Chapter 1- Introduction

A SIMPLE ECONOMY

Central PROBLEMS OF AN ECONOMY:

- scarcity of resources
- problem of choice
- Every society has to decide on how to use its scarce resources.
- Production, exchange and consumption of goods and services are among the basic economic activities of life.
- The collection of all possible combinations of the goods and services that can be produced from a given amount of resources and a given stock of technological knowledge is called the production possibility set of the economy.

Three important questions of an economy:

- *What is produced and in what quantities?*
- *How are these goods produced?*
- *For whom are these goods produced?*

Organization OF ECONOMIC ACTIVITIES:

The Centrally Planned Economy:

- In a centrally planned economy, the government or the central authority plans all the important activities in the economy.
- All important decisions regarding production, exchange and consumption of goods and services are made by the government.

The Market Economy:

- In contrast to a centrally planned economy, in a market economy, all economic activities are organized through the market.
- A market, as studied in economics, is an institution6 which organizes the free interaction of individuals pursuing their respective economic activities.

- In other words, a market is a set of arrangements where economic agents can freely exchange their endowments or products with each other.

POSITIVE AND NORMATIVE ECONOMICS:

- In positive economic analysis, we study how the different mechanisms function, and in normative economics, we try to understand whether these mechanisms are desirable or not.

MICROECONOMICS AND MACROECONOMICS

- In microeconomics, we study the behavior of individual economic agents in the markets for different goods and services and try to figure out how prices and quantities of goods and services are determined through the interaction of individuals in these markets.
- In macroeconomics, on the other hand, we try to get an understanding of the economy as a whole by focusing our attention on aggregate measures such as total output, employment and aggregate price level.

Chapter 2-Theory of Consumer Behaviour

THE CONSUMER'S BUDGET

- The consumption bundles that are available to the consumer depend on the prices of the two goods and the income of the consumer
- With a fixed income a consumer can buy only those combination of goods which will cost him less.

BUDGET SET:

- The set of bundles available to the consumer is called the budget set.
- The budget set is thus the collection of all bundles that the consumer can buy with her income at the prevailing market prices.

PREFERENCES OF THE CONSUMER

- The budget set consists of all bundles that are available to the consumer.
- The consumer can choose her consumption bundle from the budget set. But on what basis does she choose her consumption bundle from the ones that are available to her?

- In economics, it is assumed that the consumer chooses her consumption bundle on the basis of her tastes and preferences over the bundles in the budget set.

Monotonic Preferences:

- a consumer's preferences are monotonic if and only if between any two bundles, the consumer prefers the bundle which has more of at least one of the goods and no less of the other good as compared to the other bundle.

Substitution between Goods:

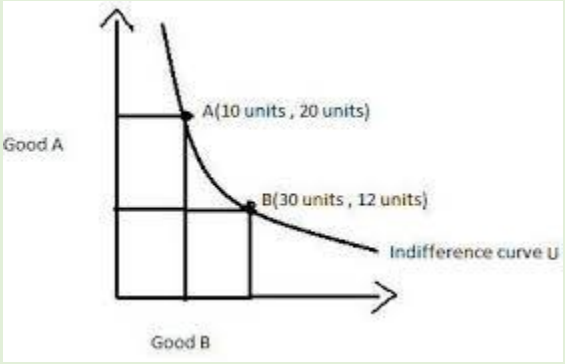
- The rate of substitution is the amount of good 2 that the consumer is willing to give up for an extra unit of good 1.
- It measures the consumer's willingness to pay for good 1 in terms of good 2.
- The rate of substitution between the two goods captures a very important aspect of the consumer's preference.

Diminishing Rate of Substitution:

- As the amount of good 1 increases, the rate of substitution between good 2 and good 1 diminishes. Preferences of this kind are called convex preferences.

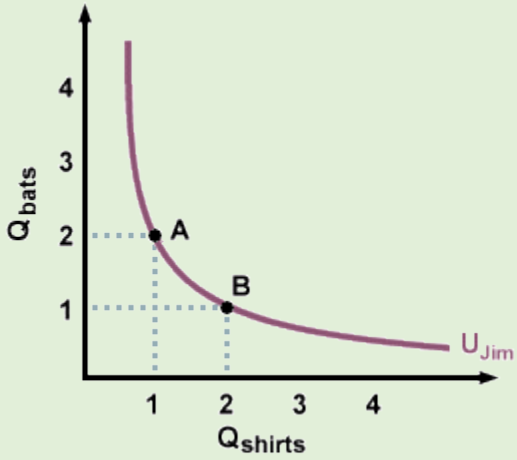
Indifference Curve:

- The points representing bundles which are considered indifferent by the consumer can generally be joined to obtain a curve.
- Such a curve joining all points representing bundles among which the consumer is indifferent is called an indifference curve.

