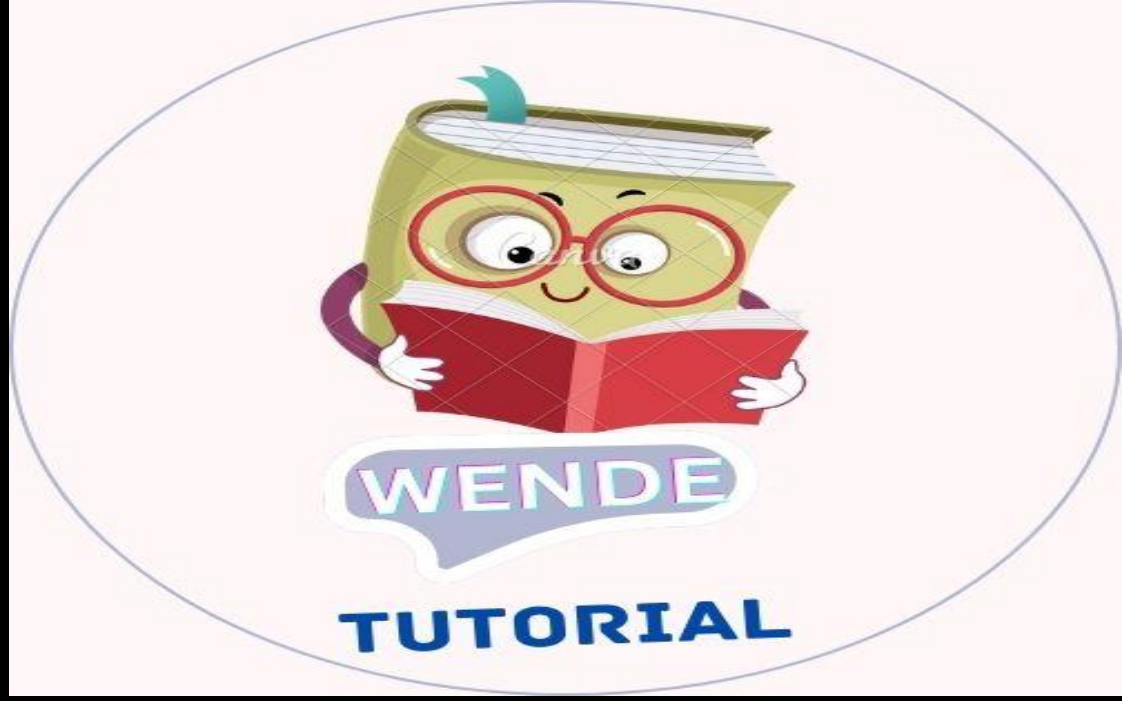
Grade 11 Economics
Chapter - 2



KNOWLEDGE IS POWER

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UNIT2
MARKET STRUCTURE AND THE DECISION OF FIRMS

2.1 Review of Market Structures

Table 2.1 Review of Market Structures and Characteristics

Market Structure	Seller Entry & Exit Barriers	Nature of product	Number of sellers	Number of buyers	Price
Perfect Competition	No	Homogeneous	Many	Many	Uniform price price takers
Monopolistic competition	No	Closely related but differentiated	Many	Many	Partial control over price
Monopoly	Yes	Unique (No Substitute)	One	Many	Price Maker
Oligopoly	Yes	Homogeneous or Differentiated	Few	Many	Price rigidity due to price war

2.2 Perfect Competition Market

- The characteristics of perfectly competitive market imply that every firm is insignificant as compared to the market size and
- since the product that it supplies is by no means different from the products supplied by other firms in the market, each individual firm cannot determine the prices for goods and services that are supplied to the market.
- In these markets, the prices for goods and services are determined by the interaction of all consumers and producers in the market, i.e. the interaction of demand and supply forces.
- Then, every firm will assume this price as a given and make its decision accordingly.

Demand, Revenue and Cost Curves

- ✓ In the perfectly competitive market firms are the price-takers and the industry is the price-maker.
- ✓ This implies that every individual firm in such markets faces a horizontal demand curve, indicating that the firm can sell whatever quantity (Q) of goods at the market-determined price.
- ✓ The average revenue curve is the demand curve of the firm.

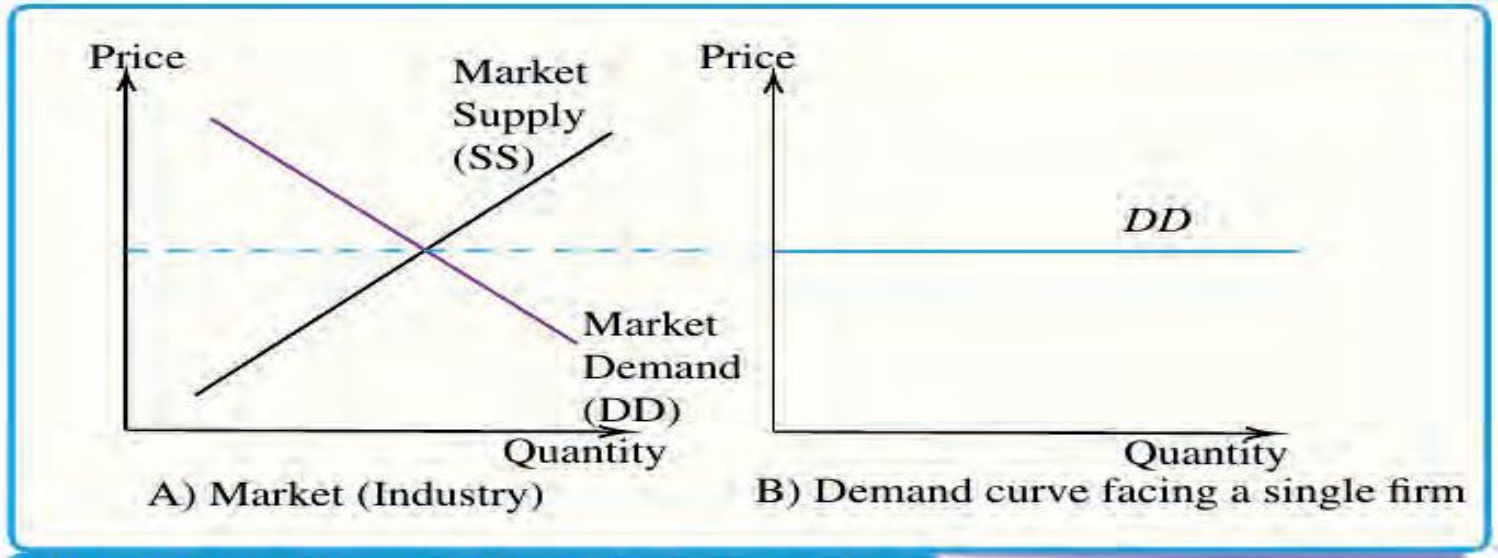


Figure 2.1 Determination of Market Price

- A total revenue curve plots the quantity sold or output on the X-axis and the revenue earned on the Y-axis. The curve is actually a straight line because the firm is a price taker in the market. The constant price is what makes the total revenue curve of a straight line.

