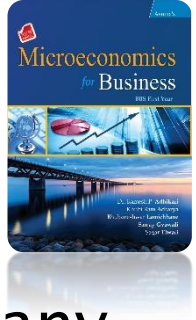
Market Structure: Concept and Characteristics

- The forces behind the demand and supply play a vital role in the determination of price of output.
- But the way in which these two factors determine the price of output depends on market structure i.e., how the firms are organized.
- Thus, the pricing of output depends on how product markets are organized, that is whether there are one, two or many firms or producers, whether the product is homogeneous, and so on.
- The market structure refers to the characteristics or structural variables of the market that affect managerial decisions.
- These characteristics are: the number of firms competing in a market, the relative size of firms, technological and cost conditions, demand conditions and the ease with which firms can enter or exit the industry.

Characteristics Market Structure



1. Number of firms in the industry
2. Size of the firm
3. Industry concentration
4. Technology used to produce goods and services
5. Demand and market conditions
6. Potential for entry



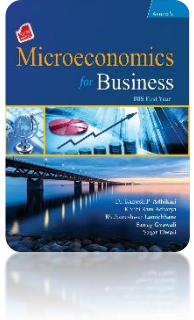
Perfect Competition

Definition

Perfect competition is the market structure in which there are many buyers and sellers of a homogeneous product. Under this market structure, the price of a product is determined in the industry and the sellers and buyers accept that price, so the price is fixed.

Characteristics of Perfect Competition

1. Large number of sellers and buyers
2. Homogenous products
3. Free entry and exit
4. Perfect mobility of factors of production
5. No government intervention
6. Perfect knowledge about the market
7. Profit maximization objective



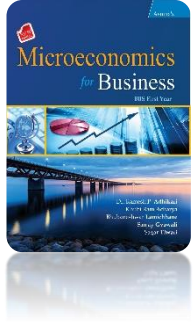
Monopoly

Definition

Monopoly is defined as the market structure where there is a single seller of a product having no close substitutes. The word 'monopoly' has been derived from the Greek words 'monos polein', which means 'alone to sell'.

Characteristics of Monopoly

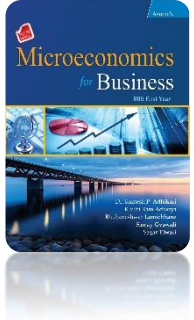
1. Single seller
2. No close substitutes
3. Barriers to entry
4. Firm and industry
5. Independent price policy
6. Price discrimination
7. Profit maximization



Monopoly Contd.

Factors that give rise to Monopoly (Sources of Monopoly)

1. Patent over new innovations
2. Control over the raw materials
3. Cost of establishing an efficient plant
4. Market franchises



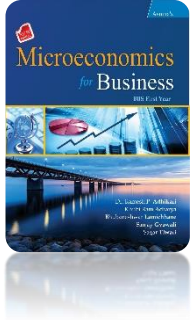
Monopolistic Competition

Definition

Monopolistic competition is defined as the market structure where there are many sellers and buyers of differentiated or heterogeneous product. Differentiated products are products that are similar but not identical.

Characteristics of Monopolistic Competition

1. Large number of sellers and buyers
2. Differentiated Product
3. Free entry and exit of firms
4. High selling cost
5. Relatively elastic demand curve
6. Heroic assumption
7. Profit maximizing objective



Oligopoly

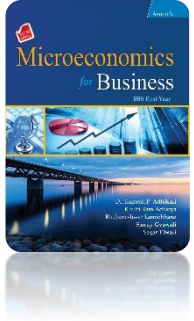
Definition

Oligopoly is a form of market structure where there are a few sellers of homogeneous or differentiated products. If the products are homogeneous, it is called homogeneous or perfect or pure oligopoly and if products are differentiated, it is called heterogeneous or differentiated or imperfect oligopoly.

Characteristics of Oligopoly

1. A few sellers
2. Interdependence of decision making
3. Barriers to entry
4. Indeterminate price and output
5. Advertising and selling cost
6. Nature of the product
7. Price rigidity

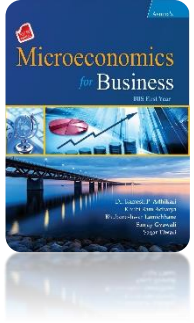
Non-collusive oligopoly and Collusive oligopoly



- **Non-collusive oligopoly** is one of the two types of oligopoly market in which oligopoly firms act independently, they is competition with one another and there is no-collusion between the firms.
- **Collusive oligopoly** is another type of oligopoly market where firms have been found to be in some kind of collusion or agreement. There are mainly two models of collusive oligopoly which are:

  1.Cartel: It is a type of collusive oligopoly market, where firms or sellers of a commodity are formally organized with the aim of restricting competition and maximizing profits.

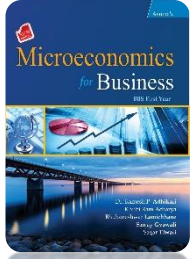
  2.Price Leadership: The form of market collusion in oligopolistic markets whereby the firm that serves as the price leader initiates a price change and other firms in the industry soon match it.



Profit Maximizing Goal of the Firm

- The main objective of a firm is to maximize profit. The firm will maximize profit, when it attains equilibrium. The firm's equilibrium is the condition that, once achieved, tends to persist means that the firm has no tendency to change its behaviour. Thus, a firm is maximizing its profit when it is in equilibrium.
- There are two approaches to analyze firm's equilibrium or profit maximization. They are:
  1. Total revenue and total cost approach (TR-TC Approach)
  2. Marginal revenue and marginal cost approach (MR-MC Approach)

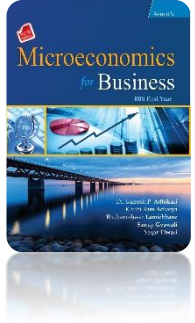
Total Revenue and Total Cost Approach (TR-TC Approach)



- In terms of total revenues and costs, the total profit (π) is the difference between total revenue (TR) and total cost (TC), i.e. π = TR–TC.
- As total revenue (TR) = P × Q, and the total cost (TC) = AC × Q, given the per unit revenue (AR or P) and per unit cost (AC) in the short-run, the total profit depends on the quantity produced and sold (Q).
- Here, we assume all quantity produced by the firm is sold in the market. So, to achieve the goal of profit maximization, the firm has to seek a production or sales level that makes the largest positive difference between TR and TC.
- In other words, the total profit is maximized at the level of production or sale (Q) where the positive difference between TR and TC is maximum.

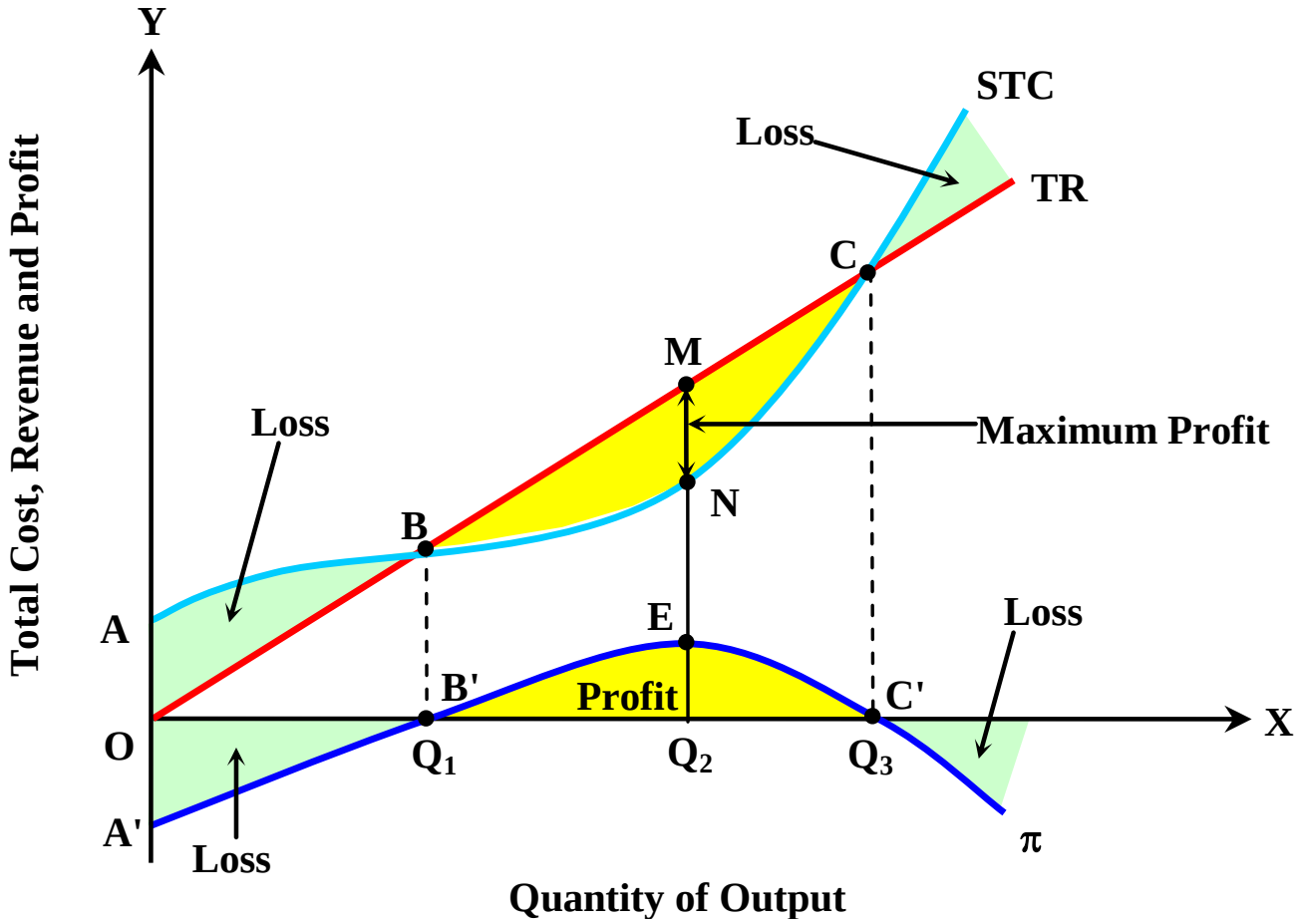
Maximum Profit (π) = TR – TC

Total Revenue and Total Cost Approach (TR-TC Approach) Contd.

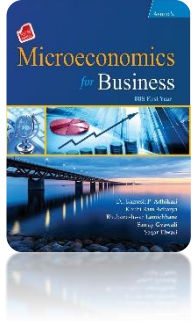


1. Short-run Equilibrium of a Firm under Perfect Competition Market by Using TR-TC Approach

- A perfectly competitive firm attains equilibrium or maximizes profit in the short-run at that level of output at which the positive difference between TR and TC, is maximum.

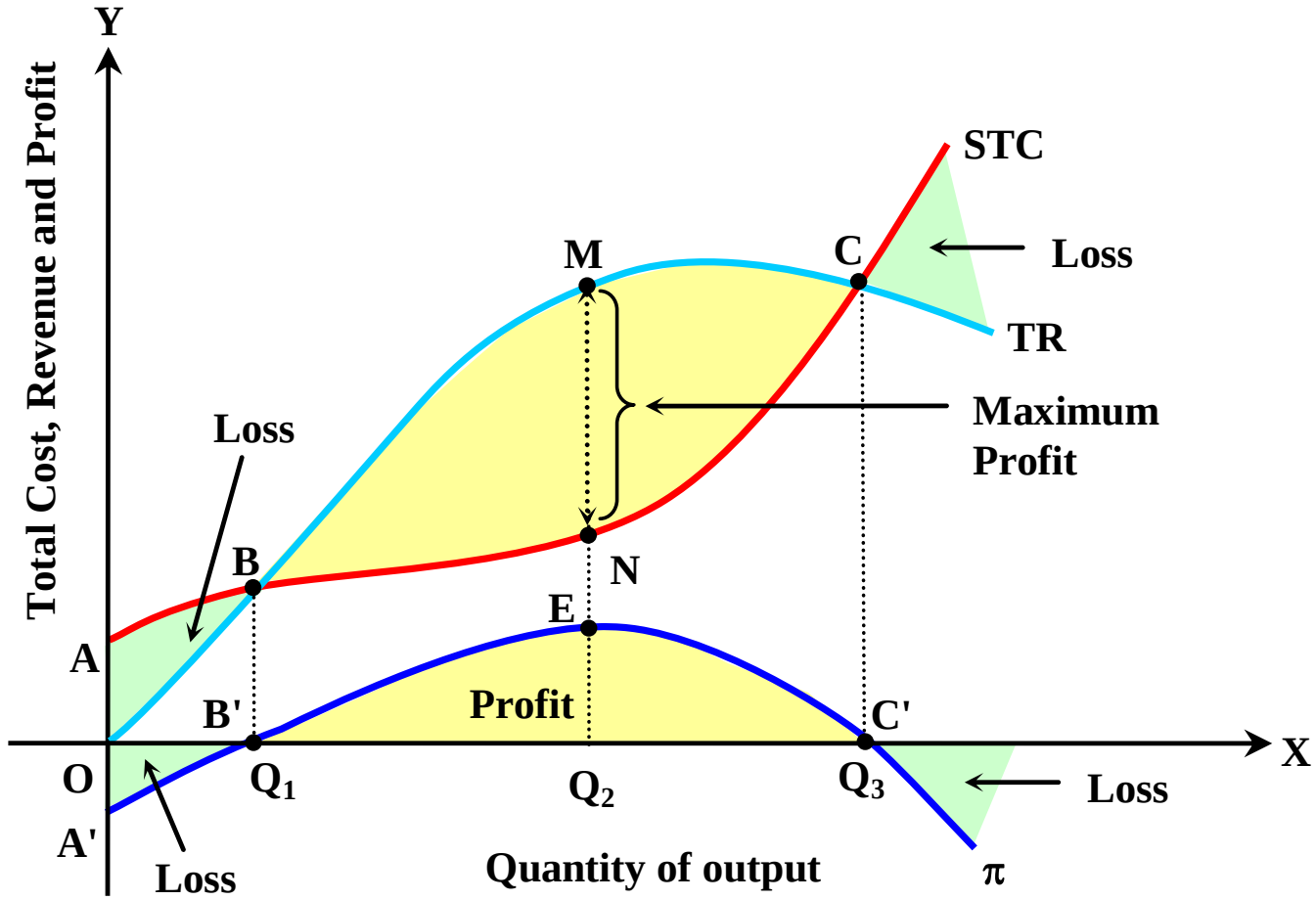


Total Revenue and Total Cost Approach (TR-TC Approach) Contd.

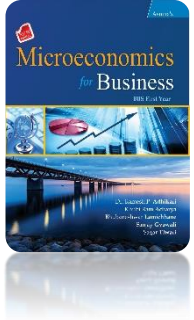


2. Short-run Equilibrium of Firm under Monopoly Market by Using TR-TC Approach

- According to the TR -TC approach, a monopoly firm attains equilibrium or maximizes its profit in the short-run at the level of output and price at which the positive total difference between TR and TC is maximum.