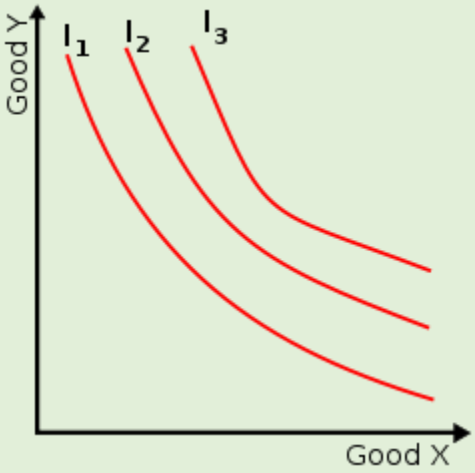


- An indifference curve joins all points representing bundles which are considered indifferent by the consumer.

- monotonicity of preferences implies that any point above the indifference curve represents a bundle which is preferred to the bundles on the indifference curve.
- For small changes, the rate of substitution between good 2 and good 1 is called the marginal rate of substitution (MRS).
- The indifference curve slopes downward.
- Diminishing Rate of Substitution. The amount of good 2 the consumer is willing to give up for an extra unit of good 1 declines as the consumer has more and more of good 1.



- Indifference Map. A family of indifference curves. The arrow indicates that bundles on higher indifference curves are preferred by the consumer to the bundles on lower indifference *curves.*



Utility:

- Utility, or usefulness, is the (perceived) ability of something to satisfy needs or wants.

- It represents satisfaction experienced by the consumer of a good. Not coincidentally, a good is something that satisfies human wants and provides utility, for example, to a consumer making a purchase.

DEMAND

- Though literally there is almost no difference between desire and demand, economics treat them as two aspects. While desire refers to the willingness to purchase or buy a commodity, on the other hand demand refers to willingness to pay and ability to pay.
- The change in the optimal quantity of a good when its price changes and the consumer's income is adjusted so that she can just buy the bundle that she was buying before the price change is called the substitution effect.

Law of Demand:

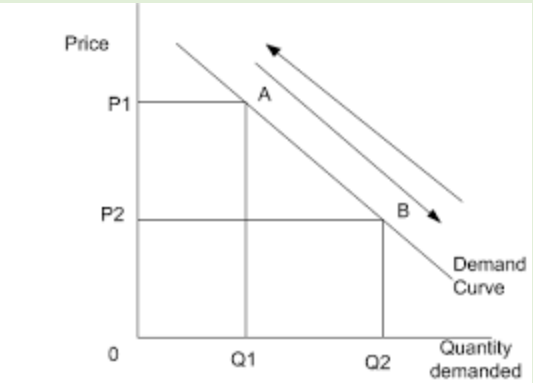
- If a consumer's demand for a good moves in the same direction as the consumer's income, the consumer's demand for that good must be inversely related to the price of the good.
- Law of demand states that people will buy more at lower prices and buy less at higher prices.
- The amount demanded increases with a fall in price and diminishes with a rise in price.

Types of Demand:

- Price demand-Inverse relationship between price and demand.
- Income Demand: Direct relationship between price and demand
- Cross Demand: Largely influenced by Substitutes.
- Joint and composite Demand: leading to the demand for another commodity. E.g.Demand for coal and rubber. Direct and Indirect Demand, Alternate demand, Competitive demand.

Demand Curve:

- The demand curve is a relation between the quantity of the good chosen by a consumer and the price of the good. The independent variable (price) is measured along the vertical axis and dependent variable (quantity) is measured along the horizontal axis. The demand curve gives the quantity demanded by the consumer at each price.