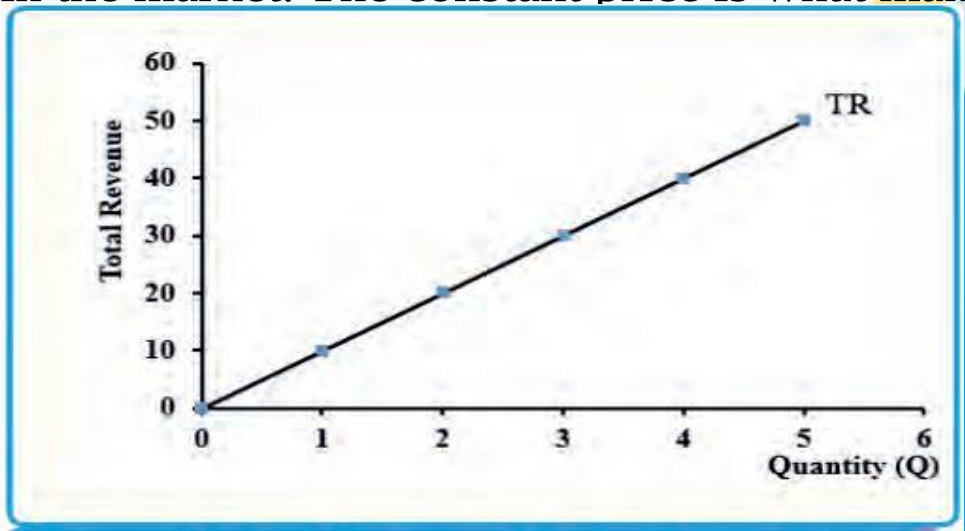


Figure 2.2 Total Revenue of Perfect Competition

- the demand (DD) curve for an individual firm is horizontal and equals to the equilibrium price (P) of the market or average revenue (AR) and to the marginal revenue (MR) of the firm. (P = AR = DD = MR).
- TR - represents total revenue. **Remember** that:

$$TR = P \times Q$$

$$AR = \frac{TR}{Q} = \frac{PQ}{Q} = P$$

$$MR = \frac{change\ in\ TR}{change\ in\ Q}$$

  - the ATC curve tends to have a U-shape.
- That is ATC tends to fall at first and then rise as the output level increases.
- The marginal cost curve falls briefly at first, and then rises. Marginal costs are derived from variable costs and are subject to the principle of variable proportions.

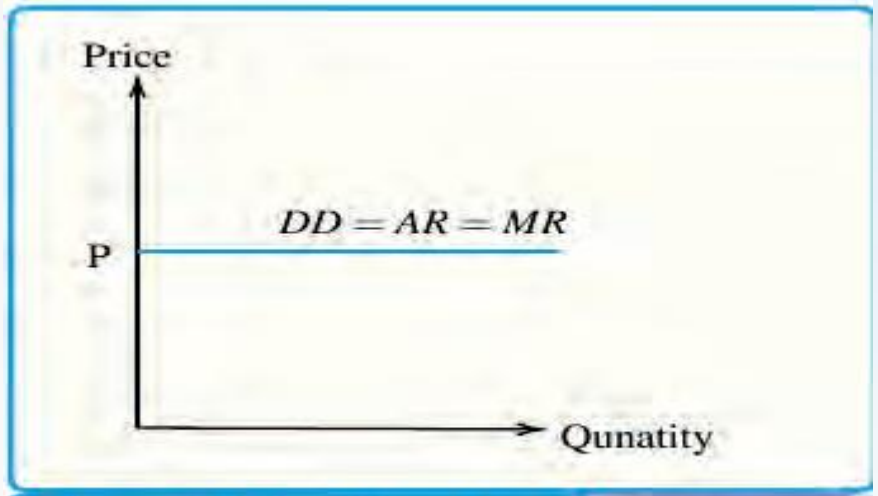


Figure 2.3 Firm Price Line

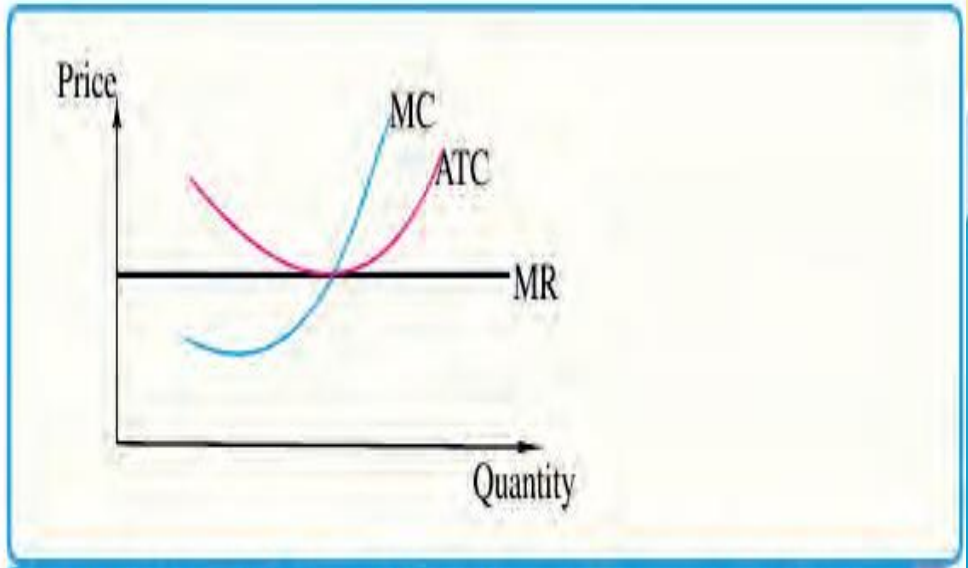


Figure 2.4 Marginal Revenue, Marginal Cost and Average Cost of the Firm

- From Figure 2.4 one can conclude that:
  - When the average cost declines, the marginal cost is less than the average cost.
  - When the average cost increases, the marginal cost is greater than the average cost.
  - When the average cost stays the same (is at a minimum or maximum), the marginal cost equals the average cost.
- When the firm chooses what quantity to produce, then this quantity along with the prices prevailing in the market for output and inputs will determine the firm's total revenue, total costs, and ultimately, level of profits.

  Profit = Total Revenue - Total Cost

  Profit = (Price)(Quantity Produced) - (Average Cost)(Quantity Produced)

The Short-Run Equilibrium of Firm

- ✓ The short run is a period of time in which the quantity of at least one input is fixed and the quantities of the other inputs can be varied.
- ✓ In order to explain the equilibrium of a competitive firm in the short run we can use two different approaches:

  1. Total revenue (TR)- total cost (TC) approach and
  2. Marginal revenue (MR)-marginal cost (MC) approach.

1. Total Revenue - Total Cost Approach

- In short run using total revenue – total cost approach the firm is at equilibrium when:

  $\pi(Q) = R(Q) - C(Q)$ is maximum.

- The maximum profit will occur at the quantity where the gap of total revenue over total cost is largest.

- In Figure 2.5 the horizontal axis shows that the quantity produced; the vertical axis shows both total revenue and total costs.
- The firm is at equilibrium by producing 'q' level of output.