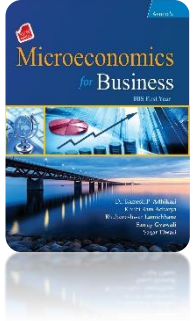


Marginal Revenue and Marginal Cost Approach (MR-MC Approach)



- The marginal revenue and marginal cost approach(MR–MC approach) is even more widely used to determine the equilibrium level of output or the profit maximizing level of output of the firm.
- A profit maximizing firm will be in equilibrium when the following two conditions are fulfilled:

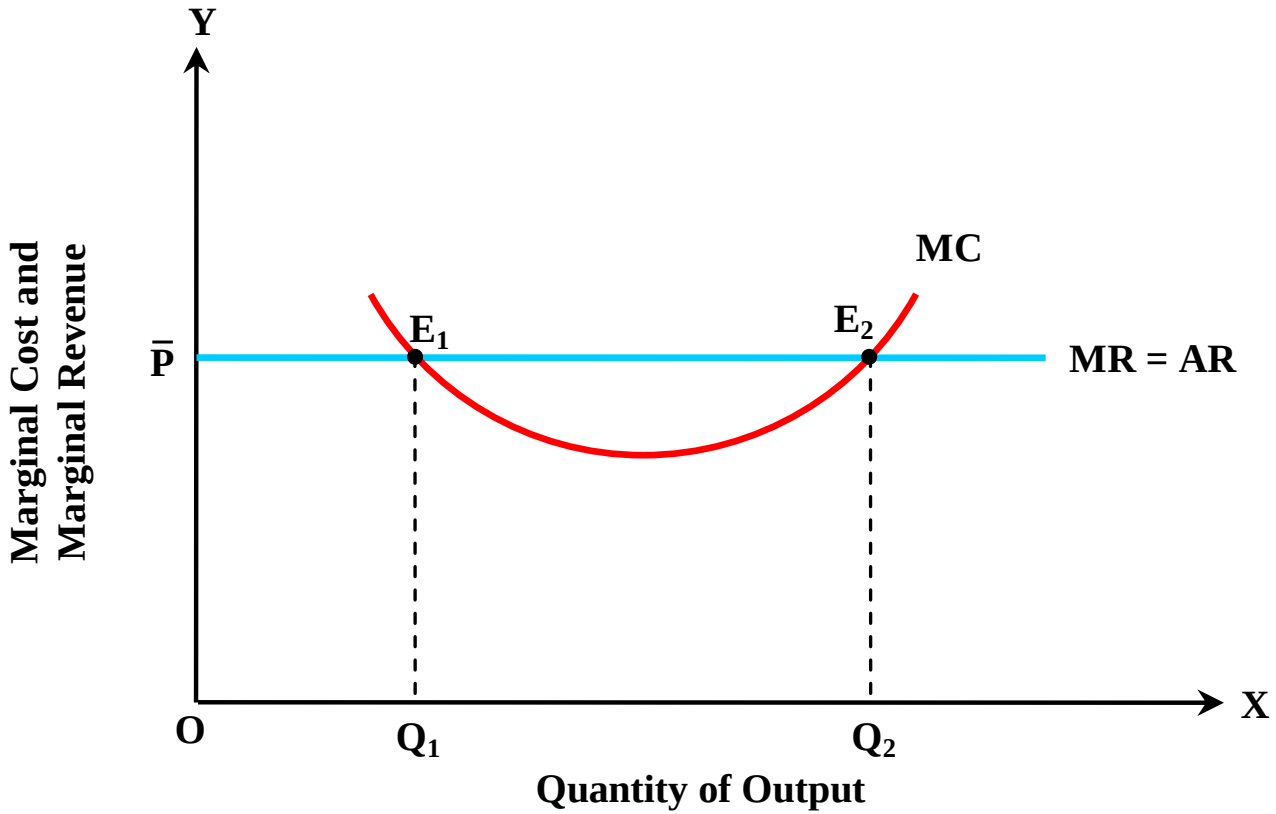
1. **Marginal revenue should be equal to marginal cost (MR = MC).** This condition is also known as necessary condition or first order condition.
2. **Marginal cost (MC) curve must intersect marginal revenue (MR) curve from below.** In other words, slope of MC curve should be greater than slope of MR curve .This condition is also known as sufficiency condition or second order condition.

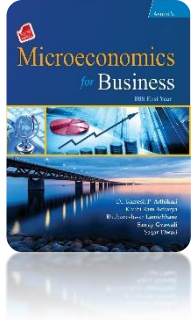


Marginal Revenue and Marginal Cost Approach (MR-MC Approach) Contd.

1. Short-run Equilibrium of a Firm under Perfect Competition by Using MR-MC Approach

- Under perfect competition, marginal revenue and price (average revenue) are equal i.e. P = AR = MR, therefore marginal revenue curve coincides with AR curve.

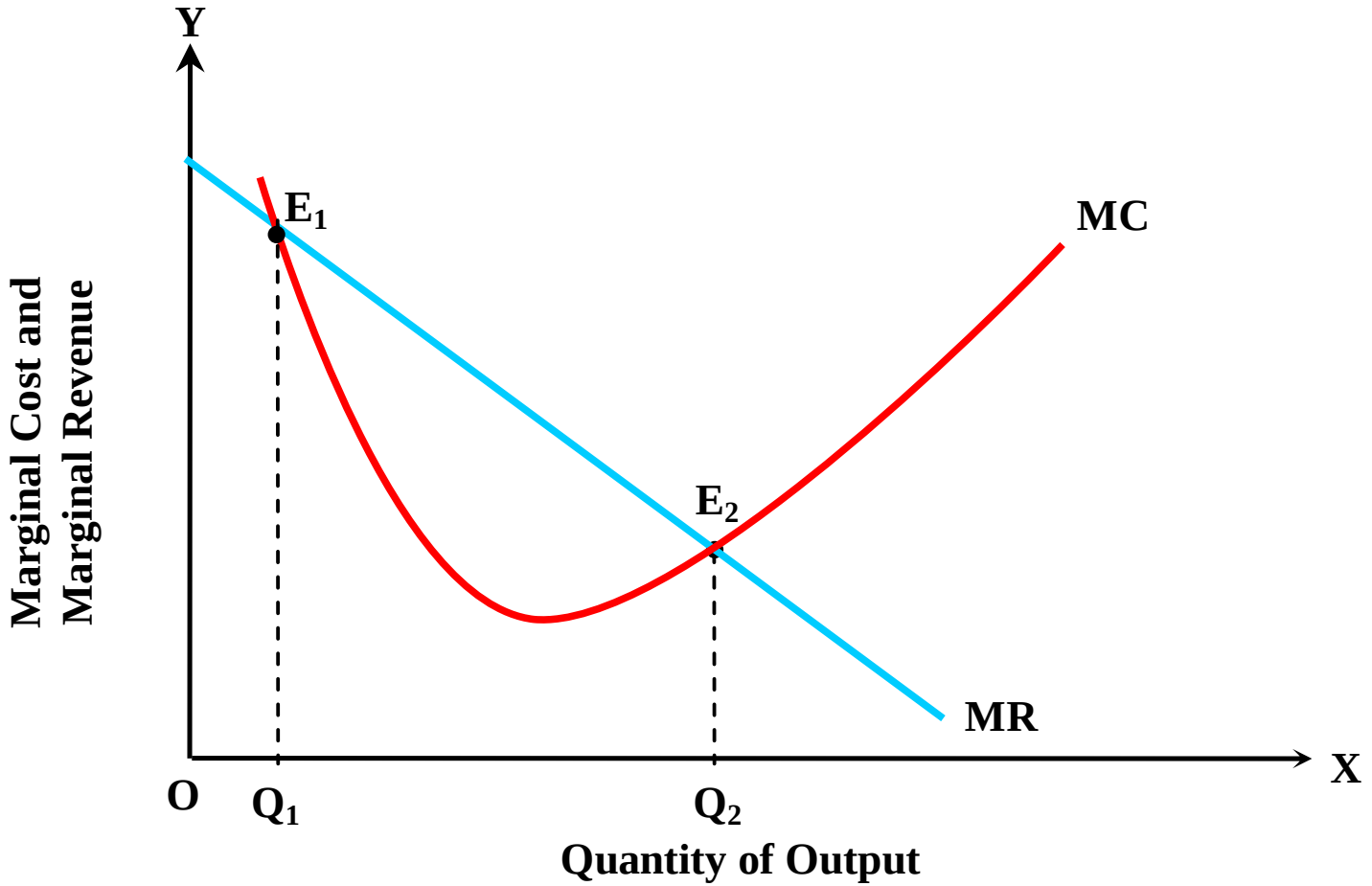




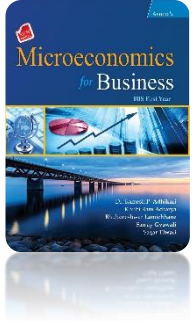
Marginal Revenue and Marginal Cost Approach (MR-MC Approach) Contd.

2. Short-run Equilibrium of Firm under Monopoly Market by Using MR-MC Approach

- The marginal revenue (MR) curve of the monopoly firm also slopes downward but it passes from the below of the average revenue curve.
- The marginal cost curve of the firm is roughly U-shaped.

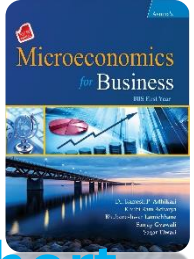


Price and Output Determination under Perfect Competition



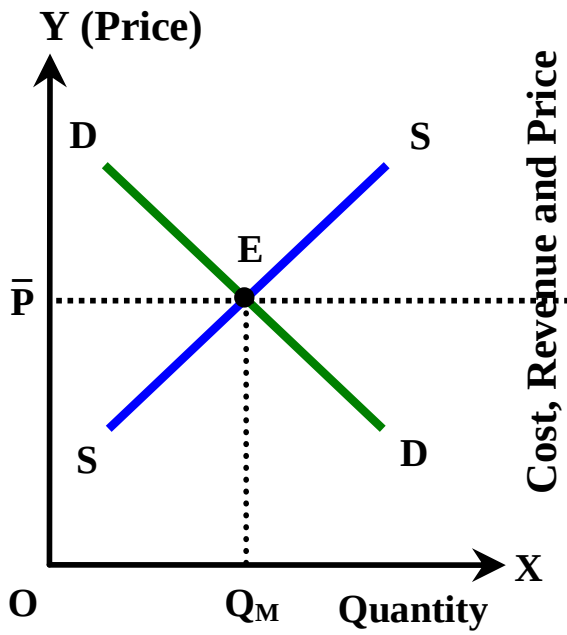
- Under perfect competition, the industry or market determines the price of the product by the interaction of market demand and market supply curves and the firms under the industry accept the price determined by the industry.
- The firms determine only the level of output and they have to sell their products at the price determined by the industry.
- So the price for the firms is constant or fixed.
- Therefore, the firm under perfect competition faces horizontal straight lined demand curve (AR curve) which coincides with MR curve.
- Hence, under perfect competition, P = AR = MR, but the cost conditions of the firms under an industry may be different.
- Price and output determination or equilibrium of firm under perfect competition in the short-run and long-run is explained below.

Price and Output Determination under Perfect Competition Contd.

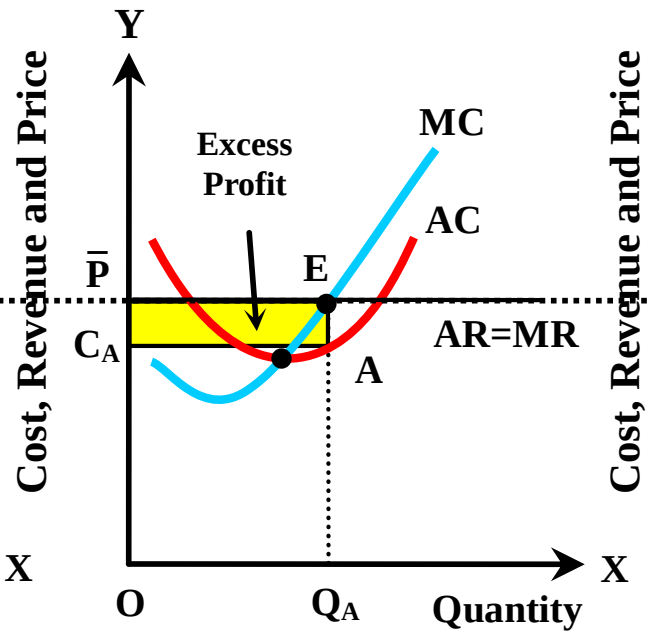


1. Price and output determination under perfect competition in the Short-run (Short-run equilibrium)

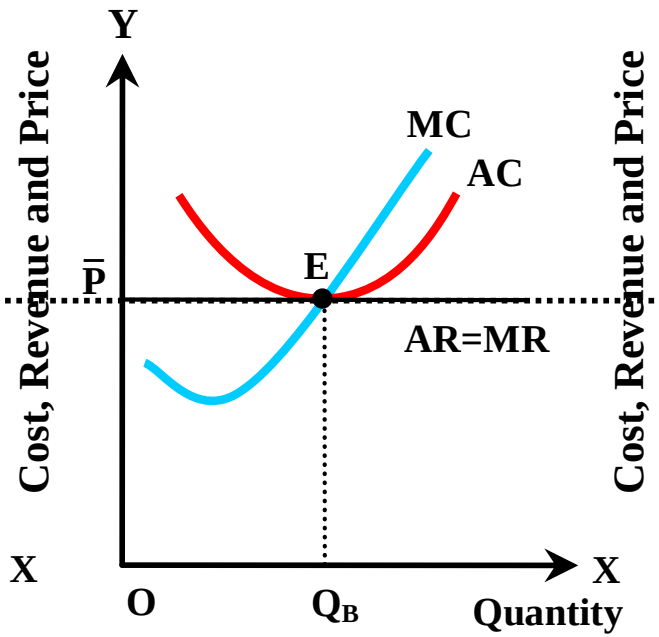
- Under perfect competition, marginal revenue and price (average revenue) are equal i.e. P=AR=MR, therefore marginal revenue curve coincides with average curve. The average and marginal cost curves of the firm are roughly U-shaped.
- The short-run equilibrium of a firm under perfect competition requires:
  1. Market supply should be equal to market demand
  2. Marginal revenue must be equal to marginal cost, i.e. MR = MC.
  3. MC curve must intersect MR curve from below. At equilibrium, the perfectly competitive firm may earn excess profit, normal profit or even bear loss in the short-run.
- As the price and the number of firms in the industry is fixed, the competitive firm's profit and loss depends on the short-run average cost.



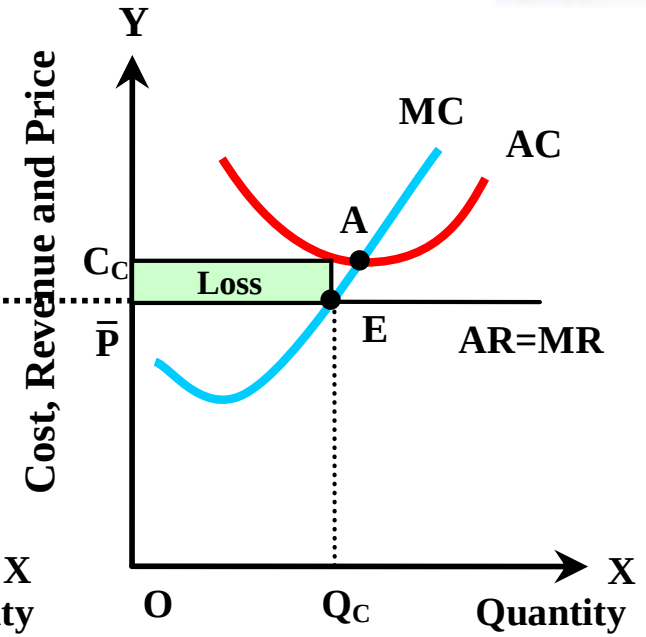
Panel (a):
Industry's Equilibrium



Panel (b): Short-run
Equilibrium of a firm
with Excess Profit

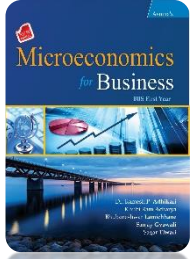


Panel (c): Short-run
Equilibrium of a firm
with Normal Profit



Panel (d): Short-run
Equilibrium of a firm
with Loss

Price and Output Determination under Perfect Competition Contd.