Normal and Inferior Goods:

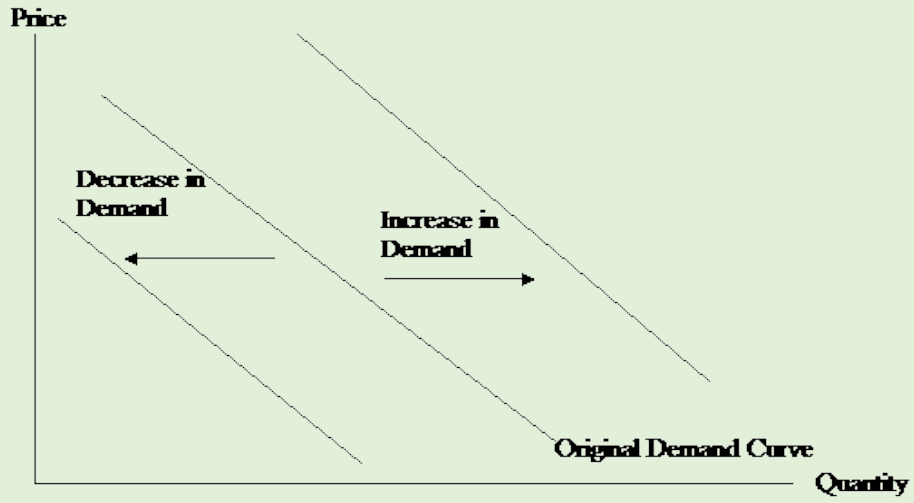
- For most goods, the quantity that a consumer chooses, increases as the consumer's income increases and decreases as the consumer's income decreases. Such goods are called normal goods. Thus, a consumer's demand for a normal good moves in the same direction as the income of the consumer.
- However, there are some goods the demands for which move in the opposite direction of the income of the consumer. Such goods are called inferior goods.

Substitutes and Complements:

- The quantity of a good that the consumer chooses can increase or decrease with the rise in the price of a related good depending on whether the two goods are substitutes or complementary to each other.
- Goods which are consumed together are called complementary goods.
- And those which can replace each other are called as substitutes.

Shifts in the Demand Curve:

- Refers to a change in demand either relationship between price or the other factors. If change results from the change in price, it may either be an extension or a contraction. On the other hand when the demand curve shifts on account of other factors other than price, it is called either an increase or decrease in demand.
- For normal goods, the demand curve shifts rightward and for inferior goods, the demand curve shifts leftward.



- If there is an increase in the price of a substitute good, the demand curve shifts rightward. On the other hand, if there is an increase in the price of a complementary good, the demand curve shifts leftward.
- If the consumer's preferences change in favour of a good, the demand curve for such a good shifts rightward. On the other hand, the demand curve shifts leftward due to an unfavorable change in the preferences of the consumer.

MARKET DEMAND

- The market demand for a good at a particular price is the total demand of all consumers taken together.
- The market demand for a good can be derived from the individual demand curves.
- The market demand for the good at each price can be derived by adding up the demands of the two consumers at that price. If there are more than two consumers in the market for a good, the market demand can be derived similarly.

ELASTICITY OF DEMAND:

- Responsiveness of demand to the change in price and the other factors of demand is known as elasticity of demand. Or %age change in quantity demanded to the %age change in price.
- The demand for a good moves in the opposite direction of its price.
- The impact of the price change is always not the same.

- Sometimes, the demand for a good changes considerably even for small price changes.
- On the other hand, there are some goods for which the demand is not affected much by price changes.
- Demands for some goods are very responsive to price changes while demands for certain others are not so responsive to price changes.
- Price-elasticity of demand is a measure of the responsiveness of the demand for a good to changes in its price. Price-elasticity of demand for a good is defined as the percentage change in demand for the good divided by the percentage change in its price.

Price elasticity of demand for a good

eD =percentage change in demand for the good/percentage change in the price of the good

Summary:

The budget set is the collection of all bundles of goods that a consumer can buy with her income at the prevailing market prices.

• The budget line represents all bundles which cost the consumer her entire income. The budget line is negatively sloping.

• The budget set changes if either of the two prices or the income changes.

• The consumer has well-defined preferences over the collection of all possible bundles. She can rank the available bundles according to her preferences over them.

• The consumer's preferences are assumed to be monotonic.

• An indifference curve is a locus of all points representing bundles among which the consumer is indifferent.

• Monotonicity of preferences implies that the indifference curve is downward sloping.

• A consumer's preferences, in general, can be represented by an indifference map.

• A consumer's preferences, in general, can also be represented by a utility function.

• A rational consumer always chooses her most preferred bundle from the budget set.

• The consumer's optimum bundle is located at the point of tangency between the budget line and an indifference curve.