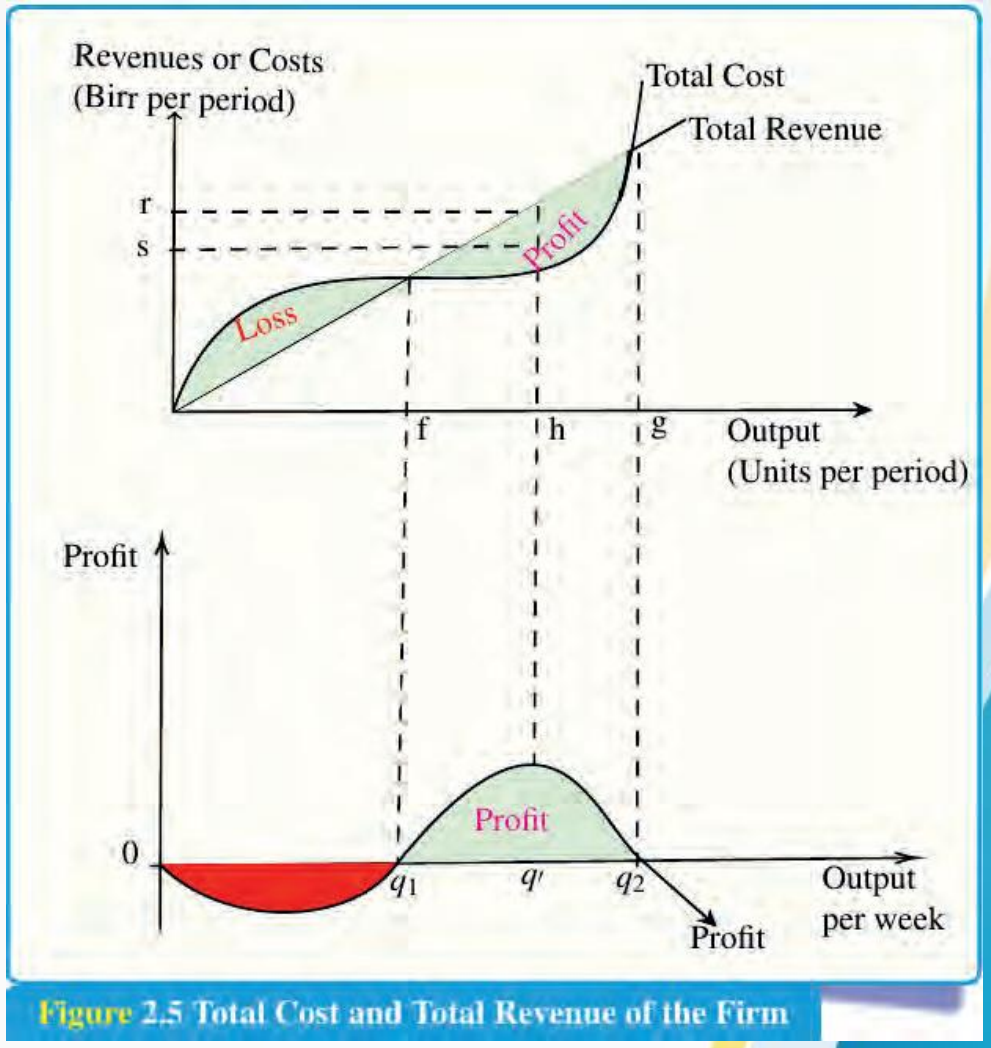


Figure 2.5 Total Cost and Total Revenue of the Firm

2. Marginal Revenue – Marginal Costs Approach

- The marginal revenue curve shows that the additional revenue which is gained from selling one more unit. Notice also that marginal revenue in a perfectly competitive market does not change as the firm produces more output.

$$MC = \frac{Change\ in\ TC}{Change\ in\ Q}$$

- For a perfectly competitive firm, the marginal revenue (MR) curve is a horizontal straight line because it is equal to the price of the good, which is determined by the market.
- The marginal cost (MC) curve is initially downward-sloping showing that this is a region of increasing marginal returns at low levels of output, but is eventually upward-sloping at higher levels of output as diminishing marginal returns kick in.

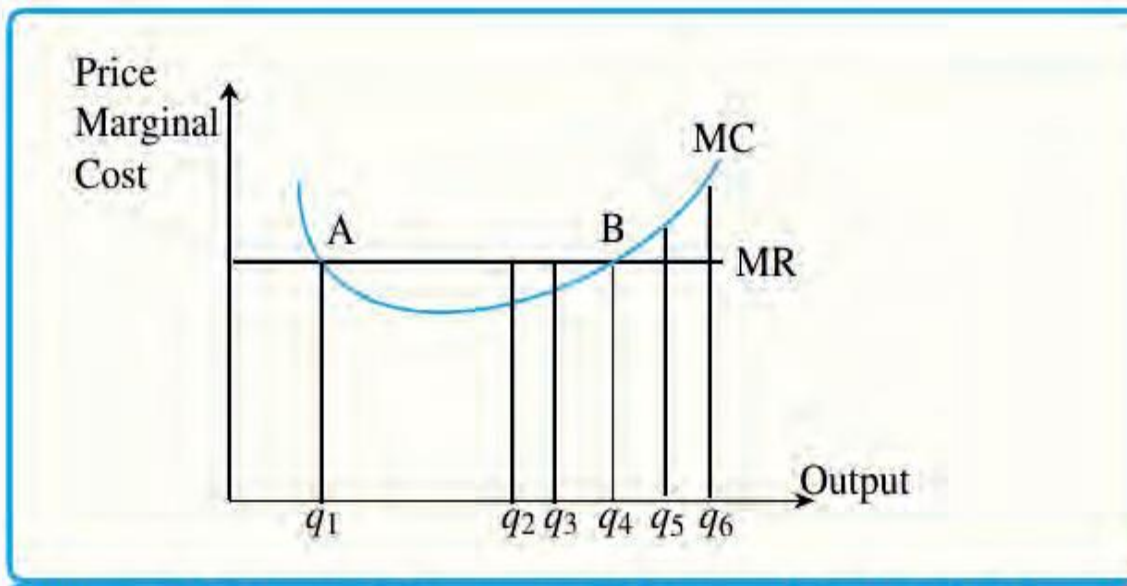


Figure 2.6 Marginal Revenues and Marginal Cost of the Firm

- In short-run using marginal revenue – marginal cost approach the first condition for the equilibrium of the firm is when:
  1) MR - MC = 0 or MR = MC
     - However, this condition is not sufficient since it may be fulfilled and yet the firm may not be in equilibrium.
  2) The second condition for equilibrium requires that the MC be rising at the point of its intersection to the MR curve. This means that the MC must cut the MR curve from below, i.e. the slope of the MC must be steeper than the slope of the MR curve.
- Note that as the marginal revenue received by a perfectly competitive firm is equal to the price of the profit-maximizing rule for a perfectly competitive firm it can also be written as P = MC.
- The answer depends on the relationship between price and average total cost.
  1. If the market price received by a perfectly competitive firm leads it to produce at a quantity where the price is greater than average cost, the firm will earn profits.
  2. If the price received by the firm causes it to produce at a quantity where price equals average cost, which occurs at the minimum point of the AC curve, then the firm earns zero profits.
  3. If the price received by the firm leads it to produce at a quantity where the price is less than average cost, the firm will incur losses.

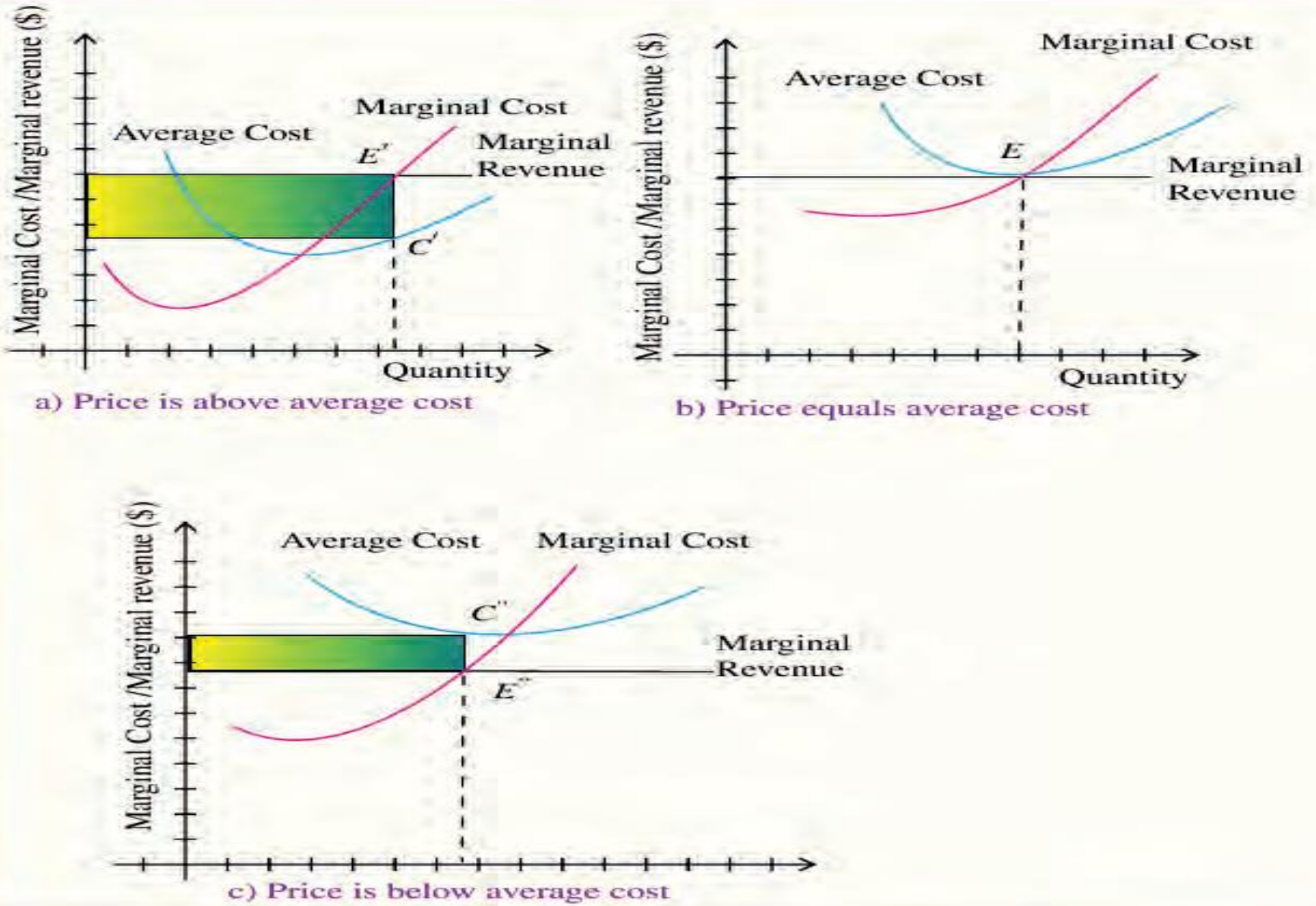


Figure 2.7 Profit Maximization in Perfectly Competitive Market

- If price falls in the zone between the shutdown point and the zero profit point (breakeven point), then the firm is making losses but will continue to operate in the short run, since it is covering its variable costs.