2. Price and output determination under perfect competition in the long-run (Long-run equilibrium)

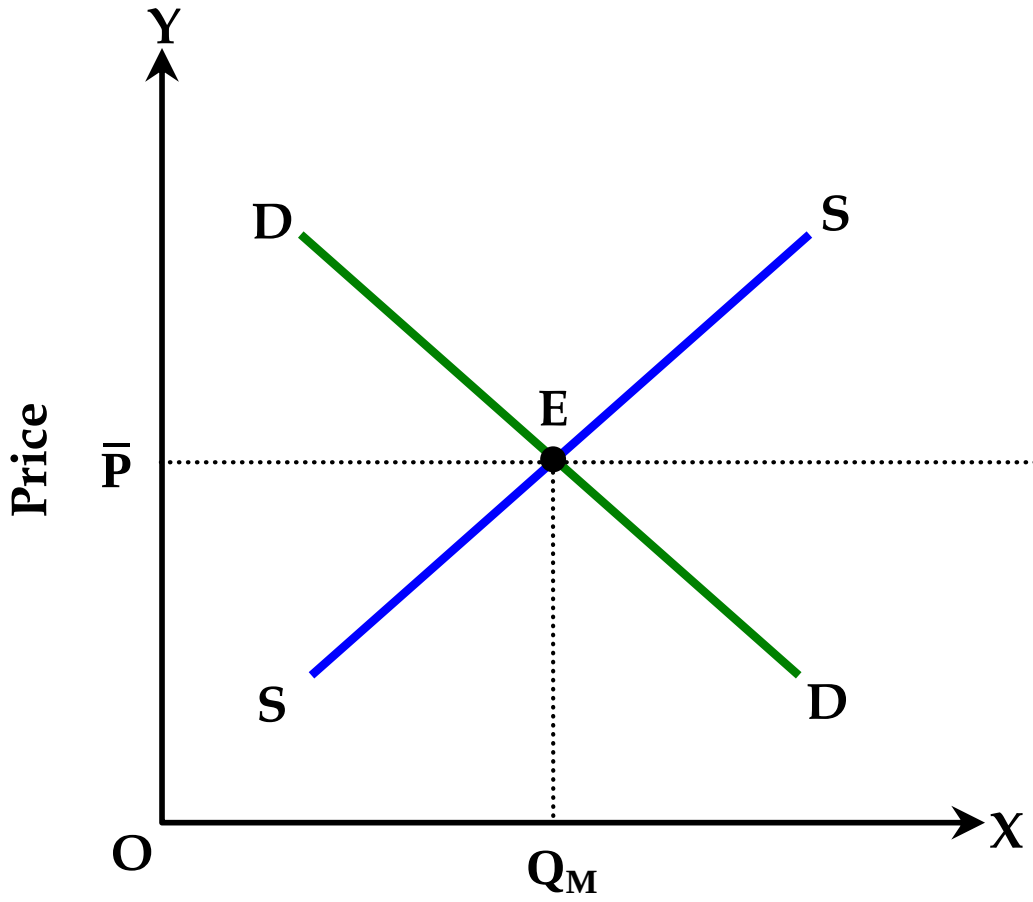
- Under perfect competition, firms can easily enter into and exit out of the industry only in the long-run. And also existing firms have the option of adjusting the quantities of their fixed inputs in the long-run. Thus in the long-run, existing firms can make adjustments in their output and costs.
- Under perfect competition, the following conditions must be fulfilled for a firm in order to attain equilibrium in the long run:

  1. Price (P) or average revenue (AR) or marginal revenue (MR) = long-run average cost (LAC) = long marginal cost (LMC) = short-run average cost (SAC) = short marginal cost (SMC)

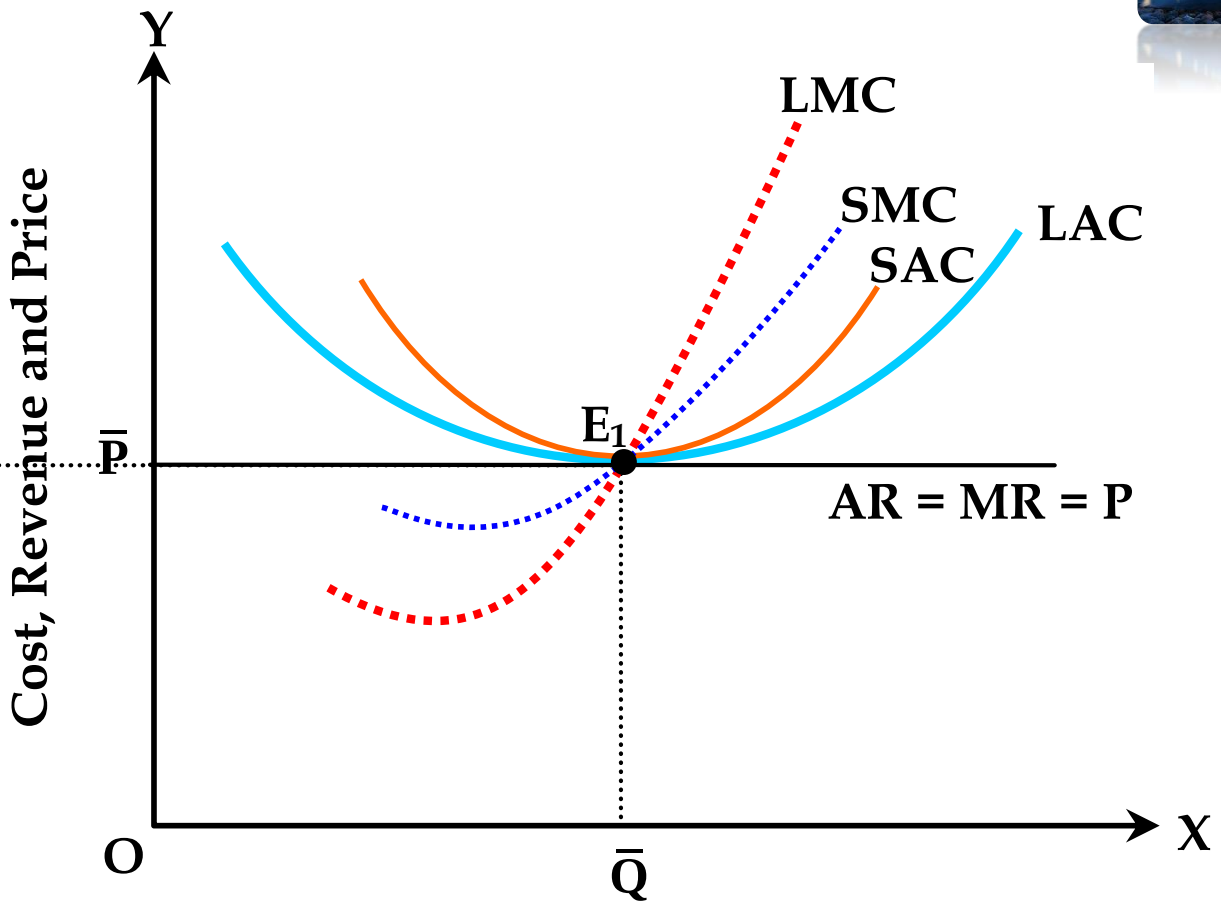
  i.e. P = LAC = LMC = SAC = SMC

  2. LMC curve must intersect MR curve from below.

- Thus, under perfect competition market, whatever may be the profit loss situations (excess profit or normal profit or loss)in the short-run equilibrium, the firm earns just normal profit in the long-run

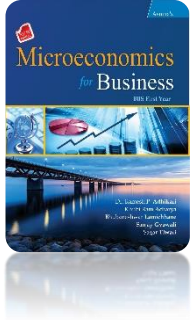


Quantity of Output
Panel (a): Industry's Equilibrium

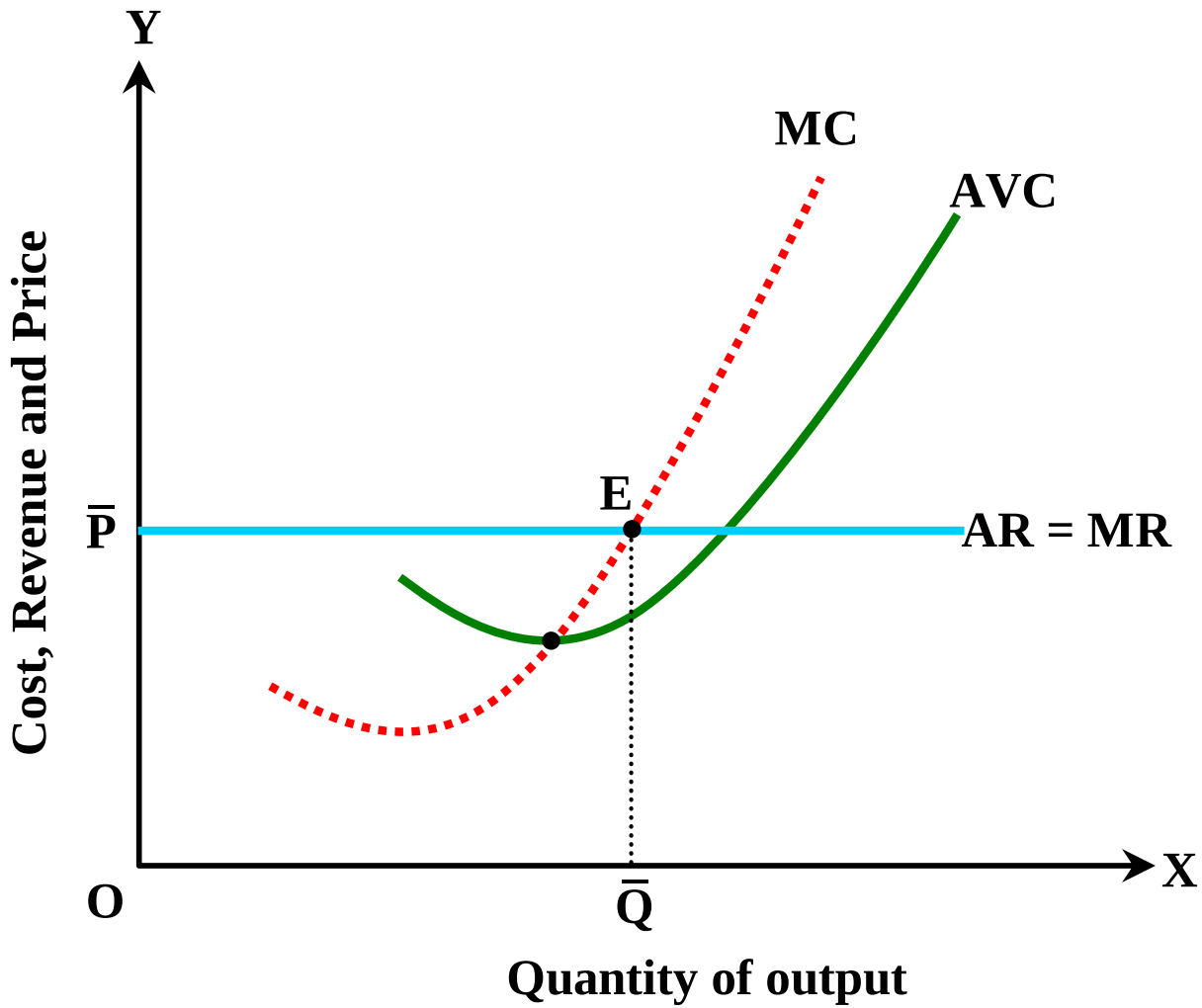


Quantity of Output
Panel (b): Long-run Equilibrium of the firm with Normal Profit

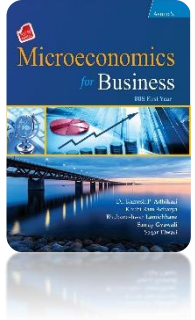
Derivation of Short-run Supply Curve of a Firm and an Industry under Perfect Competition



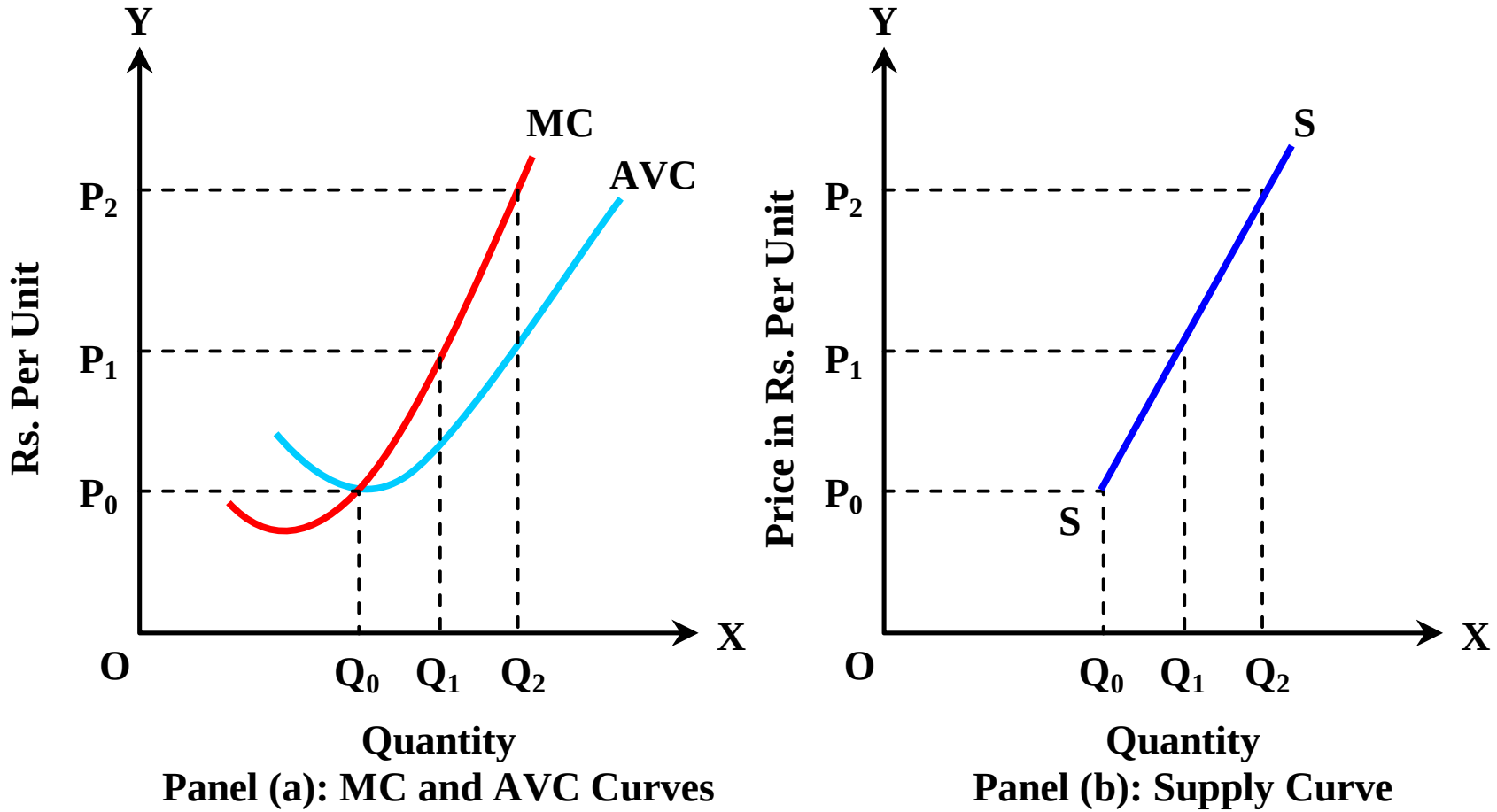
- The demand curve that a competitive firm faces for its output is almost horizontal line.
- Similarly, we know that the competitive firm in the short run will be in equilibrium or will maximize profit at the point where MR = MC and MC curve is rising.
- But for the firm the price is constant and, hence marginal revenue (MR) and average revenue(AR) are constant and equal to price(P).



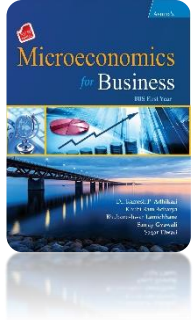
Derivation of Short-run Supply Curve of a Firm and an Industry under Perfect Competition Contd.



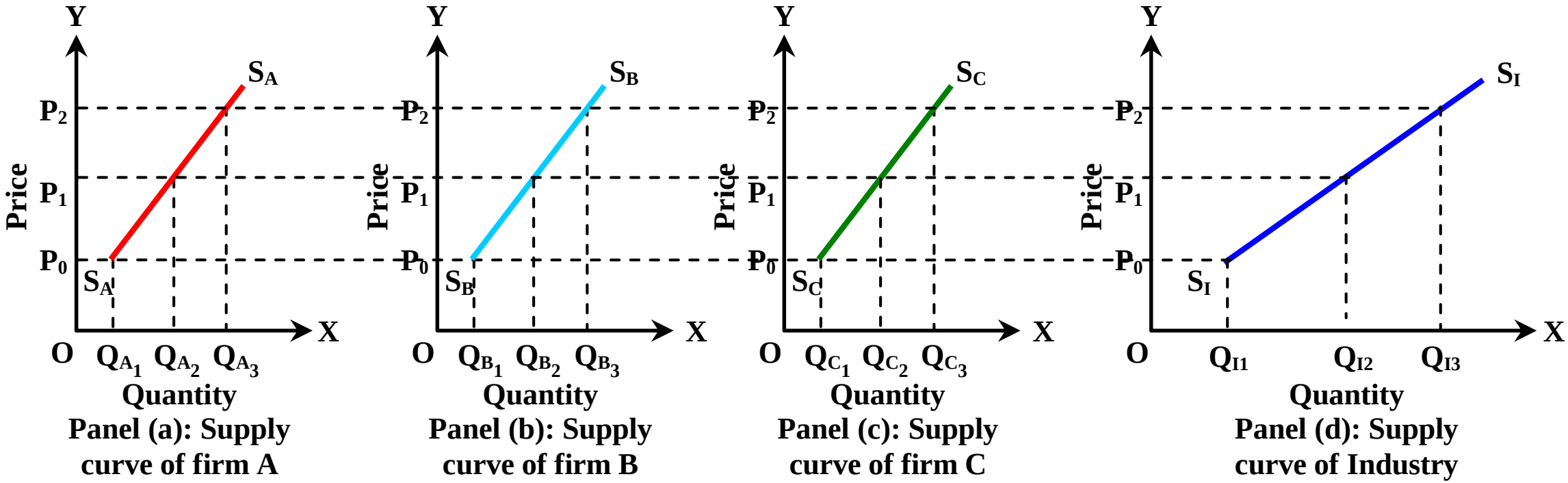
- If we vary the price (but, P > AVC), we get different level of output.
- The rising portion of firm's MC curve above the AVC curve gives the short run supply curve of the competitive firm.