• The consumer's demand curve gives the amount of the good that a consumer chooses at different levels of its price when the price of other goods, the consumer's income and her tastes and preferences remain unchanged.

• The demand curve is generally downward sloping.

• The demand for a normal good increases (decreases) with increase (decrease) in the consumer's income.

• The demand for an inferior good decreases (increases) as the income of the consumer increases (decreases).

Chapter 3- Production and Costs

PRODUCTION FUNCTION

- Production function of a firm is a relationship between inputs used and output produced by the firm.
- A production function is defined for a given technology. It is the technological knowledge that determines the maximum levels of output that can be produced using different combinations of inputs.
- The inputs that a firm uses in the production process are called factors of production.
- An isoquant is the set of all possible combinations of the two inputs that yield the same maximum possible level of output. isoquants are negatively sloped .

THE SHORT RUN AND THE LONG RUN:

- In the short run, a firm cannot vary all the inputs. One of the factors – factor 1 or factor 2 – cannot be varied, and therefore, remain fixed in the short run.
- In order to vary the output level, the firm can vary only the other factor. The factor that remains fixed is called the fixed input whereas the other factor which the firm can vary is called the variable input.
- In the long run, all factors of production can be varied. A firm in order to produce different levels of output in the long run may vary both the inputs simultaneously. So, in the long run, there is no fixed input.

TOTAL PRODUCT, AVERAGE PRODUCT AND MARGINAL PRODUCT

- **Total Product**: relationship between the variable input and output, keeping all other inputs constant, is often referred to as Total Product (TP) of the variable input.
- **Average Product**: the output per unit of variable input.
- **Marginal Product**: Marginal product of an input is defined as the change in output per unit of change in the input when all other inputs are held constant.

THE LAW OF DIMINISHING MARGINAL PRODUCT AND THE LAW OF VARIABLE PROPORTIONS

- **The law of diminishing marginal product** says that if we keep increasing the employment of an input, with other inputs fixed, eventually a point will be reached after which the resulting addition to output (i.e., marginal product of that input) will start falling. Introduced by Prof.Gossen, according to him "a person derives less utility out of his consumption of the additional units. It is also known as Gossen's first law. Or otherwise according to Marshall, " the additional benefits which a person derives from a given increase of his stock of a thing diminishes with every increase of the stock that he already has.
- In the short run production when it comes to the increase of output the producer generally does so by increasing the units of one of the four factors of production known as variable production and as the producer goes on increasing the variable factor the ratio between the fixed and the variable factor changes and the production increases upto a certain extent. The law that helps the producer to increase the volume of output is called as law of variable proportions.

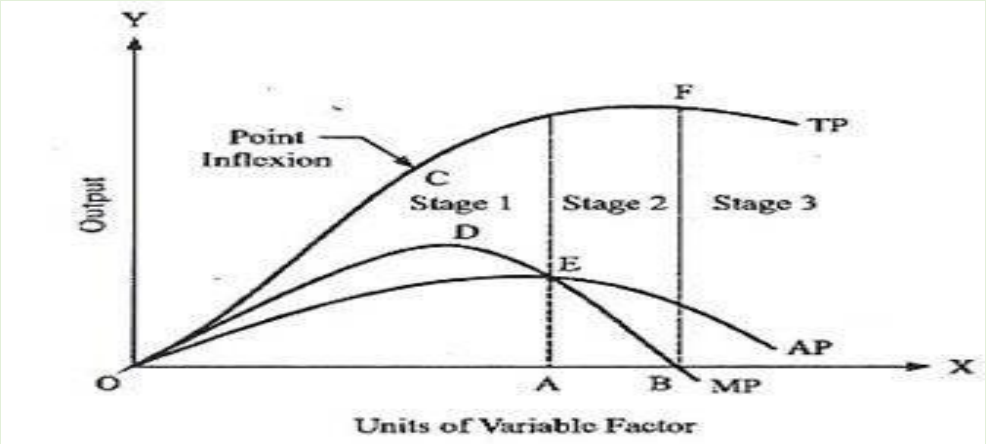


Fig. 8.2: Three Stages of Law of Variable Proportions

RETURNS TO SCALE

- Constant returns to scale (CRS) is a property of production function that holds when a proportional increase in all inputs results in an increase in output by the same proportion.
- Increasing returns to scale (IRS) holds when a proportional increase in all inputs results in an increase in output by more than the proportion.
- Decreasing returns to scale (DRS) holds when a proportional increase in all inputs results in an increase in output by less than the proportion.