- However, if price falls below the price at the shutdown point, then the firm will shut down immediately, since it is not even covering its variable costs.
- The intersection of the average variable cost curve and the marginal cost curve, which shows the price where the firm would lack enough revenue to cover its variable costs, is called the “shutdown point”

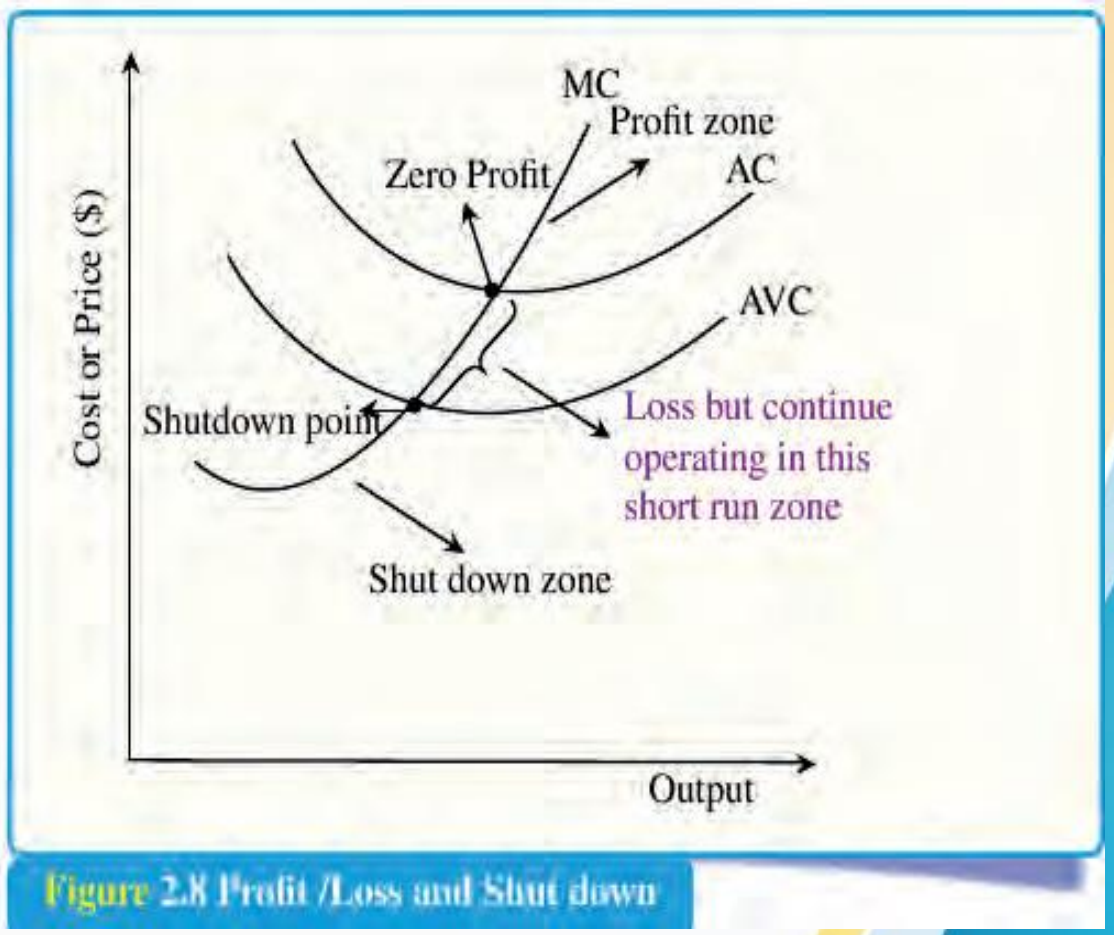


Figure 2.8 Profit /Loss and Shut down

Short Run Supply Curve of a Firm

- supply curve shows the quantities that a seller is willing to sell at different prices.
- That way, if the firm shuts down, it has to bear fixed costs.
- That is why in the short run, the firm will supply commodity till price is either greater or equal to average variable cost.
- Thus a firm will continue supplying the commodity till marginal cost is equal to price or average revenue.
- As a result short run supply curve of a perfectly competitive firm is that portion of marginal cost curve which is above average variable cost curve.

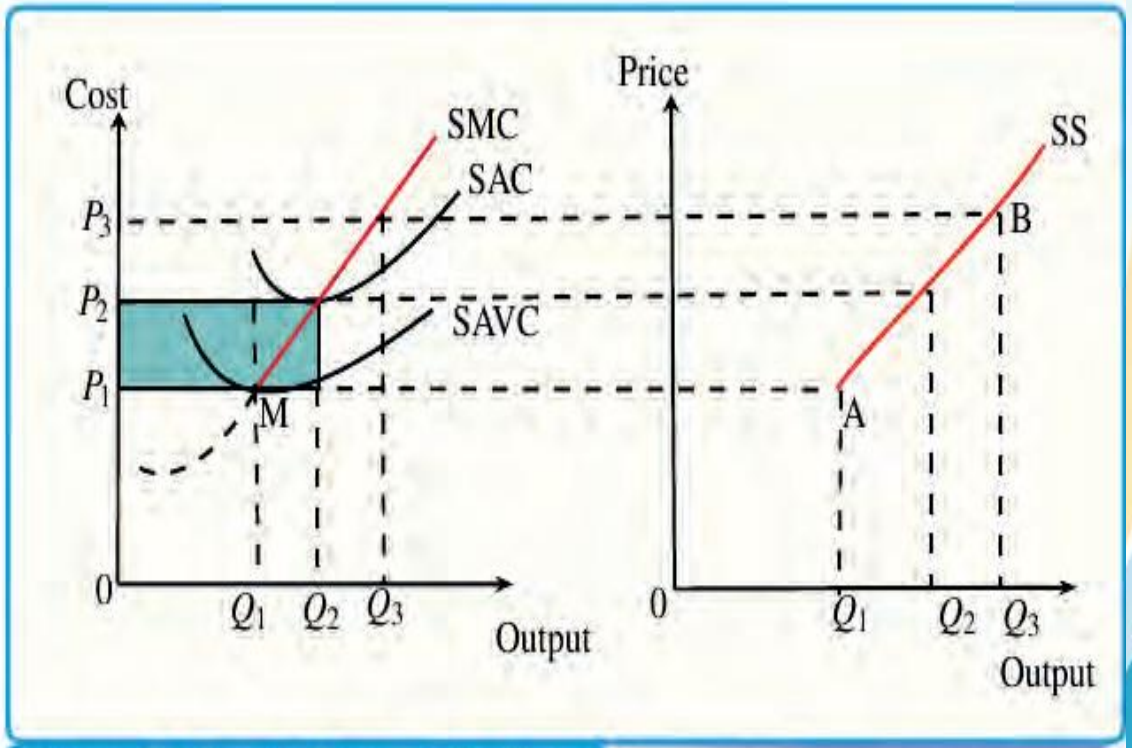


Figure 2.9 Supply Curve of the Firm

Long run-equilibrium of Firm

- The long-run production period is a production period that allows any change to the production process.
- the most important variable that determines the long - run equilibrium of perfectly competitive markets is the adjustment to the number of firms in the market.
- In other words if the firms, which are already in the industry, are making pure economic profits, then new firms will start to enter the market since the return in the industry is larger than the return that can be generated somewhere else.
- On the other hand, if firms are making economic losses in a given industry in the short run, after making all the necessary adjustments if these losses cannot be eliminated in the long run, then firms will start to leave the market since the return in the industry under consideration is smaller than what can be earned elsewhere. Therefore, this adjustment to
- the number of firms in the market will continue until there is no more incentive for new firms to enter into the market as well as for the existing firms to leave from the market.
- i.e. at that point where firms are earning a return in a given industry which is exactly the same as the returns elsewhere, then the firm is said to be at a long-run equilibrium.