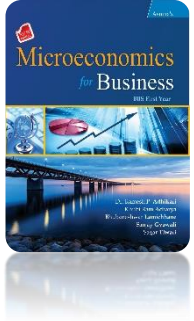
Derivation of Short Run Supply Curve of an Industry



- An industry, under perfect competition, can be defined as the group of firms producing homogeneous product.
- The short run supply curve of an industry is normally upward sloping and shows the positive relationship between price and quantity supplied by the industry.

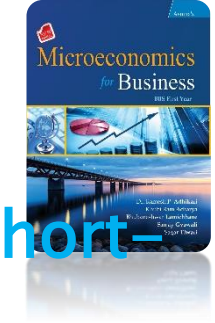


Price and Output Determination under Monopoly



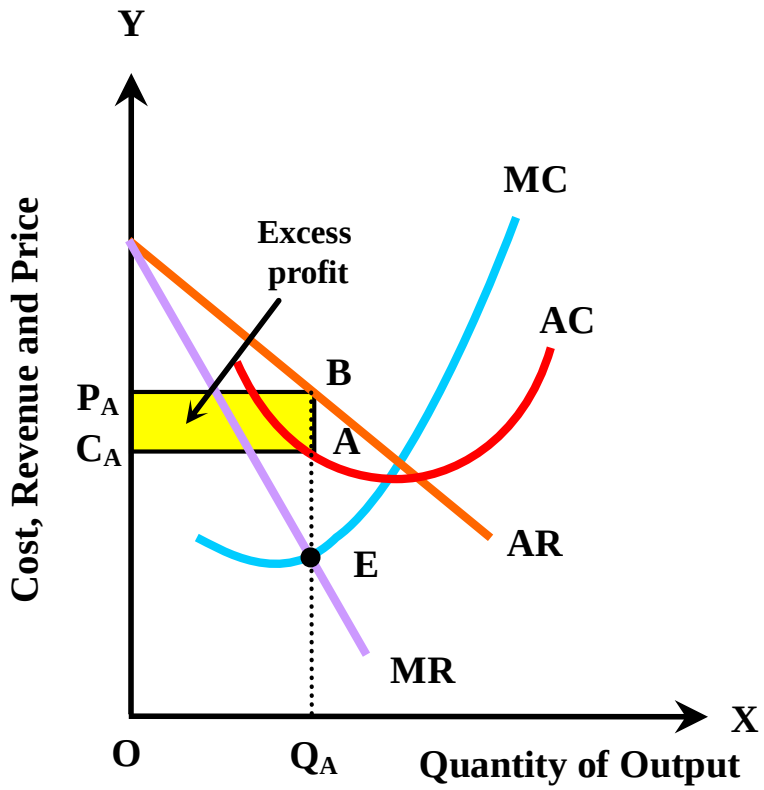
- The demand curve facing the monopolist is the market demand curve which is downward sloping.
- The average revenue curve coincides with the demand curve.
- Because the average revenue curve slopes downward, the MR curve also slopes downward and passes from the below of average revenue curve because the monopolist charges a single price on all the units sold, MR is less than price.

Price and Output Determination under Monopoly Contd.

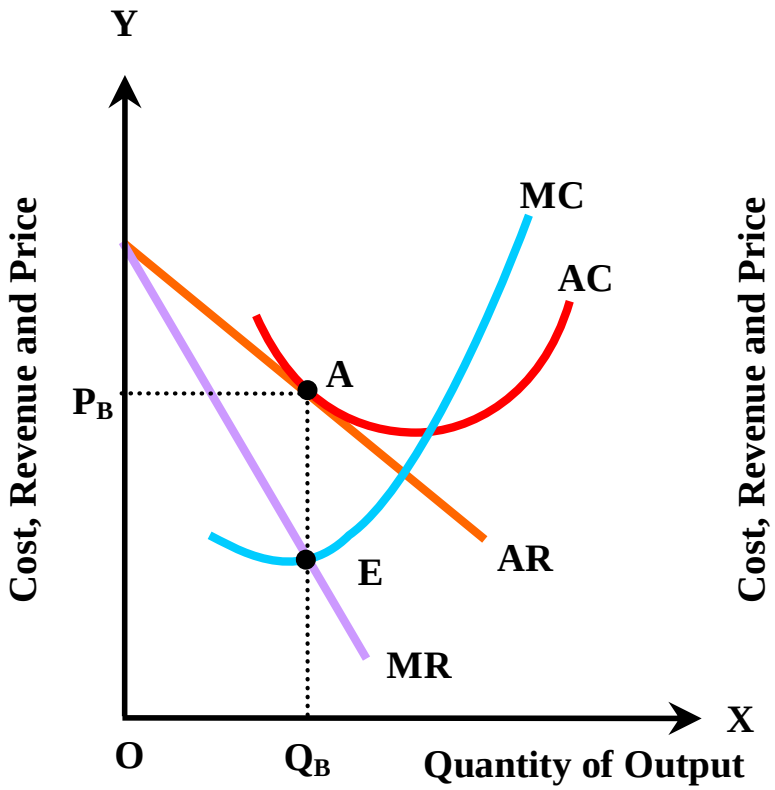


1. Price and output determination under monopoly in the short-run (Short-run equilibrium)

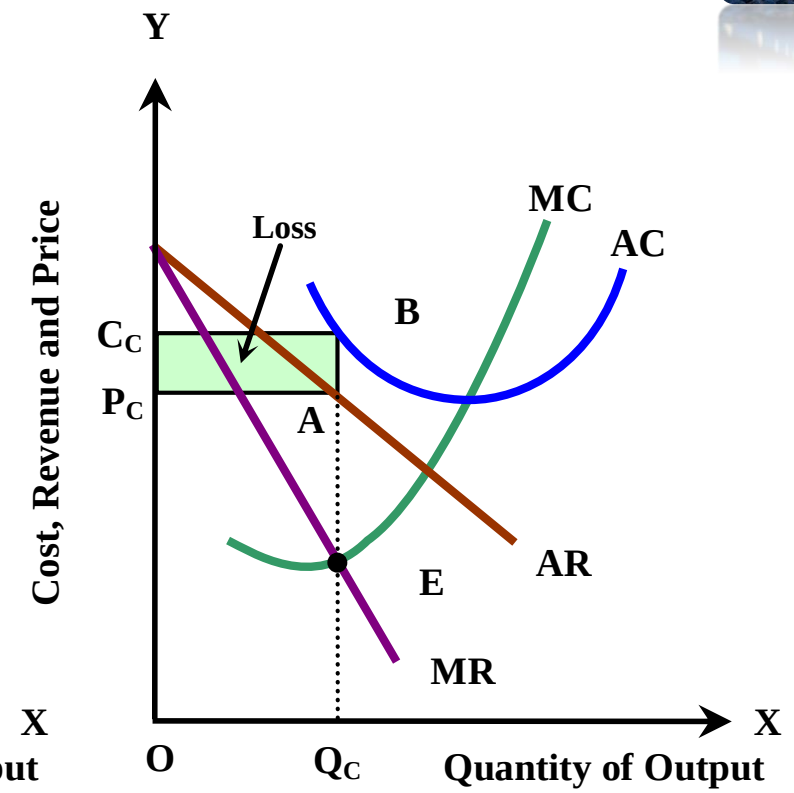
- Short-run refers to that period of time in which the monopolist cannot change the fixed factors like plant and machinery.
- However, the monopolist is free in making price decision due to the entry of new firms blocked and having no close substitutes of its products.
- It means that the monopolist sets the price of the product.
- The monopolist maximizes profit or attains equilibrium by selecting the output at the point where, MR = MC and MC curve is rising.
- The monopolist can charge the highest price that s/he can get for this output, according to the demand curve. But the equilibrium output does not imply that the monopolist can earn profit.
- The profit or loss situation depends on the cost structure of the firm.
- Thus, the short-run equilibrium of monopolist requires:
  1. Marginal revenue must be equal to marginal cost, i.e. MR = MC.
  2. MC curve must intersect MR curve from below.



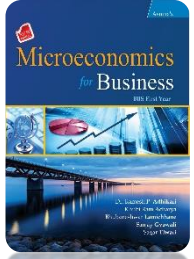
Panel (a): Short-run Equilibrium of a firm with Excess Profit



Panel (b Short-run Equilibrium of a firm with Normal Profit



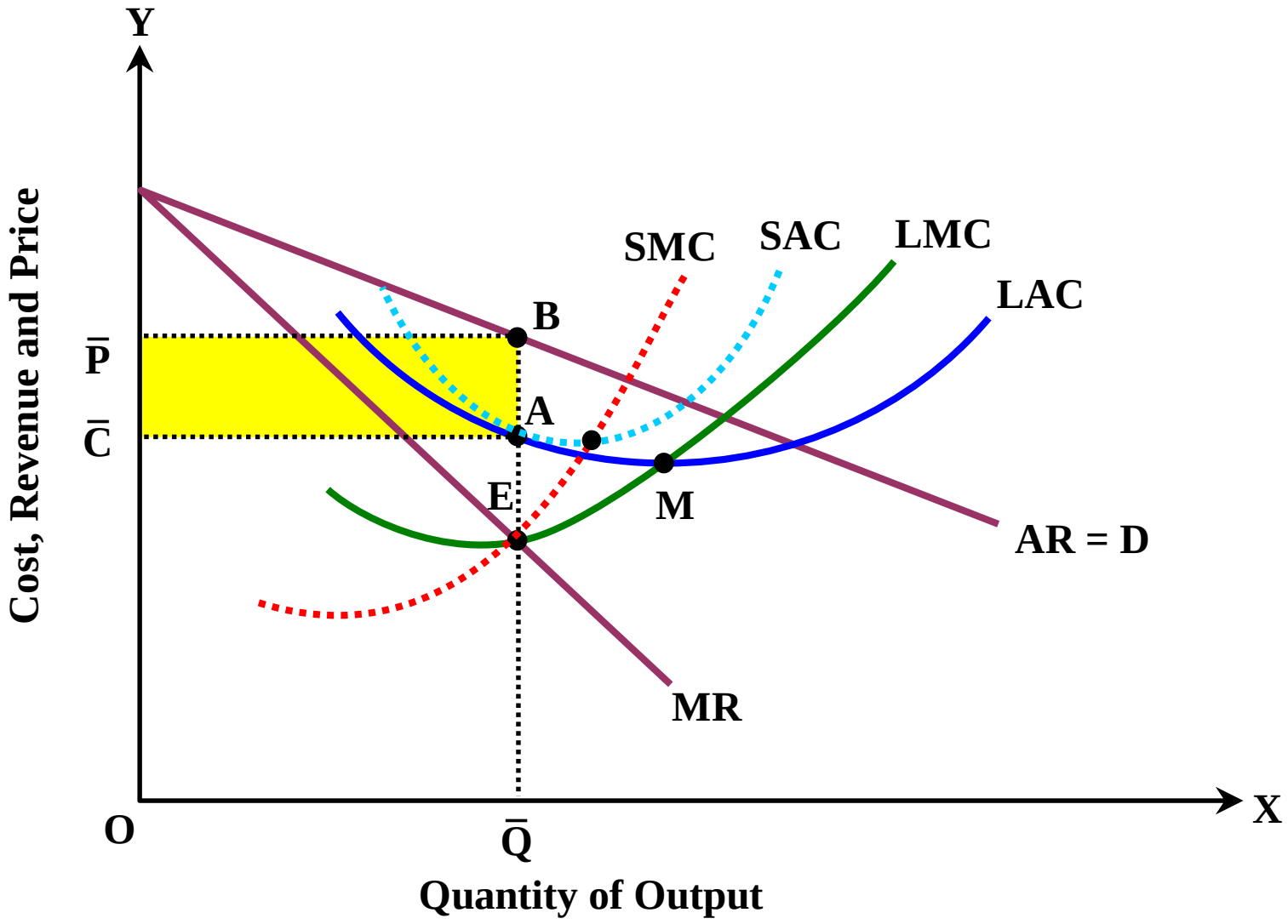
Panel (c): Short-run Equilibrium of a firm with Loss

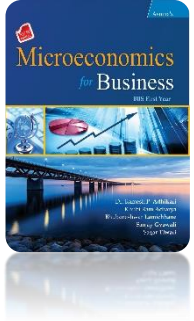


Price and Output Determination under Monopoly Contd.

2. Price and output determination under monopoly in the long-run (Long-run Equilibrium)

- Long-run is a period of time in which a monopoly firm can rearrange its production techniques and size of production plant.
- Under the monopoly, as the entry of new firms blocked and there are no any close substitutes of the product, the firm will remain in the business if there is no loss in the long-run.
- The long-run equilibrium requires the following conditions:
  1. MR = LMC
  2. LMC curve must intersect MR curve from below.

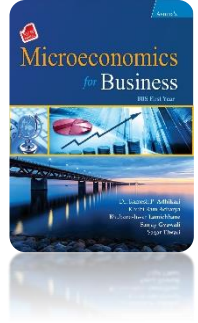

Y
Cost, Revenue and Price
SMC
SAC
LMC
LAC
B
$\bar{P}$
$\bar{C}$
A
E
M
AR = D
MR
O
$\bar{Q}$
X
Quantity of Output



Economic Effects of Monopoly

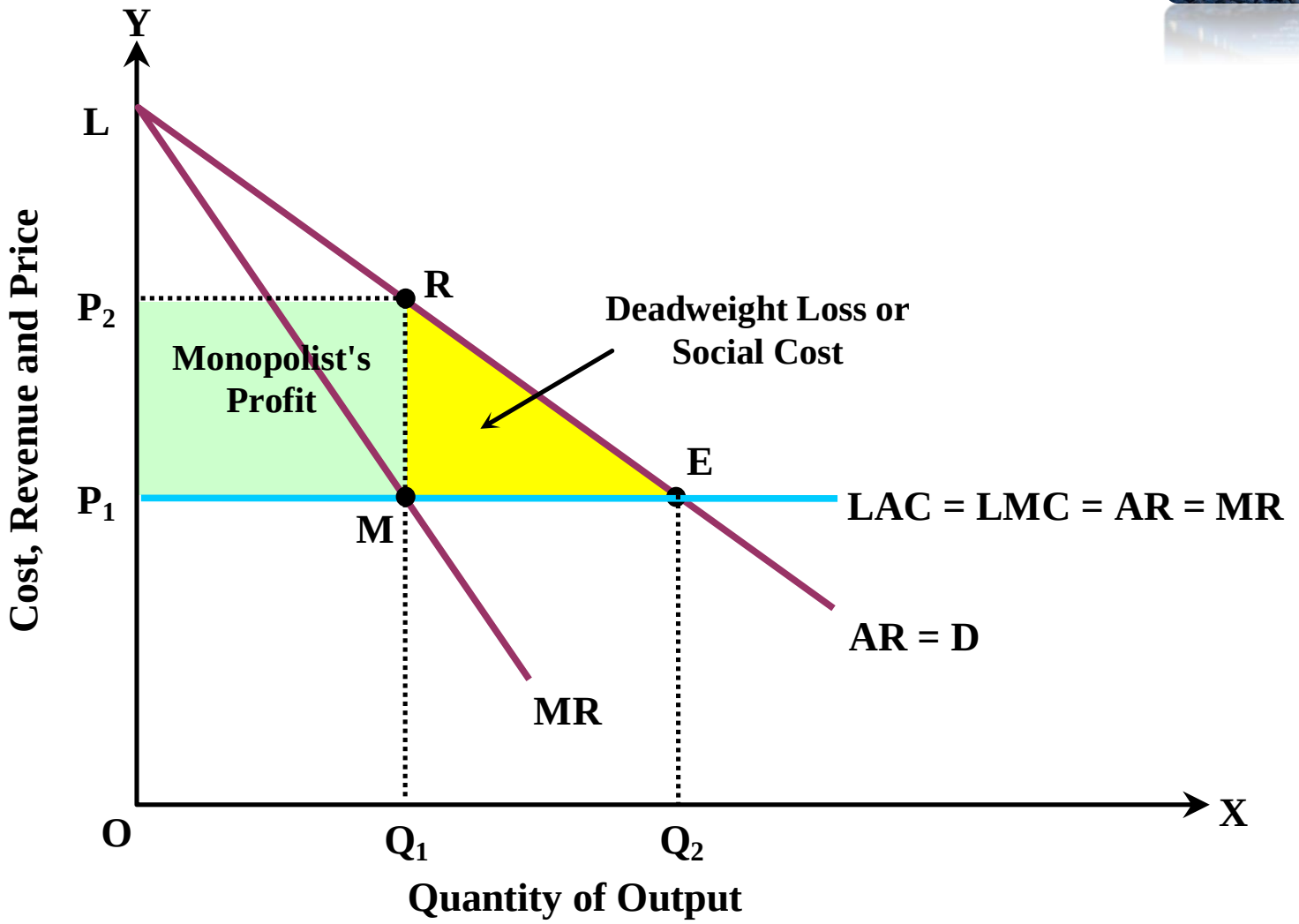
1. Adverse or negative economic effects of monopoly
    a. Allocative inefficiency
    b. Productive inefficiency
    c. Loss of social welfare and dead-weight loss
    d. Contributes income inequality
    e. Lacks to improve product/Reduce innovation
    f. Cost inefficiencies
2. Positive economic effect of monopoly
    a. Promotes innovation
    b. Benefit from the economies of scale