COSTS:

- Refers to the expenses which the producer has to bear during the process of production without which production process is quite impossible.

Short Run Costs:

- In the short run, some of the factors of production cannot be varied, and therefore, remain fixed.
- The cost that a firm incurs to employ these fixed inputs is called the total fixed cost (TFC). Accordingly, the cost that a firm incurs to employ these variable inputs is called the total variable cost (TVC). Adding the fixed and the variable costs, we get the total cost (TC) of a firm

TC = TVC + TFC

Long Run Costs

- In the long run, all inputs are variable. The total cost and the total variable cost therefore, coincide in the long run.

Summary:

- For different combinations of inputs, the production function shows the maximum quantity of output that can be produced.
- In the short run, some inputs cannot be varied. In the long run, all inputs can be Varied.

• Total product is the relationship between a variable input and output when all other inputs are held constant.

• For any level of employment of an input, the sum of marginal products of every unit of that input up to that level gives the total product of that input at that employment level.

• Both the marginal product and the average product curves are inverse 'U'-shaped. The marginal product curve cuts the average product curve from above at the maximum point of average product curve.

• In order to produce output, the firm chooses least cost input combinations.

• Total cost is the sum of total variable cost and the total fixed cost.

• Average cost is the sum of average variable cost and average fixed cost.

• Average fixed cost curve is downward sloping.

• Short run marginal cost, average variable cost and short run average cost curves are 'U'-shaped.

• SMC curve cuts the AVC curve from below at the minimum point of AVC.

• SMC curve cuts the SAC curve from below at the minimum point of SAC.

• In the short run, for any level of output, sum of marginal costs up to that level gives us the total variable cost. The area under the SMC curve up to any level of Output gives us the total variable cost up to that level.

• Both LRAC and LRMC curves are 'U' shaped.

• LRMC curve cuts the LRAC curve from below at the minimum point of LRAC.

Chapter 4-The Theory of the Firm under Perfect Competition

PERFECT COMPETITION: DEFINING FEATURES

- In order to analyses a firm's profit maximization problem, we must first specify the market environment in which the firm functions. This market environment called perfect competition.
- A perfectly competitive market has two defining features

1. The market consists of buyers and sellers (that is, firms). All firms in the market produce a certain homogeneous (that is, undifferentiated) good.
2. Each buyer and seller in the market is a price-taker.

REVENUE:

- A firm earns revenue by selling the good that it produces in the market. Let the market price of a unit of the good be p. Let q be the quantity of the good produced, and therefore sold, by the firm at price p.
- Then, total revenue (TR) of the firm is defined as the market price of the good (p) multiplied by the firm's output (q). Hence,

$$TR = p \times q$$

- The average revenue (AR) of a firm is defined as total revenue per unit of output.

Price Line

- shows the relationship between the market price and a firm's output level. The vertical height of the price line is equal to the market price, p.
- The marginal revenue (MR) of a firm is defined as the increase in total revenue for a unit increase in the firm's output.
- In other words, for a price-taking firm, marginal revenue equals the market price.

PROFIT MAXIMISATION:

- A firm produces and sells a certain amount of a good. The firm's profit, denoted by π, is defined to be the difference between its total revenue (TR) and its total cost of production (TC). In other words π = TR – TC
- The Shut Down Point: along the supply curve as we move down, the last price-output combination at which the firm produces positive output is the point of minimum AVC where the SMC curve cuts the AVC curve. Below this, there will be no production. This point is called the short run **shut down point** of the firm. In the long run, however, the shutdown point is the minimum of LRAC curve.

The Normal Profit and Break-even Point:

- The profit level that is just enough to cover the explicit costs and opportunity costs of the firm is called the normal profit.
- Profit that a firm earns over and above the normal profit is called the super-normal profit.
- **Break Even Point**: The point on the supply curve at which a firm earns normal profit is called the break-even point of the firm.
- The point of minimum average cost at which the supply curve cuts the LRAC curve (in short run, SAC curve) is therefore the break-even point of a firm.
- **Opportunity Cost**: Opportunity cost of some activity is the gain foregone from the second best activity.

DETERMINANTS OF A FIRM'S SUPPLY CURVE

- Technological Progress
- Input Prices
- Unit Tax

PRICE ELASTICITY OF SUPPLY

- The price elasticity of supply of a good measures the responsiveness of quantity supplied to changes in the price of the good. More specifically, the price elasticity of supply, denoted by eS, is defined as follows

Price elasticity of supply (eS) = Percentage change in quantity supplied/Percentage change in price.