- In the long run, a firm achieves equilibrium when it adjusts its plant to produce output at the minimum point of its long-run average cost (LAC) curve.
- This curve is tangential to the market price defined demand curve.
- In the long run, a firm just earns normal profits. If a firm earns supernormal profits in the short run, then the industry will attract new firms into it. Eventually, this leads to a fall in prices of the goods and an increase in prices of the factors as the industry expands. These changes continue until the LAC curve is tangential to the demand curve.
- On the other hand, if firms make losses in the short run, then they leave the industry in the long run. This results in a rise in price and a drop in costs as the industry contracts. These changes continue until the remaining firms in the industry cover their total costs and make normal profits.

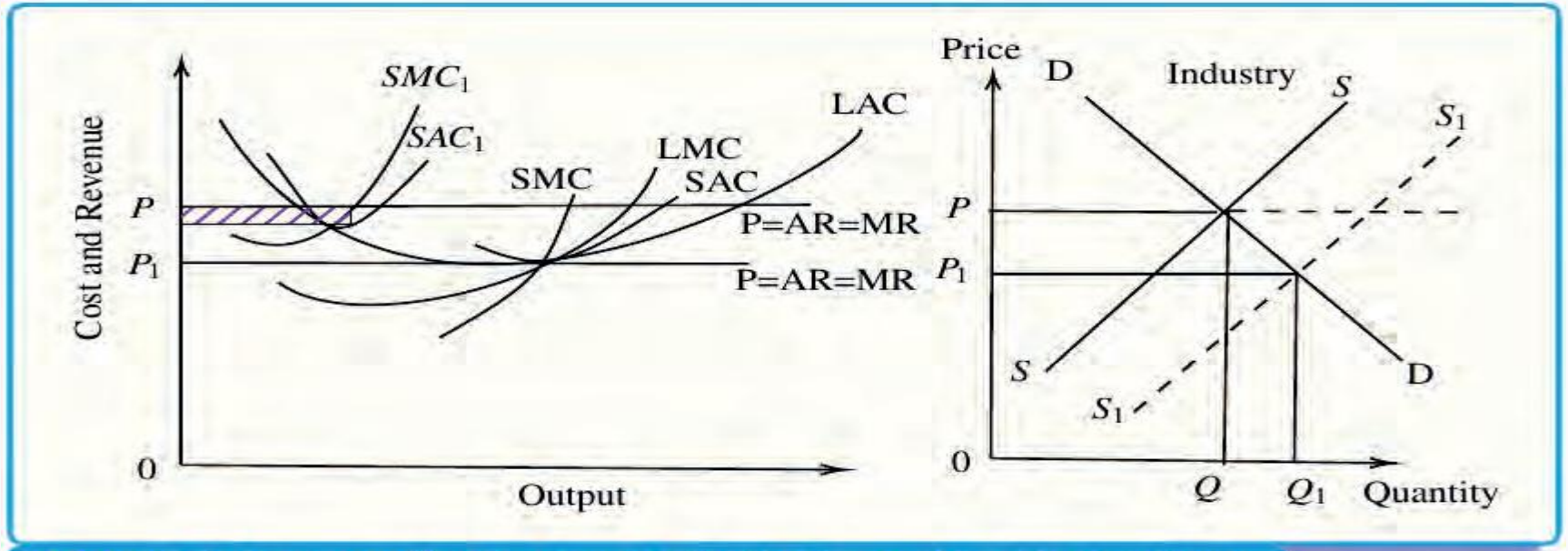


Figure 2.10 Long-run Equilibrium (Perfectly Competitive Market Firm)

Condition for Long - Run Equilibrium of a Firm

- ✓ For a firm to achieve long-run equilibrium, the marginal cost must be equal to the price and the long-run average cost.
- ✓ That is, LMC = LAC = P. The firm adjusts the size of its plant to produce a level of output at which the LAC is minimum.
- ✓ Therefore, in the long-run, we have: SMC = LMC = SAC = LAC = P = MR
- ✓ Hence, at the minimum point of the LAC, the plant works at its optimal capacity and the minima of the LAC and SAC coincide.
- ✓ Also, the LMC cuts the LAC at the minimum point and the SMC cuts the SAC at the minimum point. Therefore, at the minimum point of the LAC, the equality mentioned above is achieved.

2.3 Pure Monopoly Market

- ✓ Monopoly is at the opposite end of the spectrum of market models to perfect competition.
- ✓ A monopoly firm has no rivals; rather it is the only firm in its industry.
- ✓ There are no close substitutes for the good or service a monopoly produces.
- ✓ Not only does a monopoly firm have the market to itself, but it need not worry about other firms entering.
- ✓ In the case of monopoly, entry by potential rivals is prohibitively difficult.
- ✓ A monopoly does not take the market price as given; it determines its own price. It selects from its demand curve the price that corresponds to the quantity that the firm has chosen to produce in order to earn the maximum profit possible.
- ✓ The entry of new firms, which eliminates profit in the long run in a competitive market, cannot occur in the monopoly model.
- ✓ A firm that sets or picks price based on its output decision is called a price setter.
- ✓ A firm that acts as a “price setter” possesses monopoly power.

Demand, Revenue and Cost under Monopoly

- The firm's demand curve as perceived by a monopoly is the same as the market demand curve.

- The reason for the difference is that each perfectly competitive firm perceives the demand for its products in a market that includes many other firms; in effect, the demand curve as perceived by a perfectly competitive firm is a tiny slice of the entire market demand curve.

- In contrast, a monopoly perceives demand for its product in a market where the monopolist is the only producer.