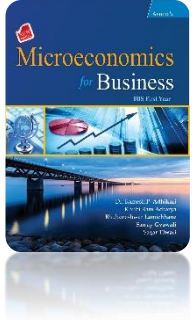
Economic Effects of Monopoly



c. Loss of social welfare and dead-weight loss

For the illustration of the loss of social welfare and dead-weight loss we assume a constant cost industry. The long run cost conditions of the both perfectly competitive firm and monopolist are same and shown by LAC = LMC curves. The revenue conditions of both the firms are different and shown by AR and MR curves. Here, illustration is made based on the long-run because long-run equilibrium is stable





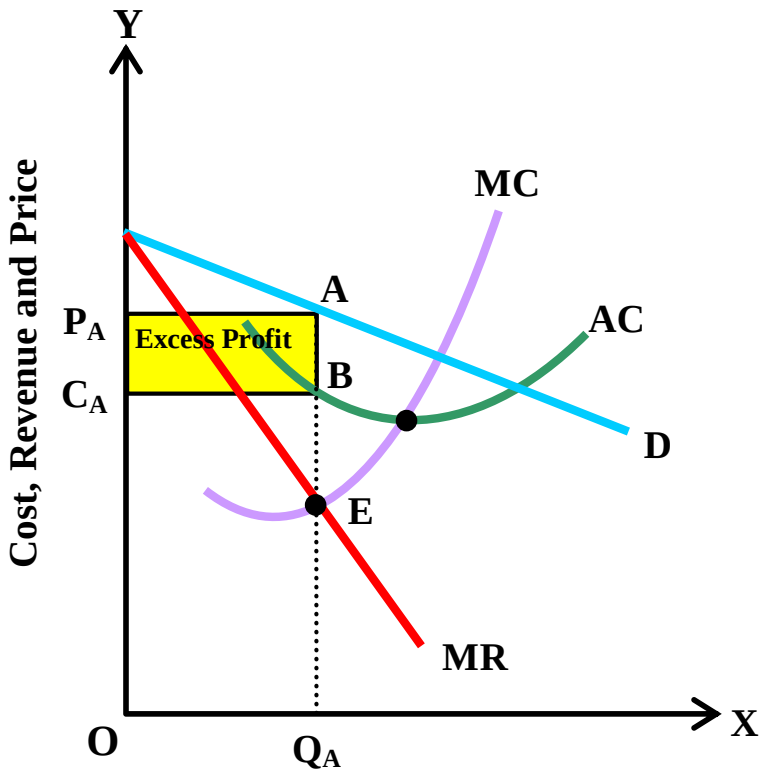
Price and Output Determination under Monopolistic Competition

1. Price and output determination under monopolistic competition in the short-run (Short-run equilibrium)

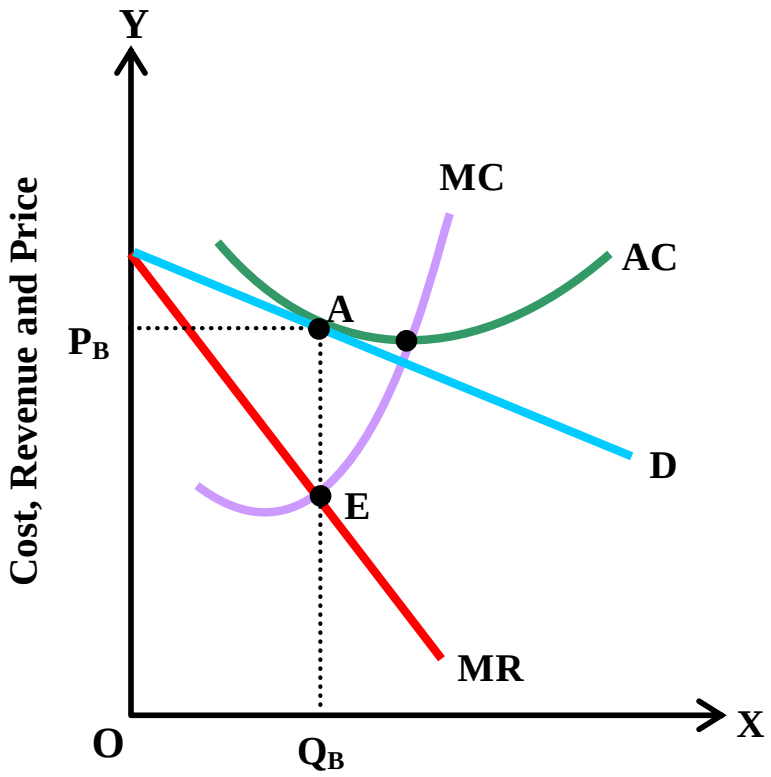
- The demand curve of the firm under the monopolistic competition is negatively sloped and highly price elastic as compared to that of the monopoly firm.
- As the demand curve of the firm is negatively sloped, the corresponding marginal cost curve is also negatively sloped.
- The short-run equilibrium of monopolistically competitive firm requires:

    1. Marginal revenue must be equal to marginal cost, i.e. MR = MC.
    2. MC curve must intersect MR curve from below.

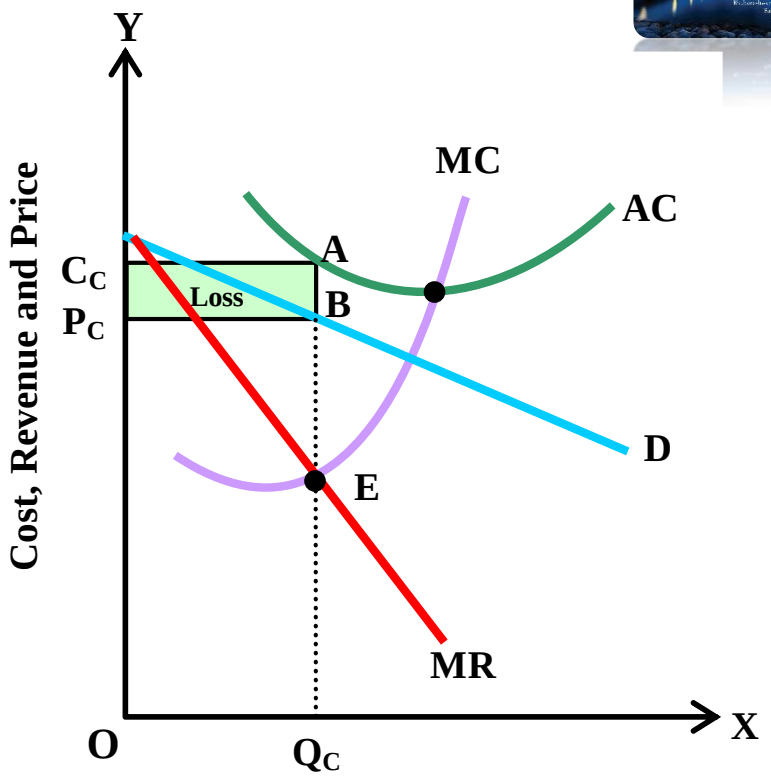
- At equilibrium, the monopolistically competitive firm may earn excess profit or normal profit or even bear loss (as long as P ≥



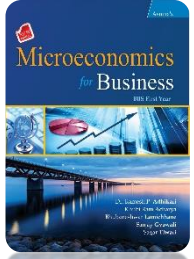
Quantity of Output
Panel (a): Short-run Equilibrium
of a firm with Excess Profit



Quantity of Output
Panel (b): Short-run Equilibrium
of a firm with Normal Profit



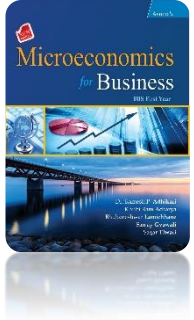
Quantity of Output
Panel (c): Short-run Equilibrium
of a firm with Loss



Price and Output Determination under Monopolistic Competition Contd.

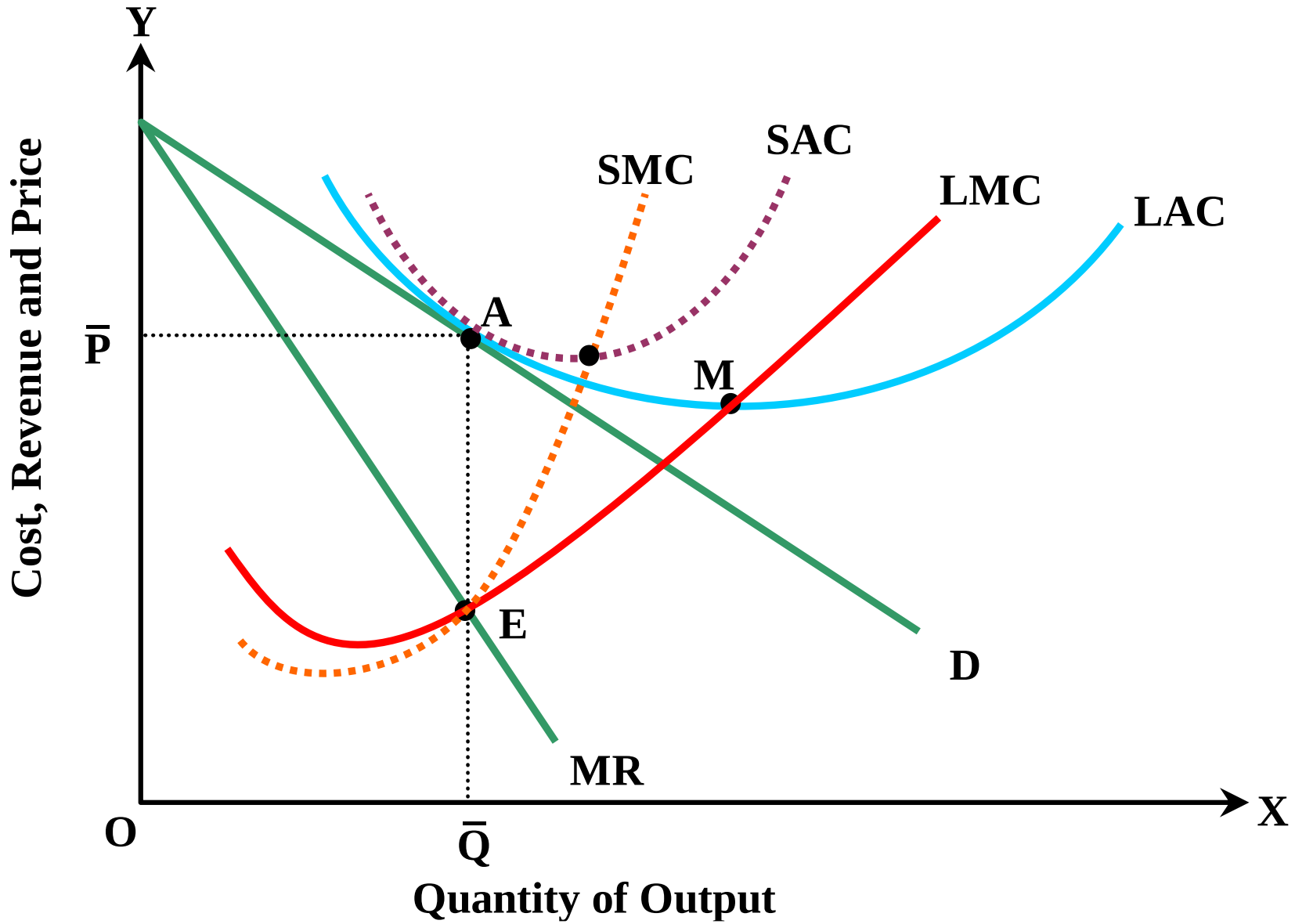
2. Price and output determination under monopolistic competition in the long-run (Long-run equilibrium)

- In the monopolistic competition market, group of firms producing differentiated but closely substitutable goods is called 'production group' or simply 'group' but not 'industry' as in the perfect competition.
- In the monopolistic competition market, there is free entry into and exit from the 'production group'.
- So, if the existing firms in the production group are earning excess profit in short-run, other new firms will enter into the 'production group' in the long-run.
- As new firms enter into the 'production group', the price of the product falls due to the increase in supply.
- The average cost of production also increases due to increase in price of factors of production.

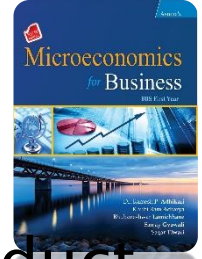


Price and Output Determination under Monopolistic Competition Contd.

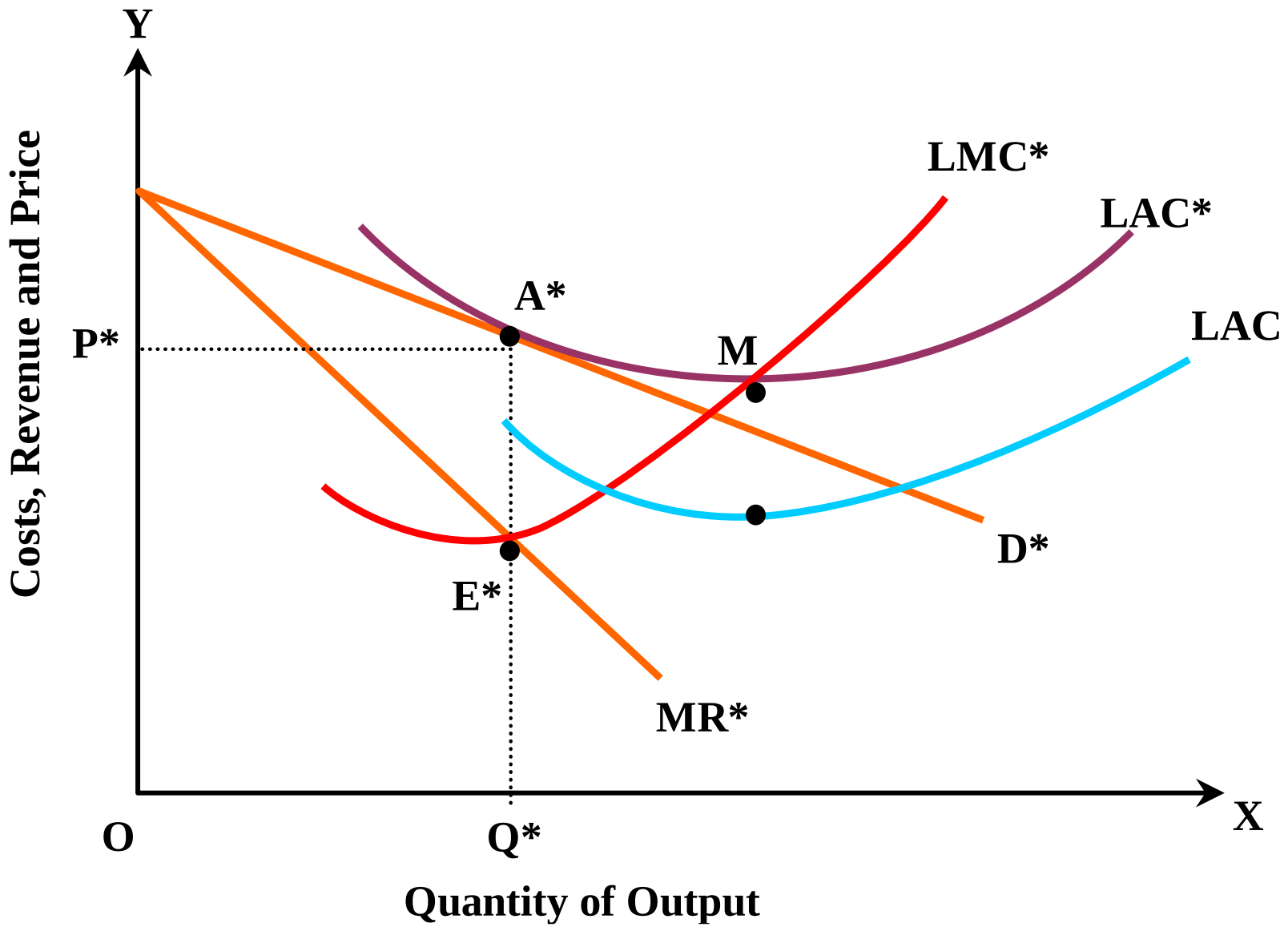
- The cause of increase in prices of factors of production is the increased demand of factors of production due to the increase in number of firms.
- The fall in price of the product and increase in average cost of production reduces profit margin. Consequently, excess profit disappears.
- Similarly, if the existing firms are bearing losses in the short-run, they will leave the 'production group' in the long-run.
- Exit of the firms from the group will increase the price of the product as well as decrease the average cost of production.
- Hence, the existing firms will earn just normal profit in the long-run.
- The long-run equilibrium of monopolistically competitive firm requires:


Y
Cost, Revenue and Price
SMC
SAC
LMC
LAC
A
M
P̄
E
D
MR
O
Q̄
X
Quantity of Output

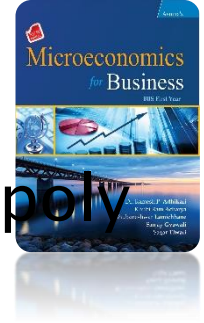
Monopolistic Firm's Equilibrium under Product Variation and Selling Expenses



- A monopolistically competitive firm can spend more on product variation and selling efforts to increase the demand for its product and make it less price elastic.
- The competition based on the advertising and product differentiation rather than on price is known as non-price competition.
- Product variation refers to changes in some of the characteristics of product that a monopolistically competitive firm undertakes in order to make its product more attractive to the consumers.
- Selling expenses refers to all those expenses that the firm incurs to advertise the product, increase its sales force, provide better service for its product and so on.
- Product variation and selling expenses can increase the firm's sales and profits, but they also lead to additional costs.
- A firm should spend more on product variation and selling effort as long as the MR from these efforts exceeds the LMC and until MR = LMC.
- A monopolistically competitive firm can increase profit in the short-run


Y
Costs, Revenue and Price
LMC*
LAC*
A*
P*
M
LAC
D*
E*
MR*
O
Q*
X
Quantity of Output

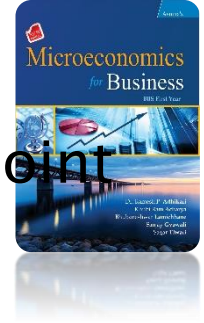
Cartels



- Cartel is defined as the formal organization of the collusive oligopoly firms in an industry with a purpose.
- Under cartels, the firms make agreement relating to price, market area and output levels.
- The main aim of the cartel is to reduce uncertainty arising from the mutual interdependence.
- In other words, a general purpose of cartels is to centralize certain managerial decisions and functions of individual firms in the industry with a view to promote common benefits.
- The cartel may be in the form of open or secret collusion.
- Whether the open or secret collusion, cartel agreements are explicit and formal.
- Therefore, cartels are regarded as the perfect form of collusion.
- There are mainly two types of cartels based on performing functions for its members, which are as follows:

1. Cartels fixing price for Joint Profit Maximization (Joint Profit Maximization cartel or perfect cartel)

Pricing under Joint Profit Maximization Cartel



- The main objective of the joint profit maximizing cartel is to maximize joint profit of the firms under the industry.
- This model is analyzed under the pure oligopoly.
- Pure oligopoly means the market situation where firms produce homogeneous products.
- To maximize the joint profit, firms appoint a central agency which has authority to determine common price, industry output, production level of each member firms, distribute total profit of the industry among the member firms, etc.
- The joint profit maximization is possible when each individual firm can maximize profit.
- Thus, the conditions for joint profit maximization of a cartel (with two member firms A and B) can be expressed as

i. $MC_A = MC_B = MR$

where

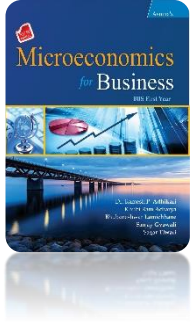
MC_A = Marginal cost of firm A

MC_B = Marginal cost of firm B

MR = Marginal revenue of industry

ii. ΣMC curve must cut MR curve from below.

where

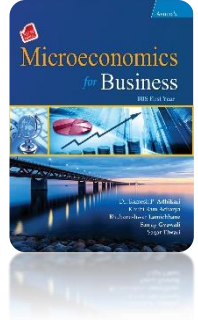


Pricing under Joint Profit Maximization Cartel Contd.

Assumptions

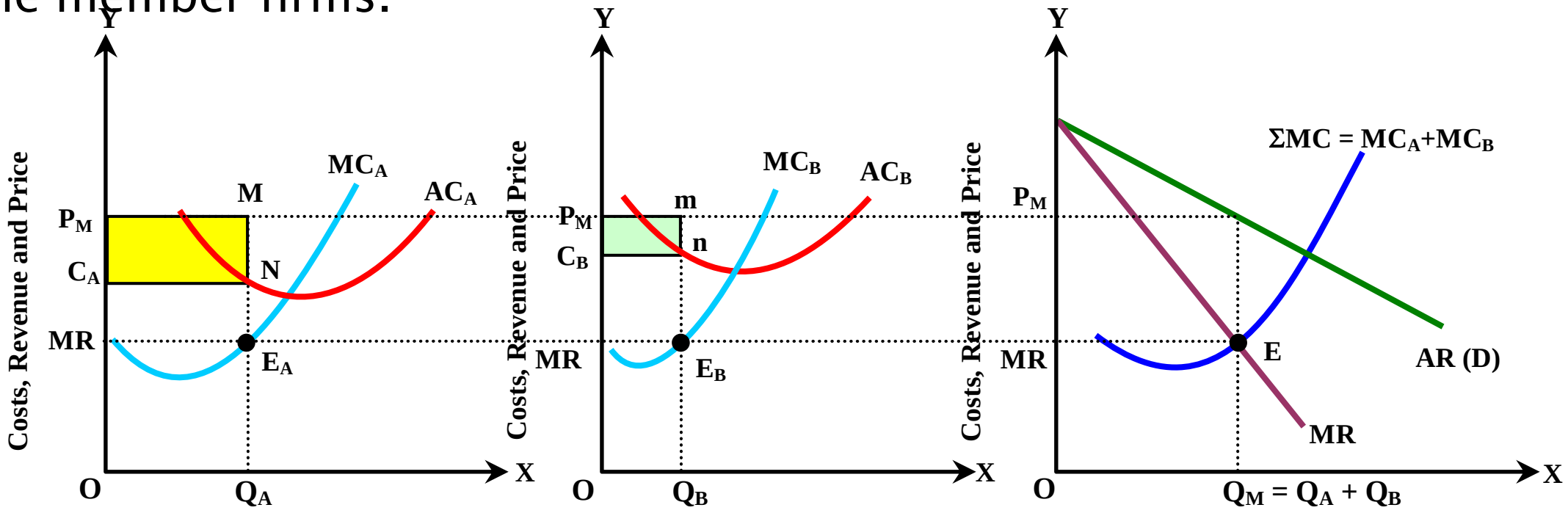
The analysis of joint profit maximization model of a cartel is based on the following assumptions:

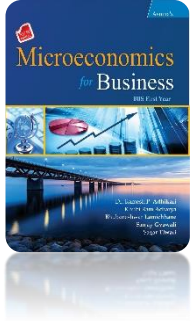
- There are only two firms (A and B) in the oligopolistic industry and that form cartel.
- Both firms produce homogeneous products.
- The cost curves of each firm are different and known to the central agency (cartel). The firm A produces at lower cost than the firm B.
- The market demand curve of the product is given and known to the cartel.
- The number of buyers of the product is large.
- The cartel aims at joint profit maximization



Pricing under Joint Profit Maximization Cartel Contd.

The member firms appoint a central agency (cartel) and delegate different authorities such as determination of common prices, total industry output and distribution of total profit of the industry among the member firms.

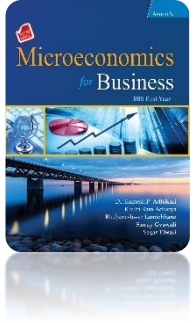




Market Sharing Cartels

- This is another type of cartel in collusive oligopoly market.
- In a market sharing cartel, the member firms agree only how to share the market.
- In other words, the firms agree to share the market but keep a considerable degree of freedom concerning the style of their products, selling activities and other decisions.
- There are mainly two method of market sharing which are also called the types of market sharing cartel. They are:
    1. Non-price competition agreements
    2. Sharing of market agreements on Quota System

Market Sharing Cartels Contd.



1. Non-Price Competition Agreements

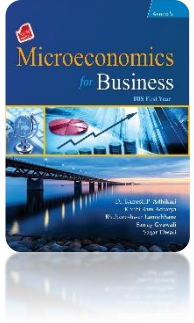
Non-price competition is a type of market sharing cartel, in which member firms agree on common price and each firm is allowed to sell as much as it can sell at the cartel price.

2. Sharing of Market Agreements on Quota System

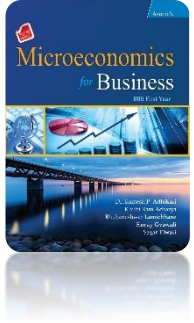
Sharing of Market Agreements on Quota System is another method of market sharing cartel.

Under this system, the cartel fixes quota of market share for each firm.

Pricing Practices



- In a complex business world, business firms follow a variety of pricing rules and methods depending on the conditions faced.
- It also depends upon objective of the firm.
- In this part of the unit, we will discuss some important pricing strategies and practices such as price discrimination, cost plus pricing, incremental cost pricing, administered pricing, export pricing, predatory pricing, skimming pricing and penetration pricing.

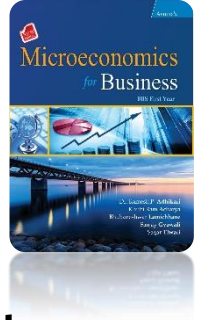


Price Discrimination

- Price discrimination refers to selling same product at different prices to different customers or in different markets.
- Price discrimination is possible only in the monopoly because even though different buyers would know that they are differently charged, they have no alternative source of buying the product.
- The monopoly firm which adopts the policy of price discrimination is called discriminating monopoly.
- The main objective price discrimination is to maximize profit.

Condition for Price Discrimination

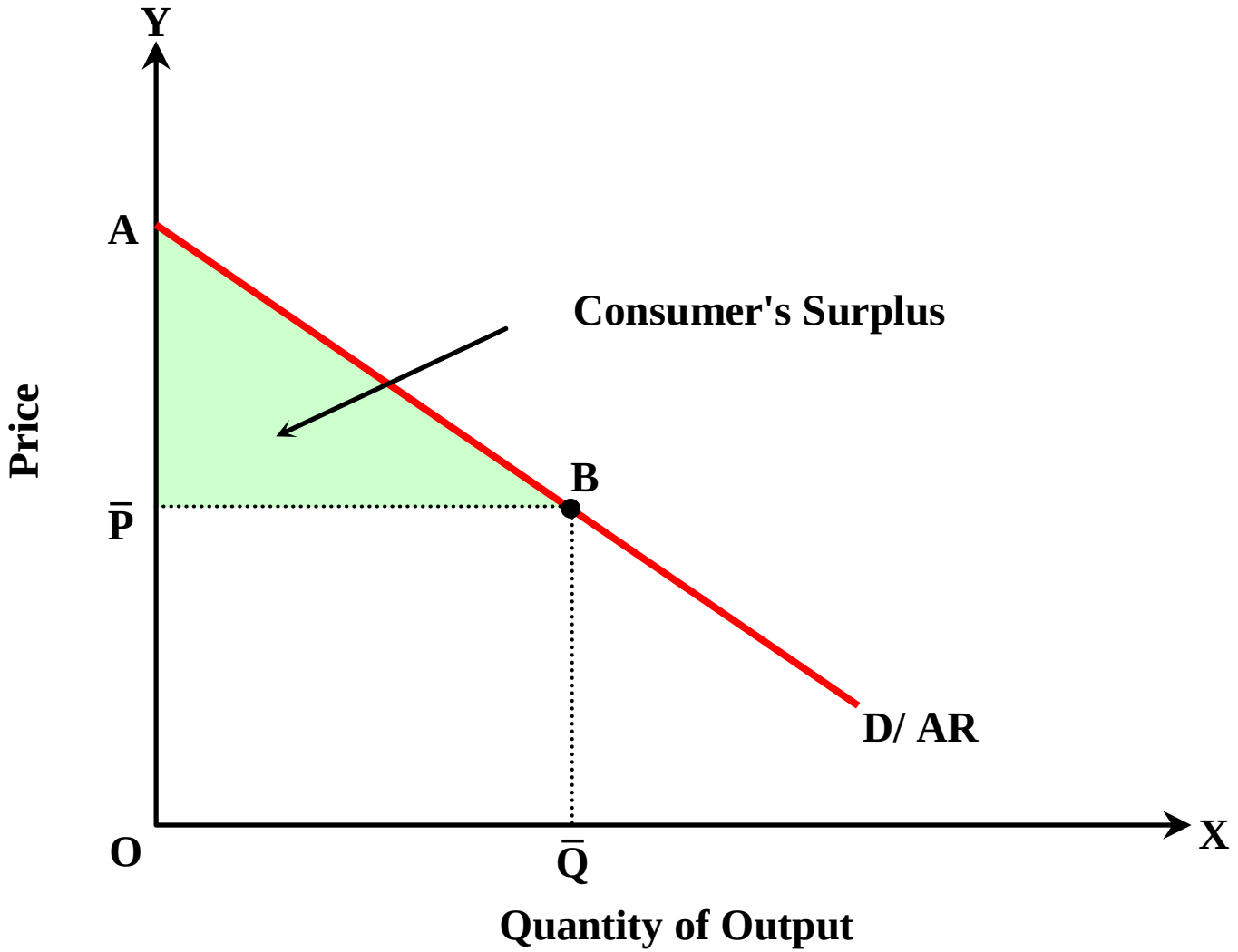
1. Monopoly power
2. Market must be divided into difference sub-markets
3. Different price elasticity of demand in different sub-markets
4. Reselling of the product must not be possible

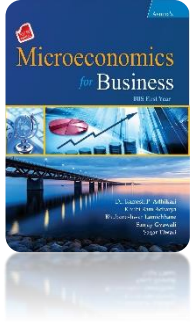


Types/ Degrees of Price Discrimination

1. First Degree Price Discrimination

- In the first degree price discrimination, seller or monopolist charges highest price for each unit of a product that each consumer willing to pay rather than go without it.
- In other words, the monopolist charges each individual consumer the maximum price that the consumer is willing to pay, i.e. reservation price.
- Thus, first degree price discrimination can be defined as the situation in which monopolist sells each unit of output at different prices.
- In this case of price discrimination, consumer's surplus is totally taken away by monopolist or the monopolist obtains maximum possible revenue from each consumer.
- Therefore, this type of price discrimination is also known as the perfect price discrimination.
- In this case, market demand curve coincides with marginal revenue curve.


Y
A
Consumer's Surplus
Price
B
P̄
D/ AR
O
Q̄
X
Quantity of Output



Types/ Degrees of Price Discrimination Contd.

2. Second Degree Price Discrimination

In the second degree price discrimination, different prices are charged for different quantity purchased.