Chapter 5-Market Equilibrium

EQUILIBRIUM, EXCESS DEMAND, EXCESS SUPPLY:

- An equilibrium is defined as a situation where the plans of all consumers and firms in the market match and the market clears.
- In equilibrium, the aggregate quantity that all firms wish to sell equals the quantity that all the consumers in the market wish to buy; in other words, market supply equals market demand.
- The price at which equilibrium is reached is called equilibrium price and the quantity bought and sold at this price is called equilibrium quantity.
- If at a price, market supply is greater than market demand, we say that there is an excess supply in the market at that price and if market demand exceeds market supply at a price, it is said that excess demand exists in the market at that price.
- equilibrium in a perfectly competitive market can be defined alternatively as zero excess demand-zero excess supply situation.
- Equilibrium occurs at the intersection of the market demand curve and market supply curve.

Wage Determination in Labour Market

- The basic difference between a labour market and a market for goods is with respect to the source of supply and demand.
- In the labour market, households are the suppliers of labour and the demand for labour comes from firms whereas in the market for goods, it is the opposite.
- The wage rate is determined at the intersection of the demand and supply curves of labour where the demand for and supply of labour balance.

Shifts in Demand and Supply

Demand Shift: With rightward shift the equilibrium quantity and price increase whereas with leftward shift, equilibrium quantity and price decrease.

Supply Shift: With rightward shift, the equilibrium quantity increases and price decreases whereas with leftward shift, equilibrium quantity decreases and price increases.

Simultaneous Shifts of Demand and Supply

- What happens when both demand and supply curves shift simultaneously? The simultaneous shifts can happen in four possible ways:

(i) Both supply and demand curves shift rightwards.

(ii) Both supply and demand curves shift leftwards.

(iii) Supply curve shifts leftward and demand curve shifts rightward.

(iv) Supply curve shifts rightward and demand curve shifts leftward.

Table 5.1: **Impact of Simultaneous Shifts on Equilibrium**

Shift in Demand	*Shift in Supply*	*Quantity*	*Price*
Leftward	Leftward	Decreases	May increase, decrease or remain unchanged
Rightward	Rightward	Increases	May increase, decrease or remain unchanged
Leftward	Rightward	May increase, decrease or remain unchanged	Decreases
Rightward	Leftward	May increase, decrease or remain unchanged	Increases

Market Equilibrium: Free Entry and Exit

- was studied under the assumption that there is a fixed number of firms.
- firms can enter and exit the market freely
- with free entry and exit, each firm will always earn normal profit at the prevailing market price.

Price Ceiling:

- The government-imposed upper limit on the price of a good or service is called price ceiling.
- Price ceiling is generally imposed on necessary items like wheat, rice, kerosene, sugar and it is fixed below the market-determined price since at the market-determined price some section of the population will not be able to afford these goods.

Price Floor:

- The government imposed lower limit on the price that may be charged for a particular good or service is called price floor.
- Most well-known examples of imposition of price floor are agricultural price support programmes and the minimum wage legislation**.**

Summary:

- In a perfectly competitive market, equilibrium occurs where market demand equals market supply.
- The equilibrium price and quantity are determined at the intersection of the market demand and market supply curves when there is fixed number of firms.
- Each firm employs labour upto the point where the marginal revenue product of labour equals the wage rate.
- With supply curve remaining unchanged when demand curve shifts rightward (leftward), the equilibrium quantity increases (decreases) and equilibrium price increases (decreases) with fixed number of firms.
- With demand curve remaining unchanged when supply curve shifts rightward (leftward), the equilibrium quantity increases (decreases) and equilibrium price decreases (increases) with fixed number of firms.
- When both demand and supply curves shift in the same direction, the effect on equilibrium quantity can be unambiguously determined whereas the effect on equilibrium price depends on the magnitude of the shifts.
- When demand and supply curves shift in opposite directions, the effect on equilibrium price can be unambiguously determined whereas the effect on equilibrium quantity depends on the magnitude of the shifts.
- In a perfectly competitive market with identical firms if the firms can enter and exit the market freely, the equilibrium price is always equal to minimum average cost of the firms.
- With free entry and exit, the shift in demand has no impact on equilibrium price but changes the equilibrium quantity and number of firms in the same direction as the change in demand.
- In comparison to a market with fixed number of firms, the impact of a shift in demand curve on equilibrium quantity is more pronounced in a market with free entry and exit.
- Imposition of price ceiling below the equilibrium price leads to an excess demand.
- Imposition of price floor above the equilibrium price leads to an excess supply.