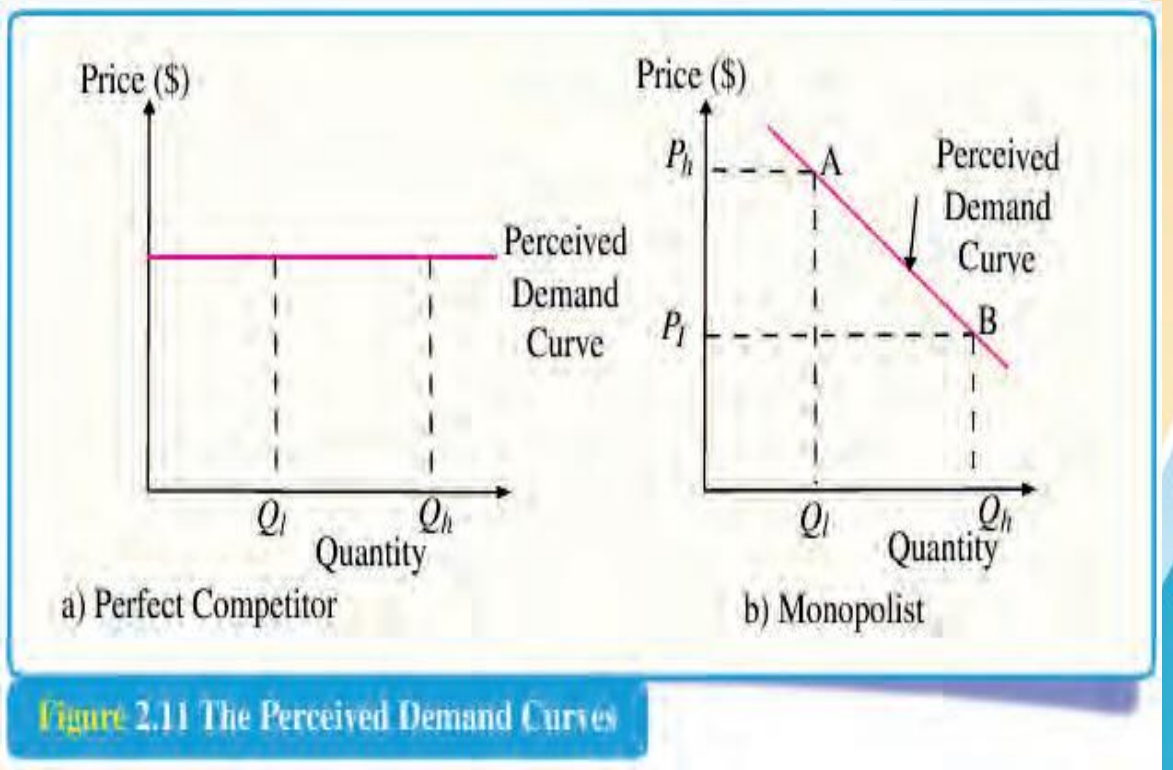


Figure 2.11 The Perceived Demand Curves

- The challenge for the monopolist is to choose the combination of price and quantity that maximizes profits.
- The marginal revenue curve for a monopolist always lies beneath the market demand curve. As shown in Figure 2.12, the monopolist's MR and demand have the same vertical intercept.
- As output increases, marginal revenue decreases twice as fast as demand, so that the horizontal intercept of MR is halfway to the horizontal intercept of demand.
- This is because when the market demand curve is conditional, the marginal revenue curve for a monopolist lies beneath the demand curve.

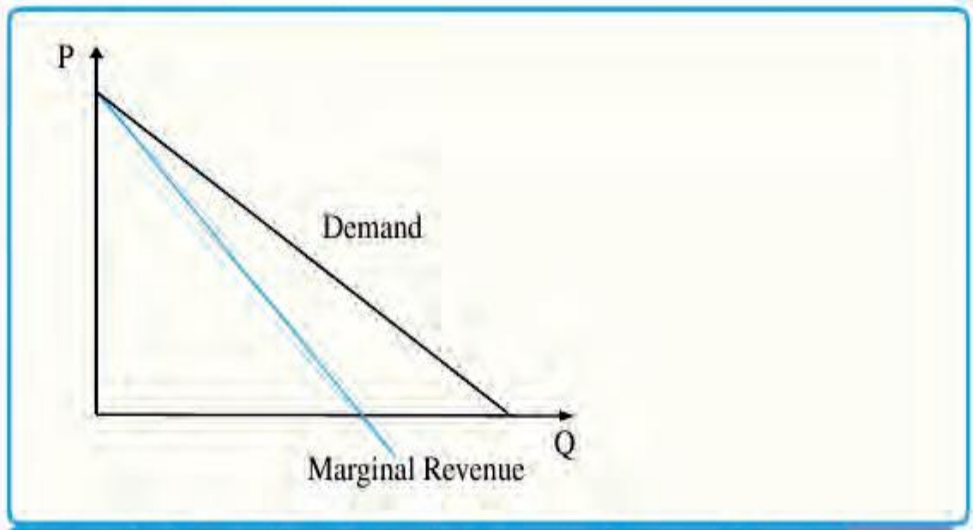


Figure 2.12 Monopolist's Marginal Revenue & Demand Curve

- The shapes of the total cost curves, average cost curves and marginal cost curves confronting a monopolist are the same as those faced by a perfectly competitive firm Total revenue, by contrast, is different from perfect competition. Since a monopolist faces a downward - sloping demand curve, the only way it can sell more output is by reducing its price.

Short-run equilibrium under Monopoly

- Short - run Equilibrium of the monopolist is a point where profits are maximized or losses are minimized. There are two approaches that indicate the equilibrium position, namely, total revenue - total cost (total approach) and marginal revenue-marginal cost (marginal approach).

1. Total Revenue-Total Cost Approach

- Analogous to the perfectly competitive firm, the monopolist reaches maximum profit when it produces and markets output levels that result in a greatest positive difference between total revenue and total cost, (or minimizes loss when, the negative difference between total revenue and total cost is least).

- The profit-maximizing level of output is not the same as the revenue-maximizing level of output, which should make sense, because profits take costs into account revenues do not.

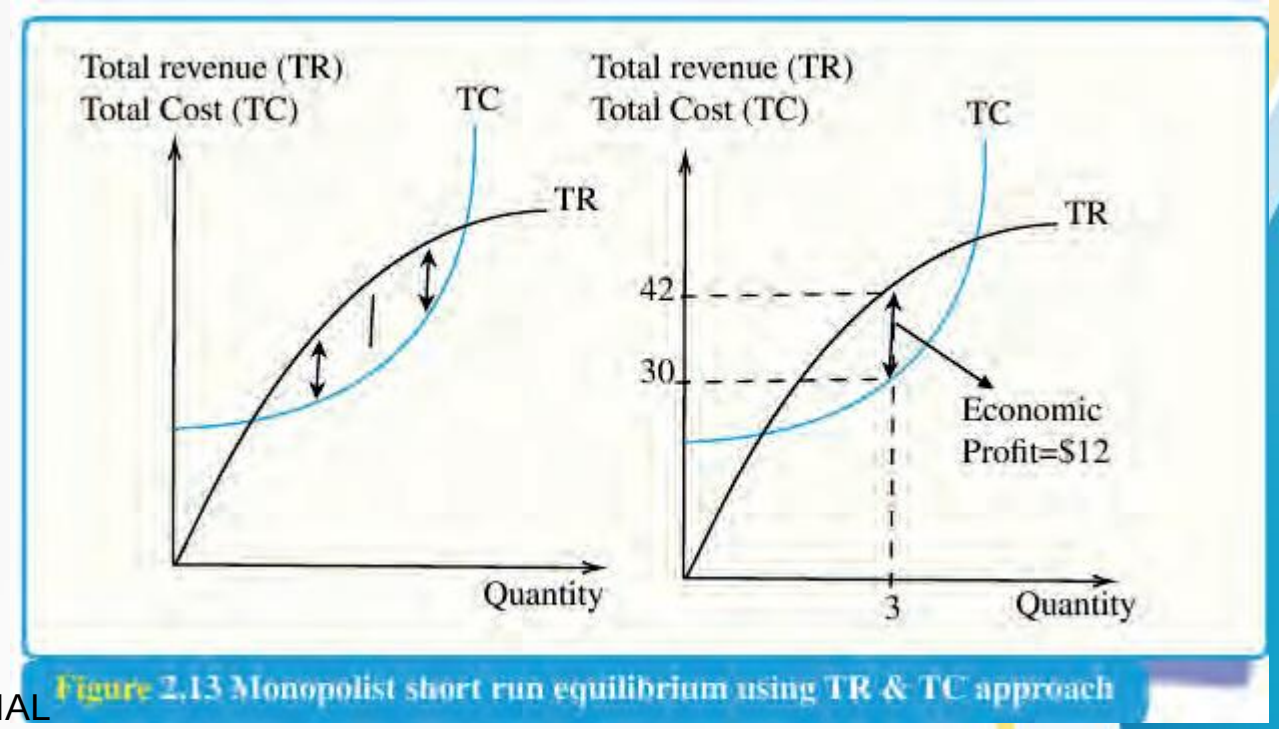


Figure 2.13 Monopolist short run equilibrium using TR & TC approach

2. Marginal Revenue- Marginal Cost Approach

- According to this approach, a monopolist maximizes its profit or minimizes its loss if the following two conditions are satisfied:

  1. Marginal cost is equal to marginal revenue.

  2. The slope of marginal cost is greater than the slope of the marginal revenue at the point of equality.

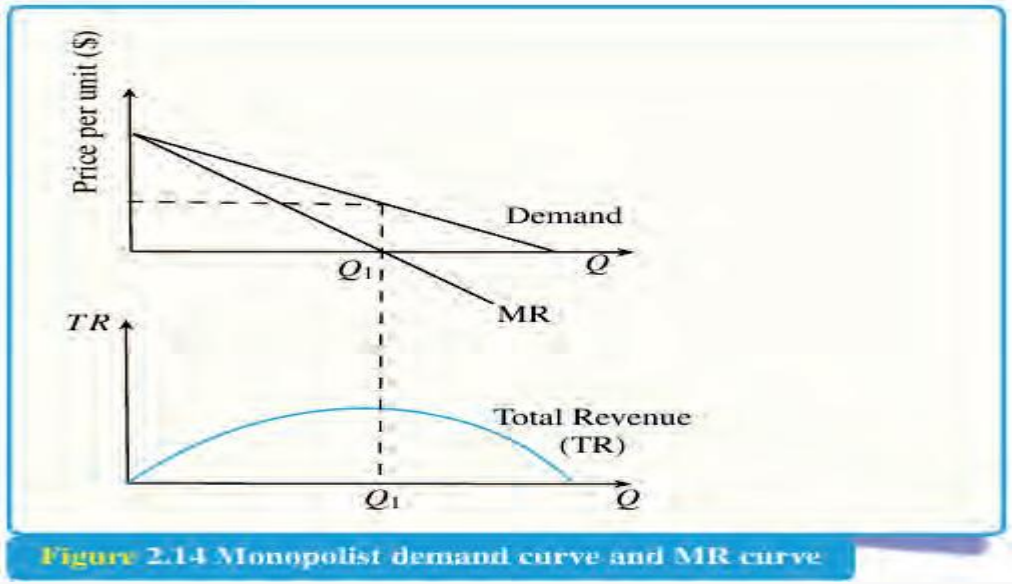


Figure 2.14 Monopolist demand curve and MR curve

- The monopolist is in equilibrium at point E and produces OM output at which it is earning maximum profit.