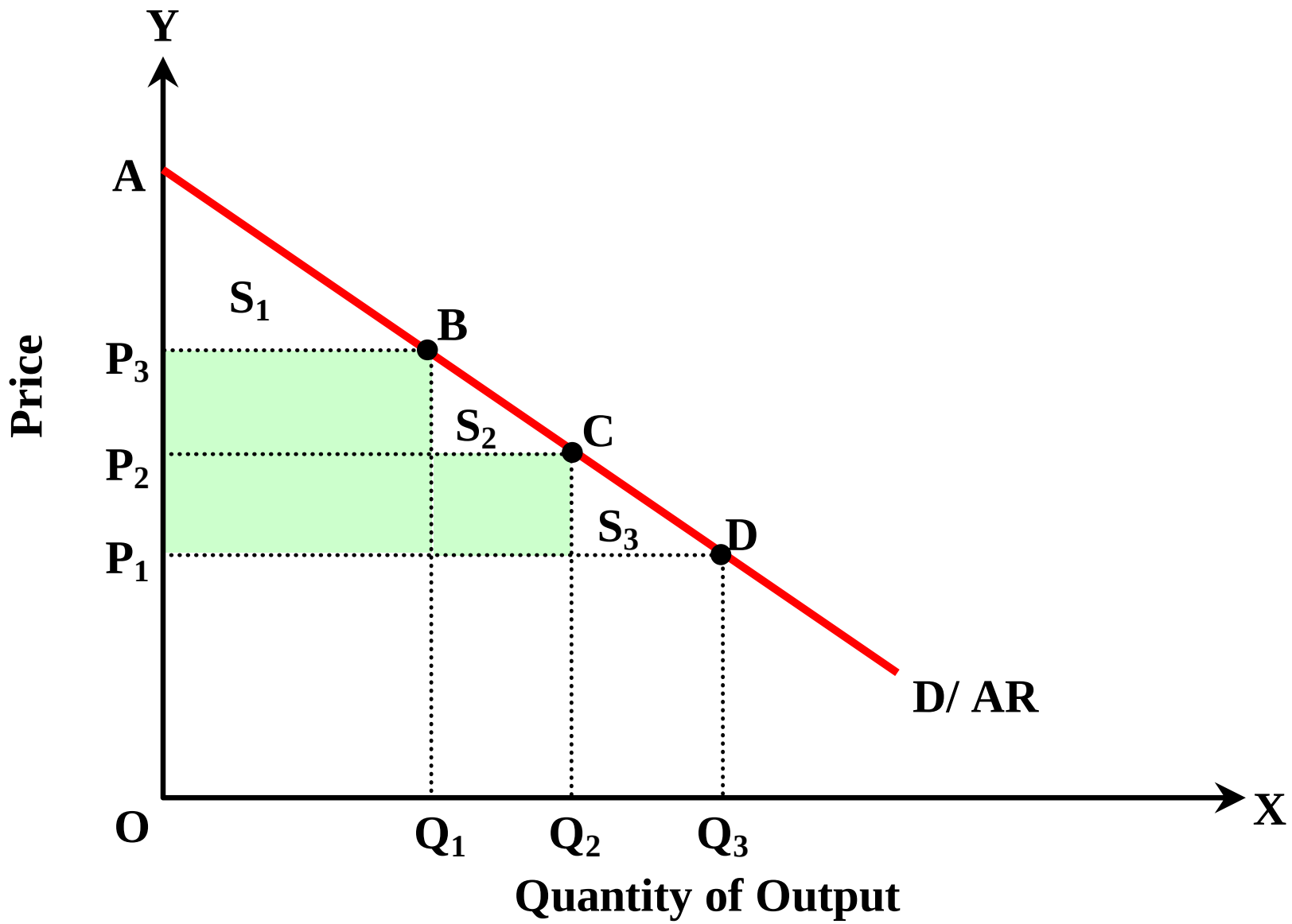
In other words, the second degree price discrimination is defined as the situation in which the monopolist charges different prices based on how much one buys.

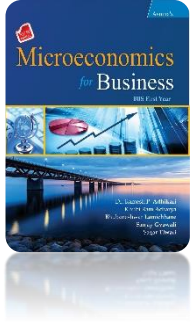
Thus, in the case of second degree price discrimination, the monopolist charges a lower price for each additional batch or block of the commodity.

Such type of price discrimination is common in case of public utilities like telephone and electricity.

In these public utilities, the price for the first hundred units may differ from the price of second hundred units and so on.

By doing so, the monopolist captures some part of consumer's surplus but not as in the case of first degree price discrimination.

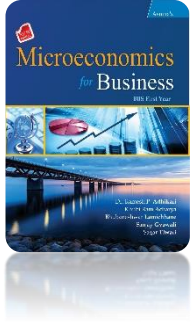

Y
A
S1
B
P3
Price
S2
C
P2
S3
D
P1
D/ AR
O
X
Q1
Q2
Q3
Quantity of Output



Types/ Degrees of Price Discrimination Contd.

3. Third Degree Price Discrimination

- The profit maximizing monopoly firm sets different prices in different markets each having different elasticity of demand of the product. In this case, monopolist charges different prices for the same commodity in the different sub-markets.
- The examples of third degree price discrimination are: different prices for students and common people in bus, aeroplanes, and train tickets; Coca-Cola company charging different prices to the consumers of Kathmandu valley and out of the Kathmandu valley in Nepal, etc.
- The aim of the third degree price discrimination is to increase total revenue and profit.
- Under third degree price discrimination, the monopolist charges a higher price for a product in the market with less elastic demand in such a way as to equalize the MR of the last unit of the product sold in the two markets.



Types/ Degrees of Price Discrimination Contd.

In order to maximize profit by the price discriminating monopolist with two sub-markets, the following conditions must be fulfilled:

i. The marginal revenues in two submarkets should be equal, i.e.

$\mathbf{MR_A = MR_B}$

where

MR_A = Marginal revenue of the market A

MR_B = Marginal revenue of the market B

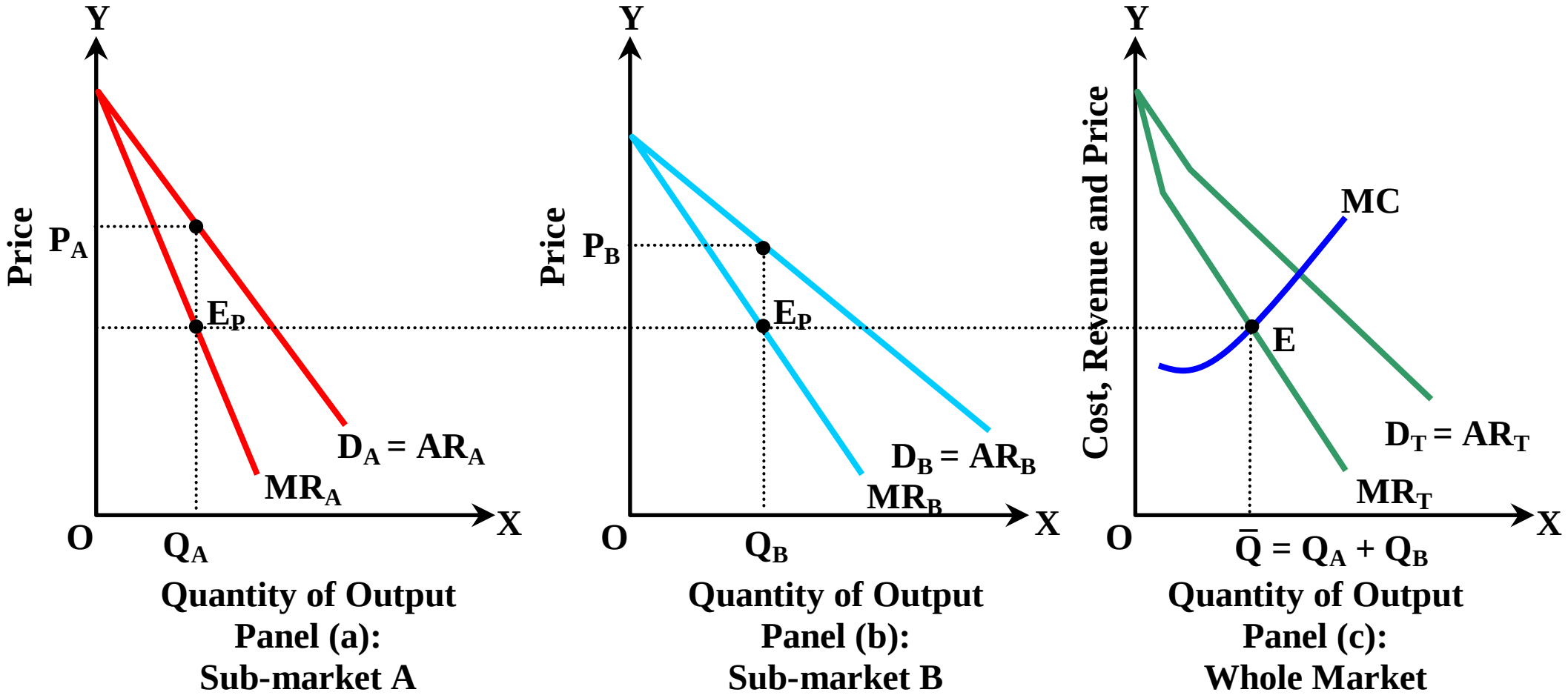
ii. The marginal revenue received from each market should be equal to marginal cost (MC) of the monopolist, i.e.

$\mathbf{MR_A = MR_B = MC}$

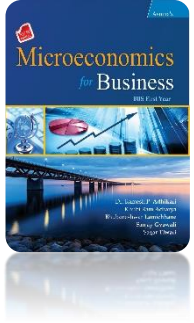
or, $MR_A = MC$

or, $MR_B = MC$

iii. The monopolist's MC curve must cut the MR_T curve from below.

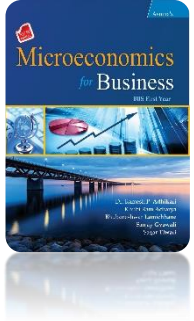

Y
Price
P_A
E_P
$D_A = AR_A$
MR_A
O
Q_A
X
Quantity of Output
Panel (a):
Sub-market A
Y
Price
P_B
E_P
$D_B = AR_B$
MR_B
O
Q_B
X
Quantity of Output
Panel (b):
Sub-market B
Y
Cost, Revenue and Price
MC
E
$D_T = AR_T$
MR_T
O
$\bar{Q} = Q_A + Q_B$
X
Quantity of Output
Panel (c):
Whole Market

Cost Plus Pricing



- According to traditional theory, the price of a product is determined with the help of the MR-MC approach.
- But this approach is not practical because it is very difficult to find out data on marginal cost and marginal revenue.
- Therefore, most of the firms fix prices without considering MR and MC concepts.
- The most popular and short cut method of pricing is the cost-plus pricing method.
- This method is also called **mark-up pricing** or **full cost pricing** or **average cost pricing**.
- In this method, the price of the product is determined by adding a fixed mark-up on average variable cost.
- The mark-up is set sufficiently high to cover average variable and fixed costs and also provide a profit margin for the firm.
- The mark-up varies depending on the industry and demand conditions. Mark-up means the percentage of profit based on cost.
- The general practice under this method is to add a fair percentage

Cost Plus Pricing Contd.



The formula for setting the price is given by

P = AVC + AVC(m) ...(i)

where

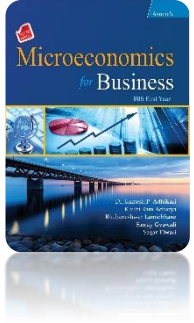
AVC = Average variable cost m = Mark-up percentage

AVC(m) = Gross profit margin(GPM) P = Price

The mark-up percentage (m) is fixed to cover the average fixed cost (AFC) and a net profit margin(NPV). Thus,

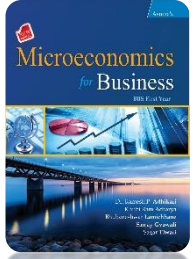
AVC (m) = AFC + NP ...(ii)

Incremental Cost Pricing



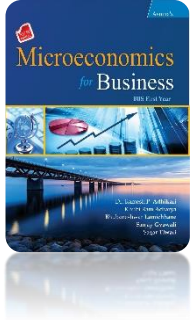
- It is a method of pricing a product based on incremental cost.
- Incremental cost refers to the total additional cost associated with the decisions to expand the output or add a new plant to the existing capacity, add a new variety of products to the product line, etc.
- In this method, the price of all additional units produced after all direct and indirect fixed costs of production have been met, are based on variable costs rather than the total cost incurred in production.
- This method is different from the regular pricing method.
- In the regular pricing method, the selling price of each product includes per-unit fixed cost, per unit variable cost and profit margin.
- But in the incremental cost pricing method, the selling price of the product is based on the per-unit variable cost and profit margin only.

Administered Pricing



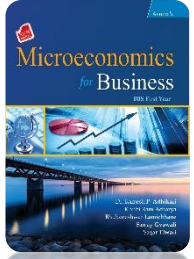
- The pricing strategy in which the price of a product is established by the conscious decision of some individual or agency rather than by the market forces of demand and supply is called administered pricing.
- The independent agency may be the government or the management of a firm having considerable market share or monopoly in the market.
- Administered pricing is generally possible where good is sold by a monopoly firm or public body.
- Administered prices are generally above or below the equilibrium prices.
- These prices are also called controlled prices i.e price ceiling or price floor often set by the government.
- A price ceiling is a maximum price that can be charged for a product, e.g. setting a price ceiling for house rent.
- Similarly, the price floor is the minimum price that can be charged for a product, e.g. setting a price floor as minimum wages of labour

Export Pricing



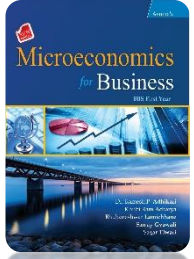
- Export pricing is a method of fixing the price of products which the exporter intends to export and sell in the international markets.
- Export pricing is a much more difficult task than domestic pricing.
- The exporter must take into account the cost of production as well as the conditions prevailing in the international market that influences the price of the product.
- Hence, export pricing is not only a calculation of the cost of production but also a practical exercise based on the international market situation.
- There are additional costs that are incurred and need to be incorporated when setting export prices.
- These costs are given below:
  1. Costs before Exporting
  2. Costs at Country of Destination
  3. Costs related to the Marketing or Selling Structure in Target Country
- The marginal cost pricing of export goods is determined as

Predatory Pricing

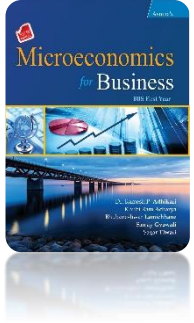


- It is the deliberate pricing strategy of a business firm in which the price of a product or service is charged at very low (or P<AC or even P< AVC).
- The predator (dominant seller) sets a very low price with the aim of attracting new customers or driving competitors out of the market or create barriers to entry for potential new competitors so that the predator can charge considerably higher price later.
- The predator is willing to sell at a loss for a period in the hope that its rivals either go bust or decide to stop selling that product.
- The predatory pricing strategy kicks out competitors and increases the monopoly power and profits of the firm.
- But it will be bad for the consumers because it will lead to abnormally high prices in the long term as well as a lack of choice.
- Dumping (exporting goods at a lower price than the domestic price or cost of production) is an example of predatory pricing.

Skim Pricing



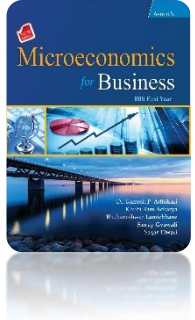
- The skim pricing, also known as price skimming is a product pricing strategy by which a firm charges the highest initial price for a product or service that customers will pay.
- As the demand of the first customers is satisfied, the firm lowers the price to attract another, more price-sensitive segment or layer of the consumers.
- The objective of a price skimming strategy is to capture the consumer surplus and earn maximum revenue or profit in the shortest time possible rather than maximum sales.
- This model encourages the entry of competitors.
- When other firms see the high margin available in the industry, they will quickly enter.
- Price skimming can be considered as a form of price discrimination.



Penetration Pricing

- In contrast, to skim pricing, penetration pricing involves reverse strategy.
- It is a pricing strategy used by new entrants to enter into the market with new products for which substitutes are available, usually by setting a very low price.
- Pricing is one of the easiest ways to differentiate new entrants among existing producers or sellers in the market.
- An extreme form of penetration pricing is called predatory pricing.
- Penetration pricing strategy is used to capture the market share, create brand trustworthiness, switch customers from competitors, generate significant demand and utilize economies of scale and drive competitors out of the market.
- This pricing strategy effectively works in situations when there is little product differentiation, the demand for the product is price-

Numerical Examples 1



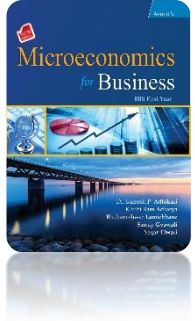
Consider the following table:

Price (Rs.) (P)	Quantity (Q)	Total Cost (TC)	Marginal Cost (MC)	Total Revenue (TR)	Marginal Revenue (MR)	Profit (π)
11	0	10				
10	1	12				
9	2	17				
8	3	21				
7	4	26				
6	5	33				
5	6	43				
4	7	60				
3	8	80				

a. Complete the above table.

b. Derive the TR curve, TC curve and profit (π) curve based on the completed table.

c. Identify the profit maximizing level of output and total profit at that level of output.