Chapter 6-Non-competitive Markets

- The perfect competition market structure is approximated by a market satisfying the following conditions:

  (i) there exist a very large number of firms and consumers of the commodity, such that the output sold by each firm is negligibly small compared to the total output of all the firms combined, and similarly, the amount purchased by each consumer is extremely small in comparison to the quantity purchased by all consumers together;

(ii) Firms are free to start producing the commodity or to stop production;

(iii) The output produced by each firm in the industry is indistinguishable from the others and the output of any other industry cannot substitute this output; and

(iv) Consumers and firms have perfect knowledge of the output, inputs and their prices.

SIMPLE MONOPOLY IN THE COMMODITY MARKET

- A market structure in which there is a single seller is called monopoly.
- requires that there is a single producer of a particular commodity; no other commodity works as a substitute for this commodity; and for this situation to persist over time, sufficient restrictions are required to be in place to prevent any other firm from entering the market and to start selling the commodity
- 'Monopoly firm is a price maker'.
- The total revenue (TR) received by the firm from the sale of the commodity equals the product of the price and the quantity sold. In the case of the monopoly firm, the total revenue is not a straight line. Its shape depends on the shape of the demand curve.
- The revenue received by the firm per unit of commodity sold is called the Average Revenue (AR).
- This change in TR due to the sale of an additional unit is termed Marginal Revenue (MR).

Market Demand Curve is the Average Revenue Curve

- Quantity purchased by the consumers is a decreasing function of the price.
- price is a decreasing function of the quantity sold.

Marginal Revenue and Price Elasticity of Demand

- Price elasticity of demand is more than 1 when the MR has a positive value, and becomes less than the unity when MR has a negative value.

OTHER NON-PERFECTLY COMPETITIVE MARKETS

Monopolistic Competition:

- We now consider a market structure where the number of firms is large, there is free entry and exit of firms, but the goods produced by them are not homogeneous. Such a market structure is called monopolistic competition.
- the monopolistic competitive firm produces lower output as compared to the perfectly competitive firm

How do Firms behave in Oligopoly?

- If the market of a particular commodity consists of more than one seller but the number of sellers is few, the market structure is termed oligopoly.
- The special case of oligopoly where there are exactly two sellers is termed duopoly.

Summary:

- The market structure called monopoly exists where there is exactly one seller in any market.
- A commodity market has a monopoly structure, if there is one seller of the commodity, the commodity has no substitute, and entry into the industry by another firm is prevented.
- The market price of the commodity depends on the amount supplied by the monopoly firm. The market demand curve is the average revenue curve for the monopoly firm.
- The shape of the total revenue curve depends on the shape of the average revenue curve. In the case of a negatively sloping straight line demand curve, the total revenue curve is an inverted vertical parabola.
- Average revenue for any quantity level can be measured by the slope of the line from the origin to the relevant point on the total revenue curve.
- Marginal revenue for any quantity level can be measured by the slope of the tangent at the relevant point on the total revenue curve.
- The average revenue is a declining curve if and only if the value of the marginal revenue is lesser than the average revenue.
- The steeper is the negatively sloped demand curve, the further below is the marginal revenue curve.
- The demand curve is elastic when marginal revenue has a positive value, and inelastic when the marginal revenue has a negative value.
- If the monopoly firm has zero costs or only has fixed cost, the quantity supplied in equilibrium is given by the point where marginal revenue is zero. In contrast, perfect competition would supply an equilibrium quantity given by the point where average revenue is zero.
- Equilibrium of a monopoly firm is defined as the point where MR = MC and MC is rising. This point provides the equilibrium quantity produced.
- The equilibrium price is provided by the demand curve given the equilibrium quantity.
- Positive short run profit to a monopoly firm continue in the long run.
- Monopolistic competition in a commodity market arises due to the commodity being non-homogenous.
- In monopolistic competition, the short run equilibrium results in quantity produced being lesser and prices being higher compared to perfect competition. This situation persists in the long run, but long run profits are zero.
- Oligopoly in a commodity market occurs when there are a small number of firms producing a homogenous commodity.