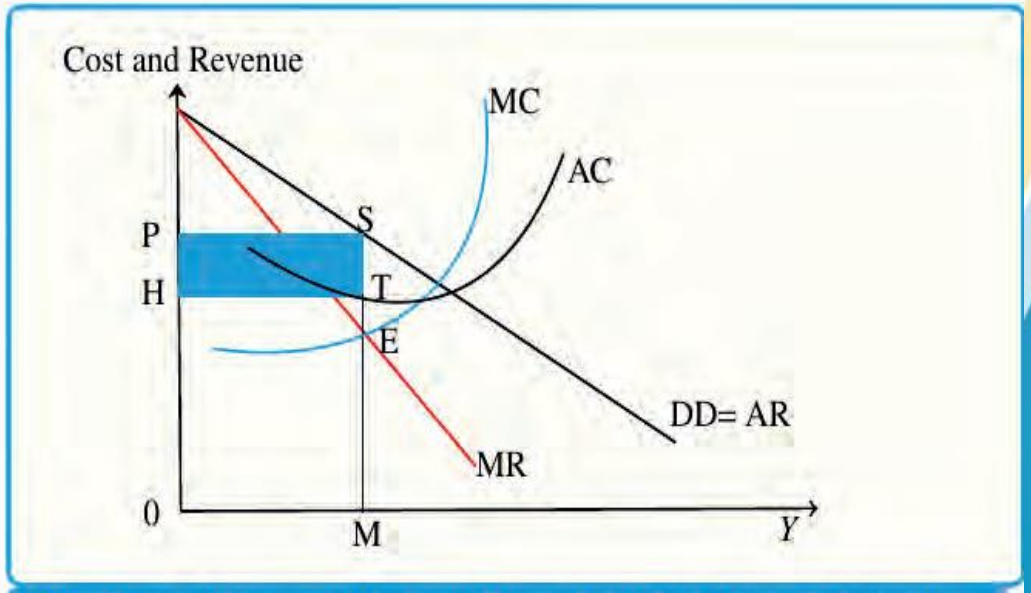


Figure 2.15 Price and Output Determination in Monopoly Market

- As in perfect competition, there are three possibilities for a firm's equilibrium in monopoly. These are:
  1. The firm earns normal profits if the average cost is equal to the average revenue.
  2. It earns super-normal profits if the average cost is less than the average revenue.
  3. It incurs losses if the average cost is greater than the average revenue.

Price Discrimination under Monopoly

- ✓ Price discrimination in monopoly involves selling different units of output at various prices to maximize profit by capturing consumer surplus.
- ✓ This practice is classified into three degrees: first-degree, second-degree, and third-degree, representing varying levels of market segmentation and the monopolist's ability to extract surplus from consumers.

1. First degree (or perfect/primary) price discrimination requires the monopoly seller of a good or service to know the absolute maximum price (or reservation price) that every consumer is willing to pay.

- By knowing the reservation price, the seller is able to sell the good or service to each consumer at the maximum price he/she is willing to pay, and thus transform the consumer surplus into revenues.
- the profit is equal to the sum of consumer surplus and producer surplus.
- This is sometimes referred to as "take or-leave-it" price discrimination; since the monopolist charges the maximum price that the consumer is willing to pay otherwise denying the sale of any quantity to the consumer. In practice, first-degree discrimination is rare.

2. Second degree price discrimination, or nonlinear pricing, occurs when prices differ depending on the number of units of the good bought, but not across consumers.

- ❑ Price varies according to quantity demanded. Larger quantities are available at a lower unit price.

3. Third degree price discrimination, means charging a different price to different consumer groups and it is the most common type.

- ✓ The monopolist divides the entire market into submarkets and different prices are charged in each submarket.
- ✓ Therefore, third-degree price discrimination is also termed as “market segmentation”.
- ✓ There are several factors or bases for price discrimination:
  - Income of the consumers,
  - Geographical location,
  - Age,
  - Quantity of purchase,
  - Relationship with the seller,
  - Frequency of visit to the shop, are a few among others.

2.4 Monopolistic Competition Market

- The monopolistic competition lies between the two extremes of pure competition and monopoly.
- It involves many firms competing against each other, but selling products that are distinctive in some way. Firms producing such products must also compete with other styles, flavors and brand names.
- Examples include stores that sell different styles of clothing, restaurants or grocery stores that sell different kinds of food and even products like golf balls or beer that may be similar but differ in public perception because of advertising and brand names.

Product Differentiations and the Demand Curve

- ✓ The concept of differentiated products is closely related to the degree of variety that is available.
- ✓ Product differentiation arises from diverse styles, flavors, locations, and characteristics, fostering monopolistic competition.
- ✓ Market structure is influenced by consumer preferences, with some industries having identical products, while others exhibit differentiation.
- ✓ Buyer preferences, often influenced by advertising, brand names, and designs, contribute to subjective product differentiation.
- ✓ Product differentiation can be achieved through physical aspects, location, intangibles, and consumer perceptions.

- Differentiation is significant if it provides a basis for buyers to distinguish one seller's product from another, whether real or fancied.
- Real differentiation involves intrinsic differences, such as specifications, inputs, or location, while fancied differentiation relies on advertising and branding.
- The goal of product differentiation is to create a perception of uniqueness, granting the firm some monopoly power over pricing.
- In monopolistic competition, firms enjoy discretion in determining prices due to product differentiation, but they face competition from producers offering close substitutes, resulting in a blend of monopolistic and competitive elements in the market structure.
- the reasons why product differentiation plays a crucial role in monopolistic competitive industries:
  - ✓Tacit collusion is virtually impossible when there are many producers.
  - ✓Hence, product differentiation is the only way that monopolistically competitive firms can acquire some market power.
- There are two important features of industries with differentiated products:
  - ❖ **Competition among sellers:** producers compete for the same market, so entry by more producers reduces the quantity each existing producer sells at any given price.
  - ❖ **Value in diversity:** in addition, consumers gain from the increased diversity of products.

- The demand curve as a monopolistic competitor faces is not flat, but rather downward-sloping, which means that the monopolistic competitor can raise its price without losing all of its customers or lower the price and gain more customers.