SOLUTION

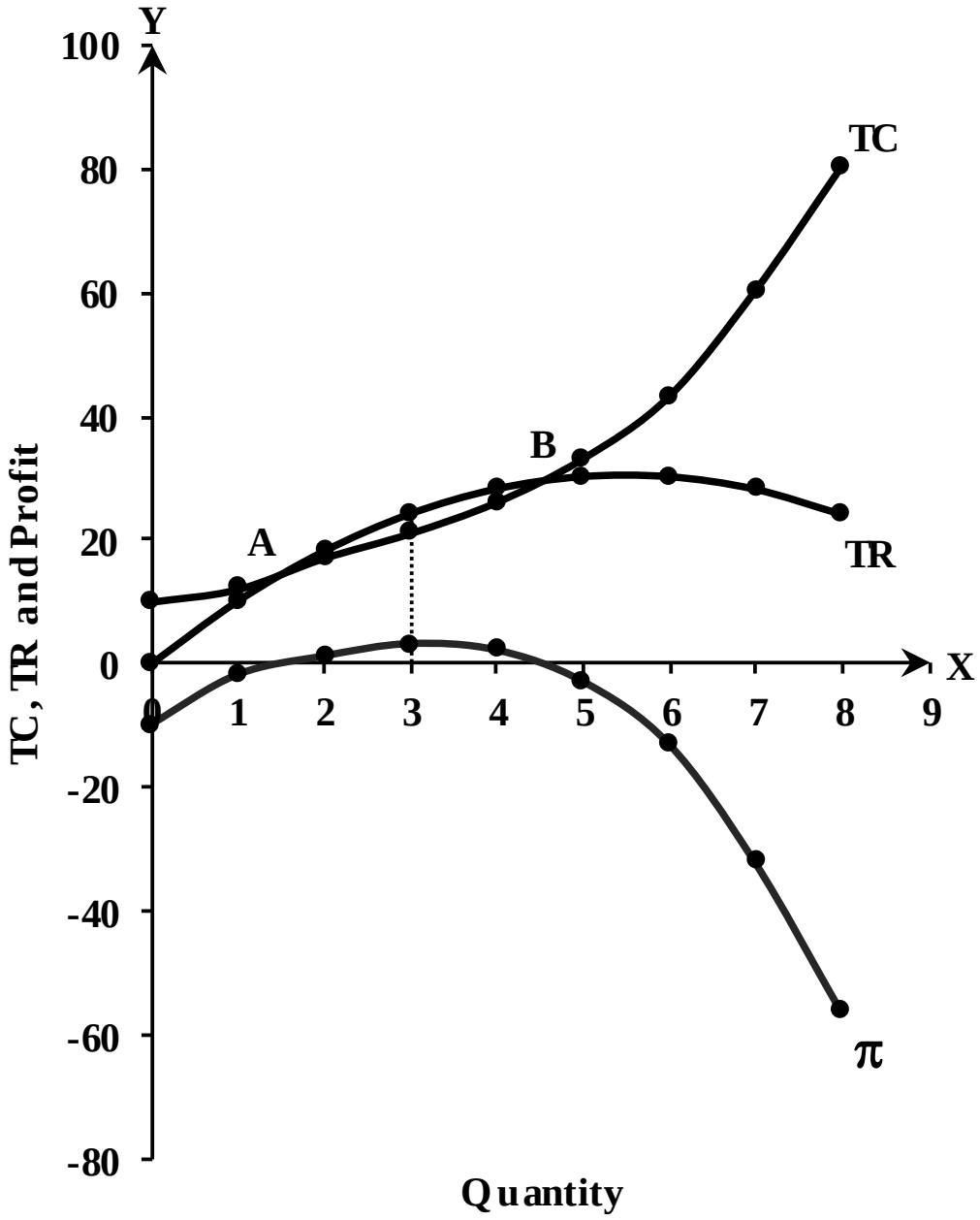
a.

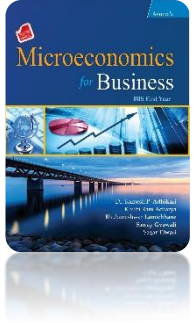
Price (Rs.)	Quantity	Total Cost	Marginal Cost	Total Revenue	Marginal Revenue	Profit = TR – TC
11	0	10	-	0	-	–10
10	1	12	2	10	10	– 2
9	2	17	5	18	8	1
8	3	21	4	24	6	3
7	4	26	5	28	4	2
6	5	33	7	30	2	– 3
5	6	43	10	30	0	– 13
4	7	60	17	28	-2	– 32
3	8	80	20	24	-4	– 56

b.

c. Total profit = Rs. 3 and profit maximizing output level is 3 units.

d. This indicates imperfect competition (monopoly or monopolistic competition) because there is inverse relationship between price and quantity of output sold or both price and MR are falling.





Numerical Examples 2

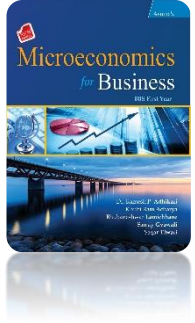
Consider the following table and solve the questions given below.

Output (Q)	0	1	2	3	4	5	6	7	8
Total Revenue (TR)	0	110	200	270	320	350	360	350	320
Total Cost (TC)	200	220	236	248	264	300	360	448	560
Profit (π)									

a. Complete the above table.

b. Graph TR, TC and profit (π) curves and explain the equilibrium condition using TR–TC approach.

c. Which market does it indicate and why?

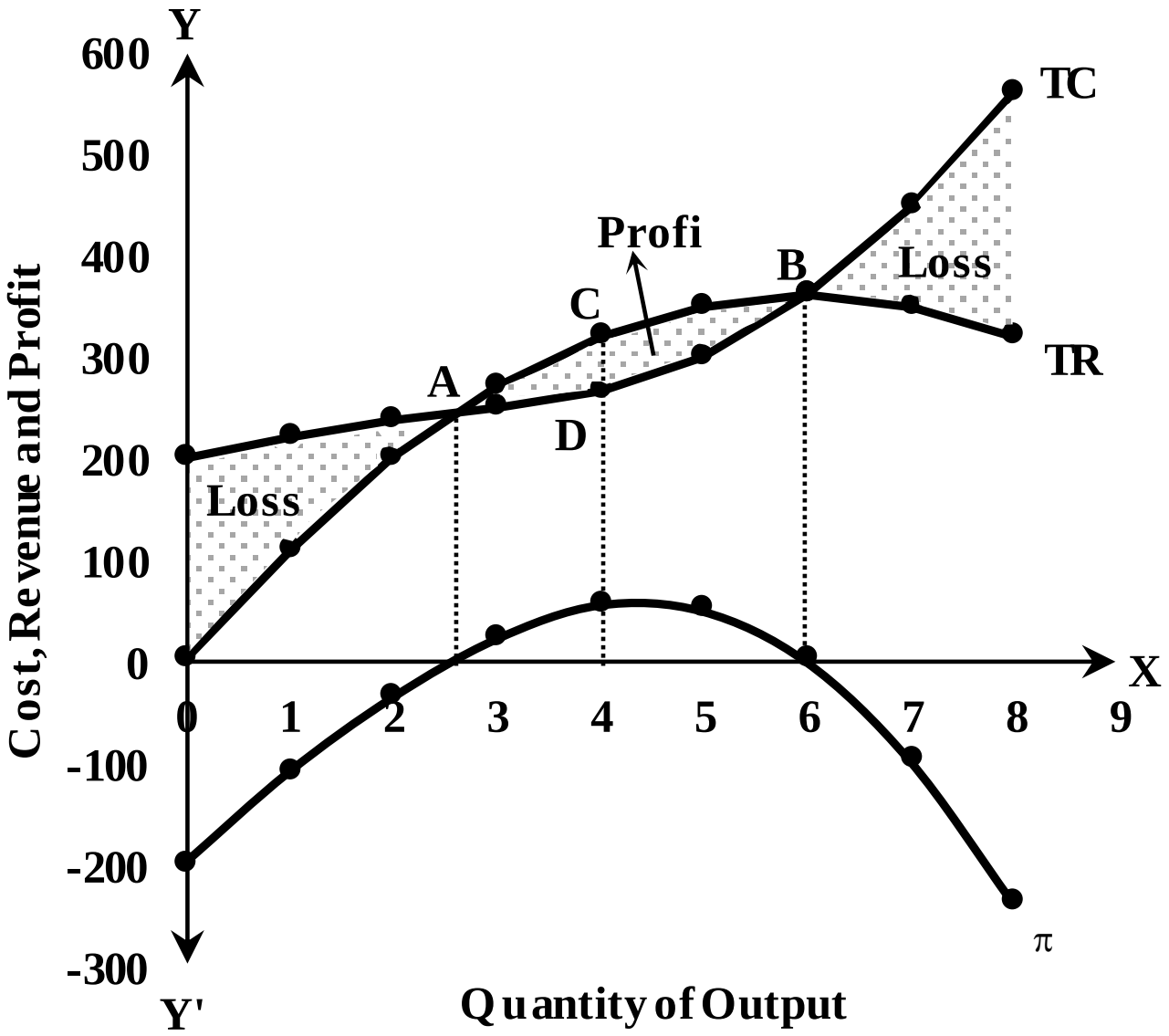


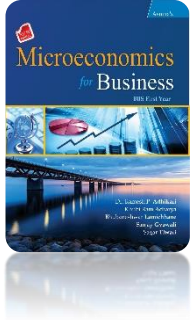
SOLUTION

a.

Output	TR	TC	Profit
0	0	200	-200
1	110	220	-110
2	200	236	-36
3	270	248	22
4	320	264	56
5	350	300	50
6	360	360	0
7	350	448	-98
8	320	560	-240

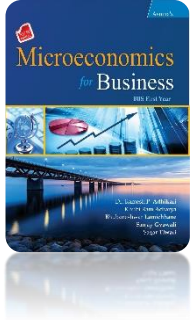
b.


Y
600
500
400
300
200
100
0
-100
-200
-300
Y'
X
0
1
2
3
4
5
6
7
8
9
TC
TR
π
Profi
Loss
Loss
A
B
C
D
Cost, Revenue and Profit
Quantity of Output



In the above figure, X-axis represents quantity of output and Y-axis represents total cost and total revenue and profit. The curves TC, TR and π represent total cost curve, total revenue curve and total profit curve respectively. These curves has been derived based on the completed table. Thus, TR and TC curves are intersecting each other at point A and B. At points A and B, TC and TR are equal. Therefore, these points are called break-even points. Before point A and beyond point B, TC > TR. Therefore, there is loss. Between point A and B, there is profit because TR > TC. At 4^{th} unit of output, there is maximum profit or maximum difference between TR and TC. Therefore, the firm is equilibrium at 4^{th} unit of output. At this level of output, the firm's total profit is equal to Rs. 56.

c. This shows or indicates imperfect competition (monopoly or monopolistic competition) because total revenue is increasing at the decreasing rate upto point B and their after it is failing.



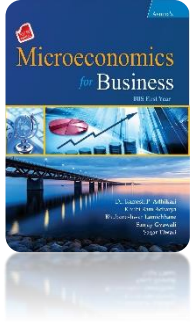
Numerical Examples 3

The total revenue and total cost functions of a perfectly competitive firm are given as:

$$TR = 10Q$$

$$TC = 100 + 2Q + 0.01Q^2$$

Determine level of output that maximizes profit and find the total profit at that level of output.



SOLUTION

We have,

$TR = 10Q$

$TC = 100 + 2Q + 0.01Q^2$

Here,

$$MR = \frac{d}{dQ}(TR) = \frac{d}{dQ}(10Q) = 10$$

$$MC = \frac{d}{dQ}(TC) = \frac{d}{dQ}(100 + 2Q + 0.01Q^2) = 2 + 0.02Q$$

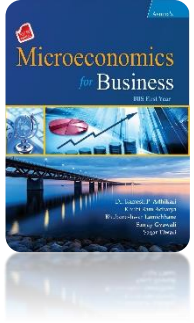
Condition for profit maximization

$MC = MR$

$2 + 0.02Q = 10$

or, $0.02Q = 8$

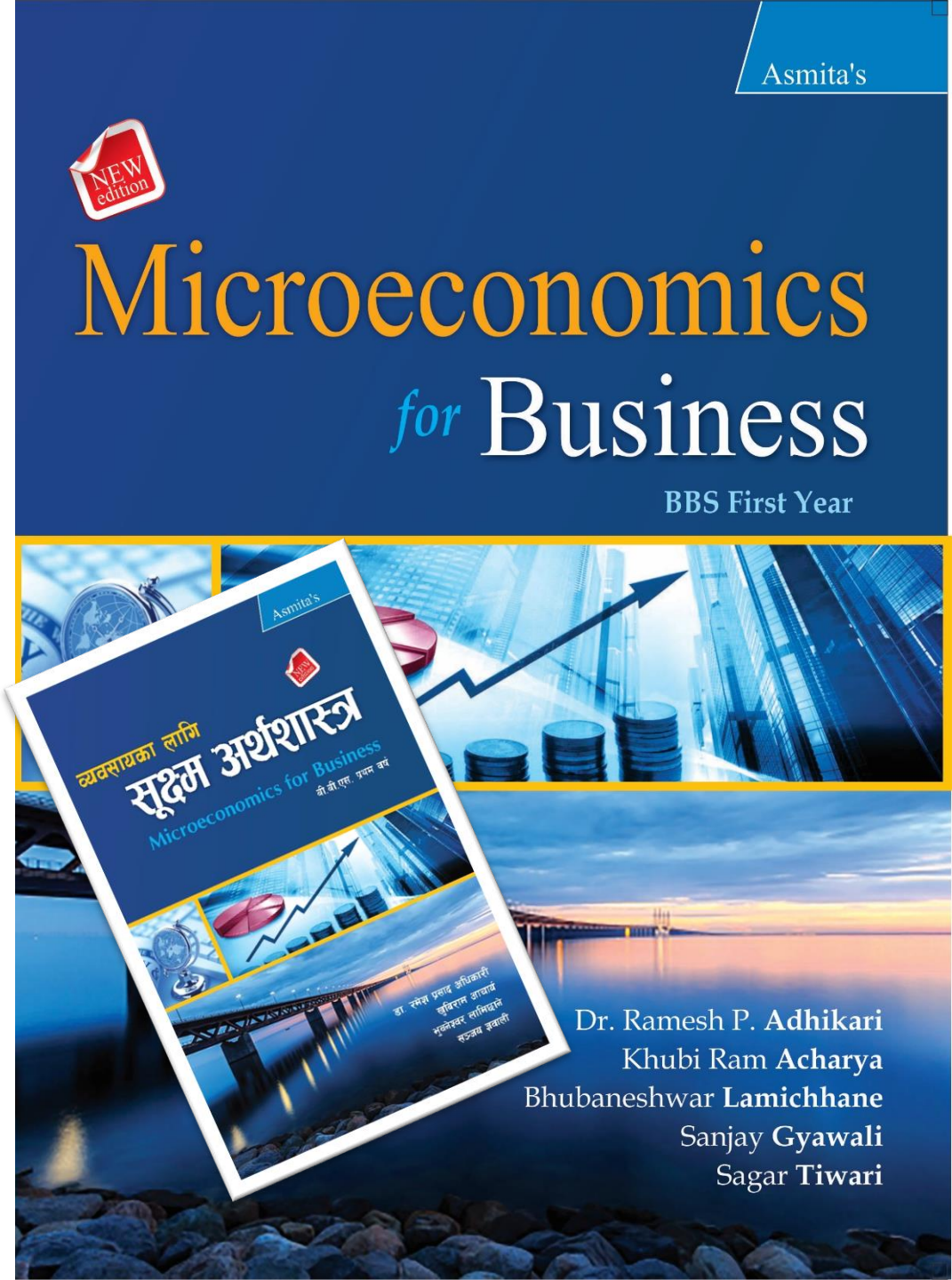
or, $Q = 400$ units



$$\begin{aligned}
\text{Total profit } (\pi) &= TR - TC \\
&= 10Q - (100 + 2Q + 0.01Q^2) \\
&= 10Q - 100 - 2Q - 0.01Q^2 \\
&= -100 + 8Q - 0.01Q^2 \\
&= -100 + 8 \times 400 - 0.01 \times 400^2 \\
&= -100 + 3200 - 1600 \\
&= \text{Rs. } 1500
\end{aligned}$$

Hence, total profit is maximized at Q = 400 units and total profit = Rs. 1500

Thank You


Asmita's
NEW edition
Microeconomics
for Business
BBS First Year
Asmita's
व्यवसायका लागि
सूक्ष्म अर्थशास्त्र
Microeconomics for Business
Dr. Ramesh P. Adhikari
Khubi Ram Acharya
Bhubaneshwar Lamichhane
Sanjay Gyawali
Sagar Tiwari