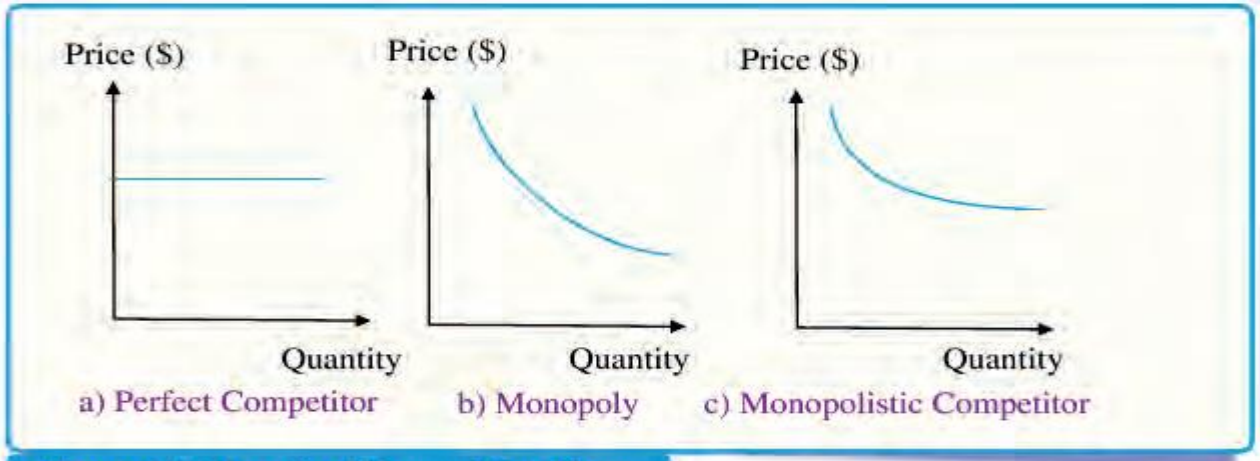


Figure 2.16 Perceived Demand for Firms

Costs under Monopolistic Competition

- ✓ The monopolistically competitive firm decides on its profit-maximizing quantity and price in much the same way as a monopolist.
- ✓ In the short-run in monopolistic competition there are two marginal conditions that must be satisfied for the profit to be maximum:

1. Necessary or first order condition: marginal revenue is equal to marginal cost (MR = MC) and
2. Supplementary (sufficient) or second order condition: marginal revenue curve cuts marginal cost curve from the lower side.

- MC and AC are the short period marginal cost and average cost curves.
- The downward sloping average revenue and marginal revenue curves are AR and MR.
- The equilibrium point is E where MR = MC.
  - The equilibrium output is OM and
  - the price of the product is fixed at OP.

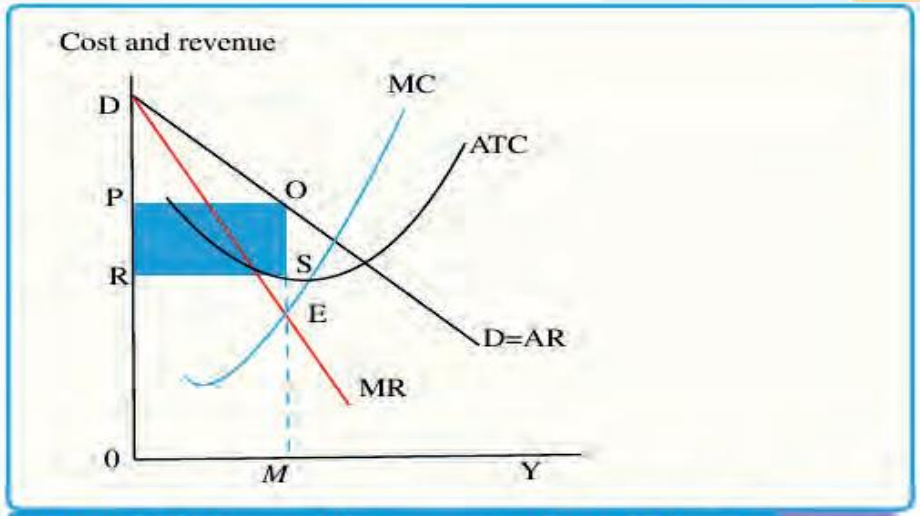


Figure 2.17 Monopolistic competitive firm with Profit

The Concept of Industry and Product Group

- The word “industry” refers to all the firms producing a homogeneous (identical) product.
- But under monopolistic competition the product is differentiated. Therefore, there is no “industry” but only a “group” of firms producing a similar product.
- A practical definition for a product group is when the demand for each individual product within the group is highly elastic and responsive to price changes in other products within the same group, indicating high price and cross elasticity.
- Firms producing closely substitutable goods, such as soap, shampoo, and chocolate, are considered part of a "product group" rather than a traditional industry due to the differentiated nature of their products and the high cross elasticity of demand within the group.

2.5 Oligopoly Market

- Oligopoly is a market in which a few dominant sellers sell differentiated or homogeneous products under continuous consciousness of rivals' action.
- In oligopoly, due to the small number of large firms and hence, the large market share of each firm, the actions of one firm affect and are affected by the actions of the other firms in the market, and this is known as "strategic interdependence".
- The oligopolistic firms are aware of their interdependence and always consider their rivals' reaction when setting prices, output goals, advertising budgets and other business policies.
- When the firms sell homogeneous products such as cement, steel or aluminum, they are called "**pure oligopolies**"
- whereas if the firms are selling differentiated products, such as cold drinks and automobiles, they are called "**impure**" or "**differentiated oligopoly**".
- **Duopoly** is a special case of an oligopoly where two firms operate and have power over the market. The aircraft manufactures Boeing and Airbus can be considered as duopolies.
- There are two types of oligopoly: **collusive** and **non-collusive oligopoly**
  - ✓ **Collusive Oligopoly:-**Collusive oligopoly involves competing firms colluding to minimize competition and maximize joint profit by coordinating on prices and outputs, effectively reducing uncertainties and operating at a monopoly price level.

- ❖ In this form of oligopoly, firms enter into contracts to establish pricing and output levels, and the products offered are homogeneous, allowing customers to purchase from any firm without differentiation.
- ❖ By avoiding competition and collectively setting a monopoly price, the oligopolists can achieve the maximization of joint profit, functioning essentially as a single firm.
- ❖ Collusion in pricing agreements can take explicit or formal forms, as well as implicit or informal ones, contributing to the stability of prices and avoiding destructive price wars.
- ❖ Collusion can be of two types:
- ❖ **A cartel** is formed when producer firms enter into a formal agreement, designating a common sales agency that conducts selling activities for all member firms, and collectively determines pricing and output policies through formal agreements.
- ❖ **Price leadership :-** In oligopolies where establishing a formal collusive agreement is challenging, informal tacit collusion, such as price leadership, may emerge. Price leadership involves a dominant firm initiating price changes, and other firms in the oligopoly implicitly coordinating by following or matching the price adjustments set by the leading firm.

- ➢ **Non-collusive Oligopoly:-**Non-collusive oligopoly describes a market where firms are in competition with each other, independently determining the prices of their products without formal agreements.

- In this environment, each firm strives to increase its market share through aggressive competition, leading to intense rivalry and the development of brand loyalty through aggressive advertising.
- In a non-collusive oligopoly:
    1. Firms are independent of each other.
    2. There are a large number of firms.
    3. There are fewer barriers to.
    4. There are strict government regulations.
    5. Each firm develops an expectation as to what rivals firms are about to do.
- In a non-collusive oligopoly, firms must consider the potential actions of competitors and formulate reactive strategies, resulting in price inflexibility within this market structure.
- The pursuit of increased market share through competition adds complexity, making predictions challenging compared to perfect competition or monopoly scenarios.
- Interdependence among sellers is a key characteristic of oligopoly, where each firm's pricing and output decisions are influenced by perceptions of counter-moves from rival sellers, leading to the development of various models based on different assumptions about competitor behavior, exit and entry dynamics, and the likelihood of collusion.

Table 2.4 Difference between Collusive and Non Collusive Oligopoly

	Collusive Oligopoly	Non Collusive Oligopoly
Meaning	Refers a form of market in which sellers eliminate the competition through a formal agreement.	A situation where each firm has its own price and output policy independent of its rival firms.
Collusion	Here, the few sellers collude to cartels to avoid competition.	Here, competition is preferred to collusion as a means of profit maximization.
Price and output decisions	The price and output decisions of a cartel are mutual.	In this market, each firm has its own price and output decisions.
Interdependency	Firms decisions are interdependent of each other.	Firms decisions are independent of rival firms in the market.
Competition	There is no competition in th market due to collusion.	Here, there is cut-throat competition among the firms.
Selling costs	There is no need to incur expenditure to create brand loyalty.	Firms make aggressive advertisement and develop brand loyalty.
	This market is also known as Cooperative Oligopoly.	This market is also known as Non-Cooperative Oligopoly.
Creation of Monopoly	This market is like a monopoly as cartels have full control over the price and can earn monopoly profits.	There is no such market formation under this market.

The End of CHAPTER Two

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To Be Continue….
Thank you