GEC S1 01

Introduction to Economic Theory-I

SEMESTER - I

ECONOMICS

BLOCK - 2

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BLOCK INTRODUCTION

The third block of this paper 'Introduction to Economic Theory I' has the next five units. Unit XI describes the monopoly market and gives a comparison between monopoly and perfect completion market structures. Unit XII describes Imperfect Competition and introduces the learner to the concepts of oligopoly and duopoly. Unit XIII gives the equilibrium conditions of monopolistic competition. Short run and long run equilibrium conditions along with Product and Group Equilibrium are discussed. Unit XIV deals with the basic concepts of National Income. A learner is introduced to the concepts of National Income, Gross National Income, Gross National Product, Net National Product, Per Capita Income and Disposable Income in this unit. The importance of measuring National Income is also discussed here. Unit XV discusses the methods of measuring National Income. The difficulties of measuring National Income is explained along with the circular flow of National Income.

This block includes some along-side boxes to help you know some of the difficult, unseen terms. Some "ACTIVITY' have been included to help you apply your own thoughts. And, at the end of each section, you will get "CHECK YOUR PROGRESS" questions. These have been designed to self-check your progress of study. It will be better if you solve the problems put in these boxes immediately after you go through the sections of the units and then match your answers with "ANSWERS TO CHECK YOUR PROGRESS" given at the end of each unit.

UNIT 9: EQUILIBRIUM OF FIRM AND INDUSTRY

UNIT STRUCTURE

9.1 Learning Objectives

9.2 Introduction

9.3 Conditions of Firm's Equilibrium

9.4 Break-even Point

9.5 Equilibrium of Industry

9.6 Incorporating Normal Profit into Average Cost Prices

9.7 Validity of Profit Maximization Doctrine

9.8 Let Us Sum Up

9.9 Further Reading

9.10 Answers to Check Your Progress

9.11 Model Questions

9.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- discuss how a firm and an industry attain equilibrium in the market
- explain the concept of break-even point
- state why normal profit is a part of average cost
- judge the validity of the profit maximization doctrine.

9.2 INTRODUCTION

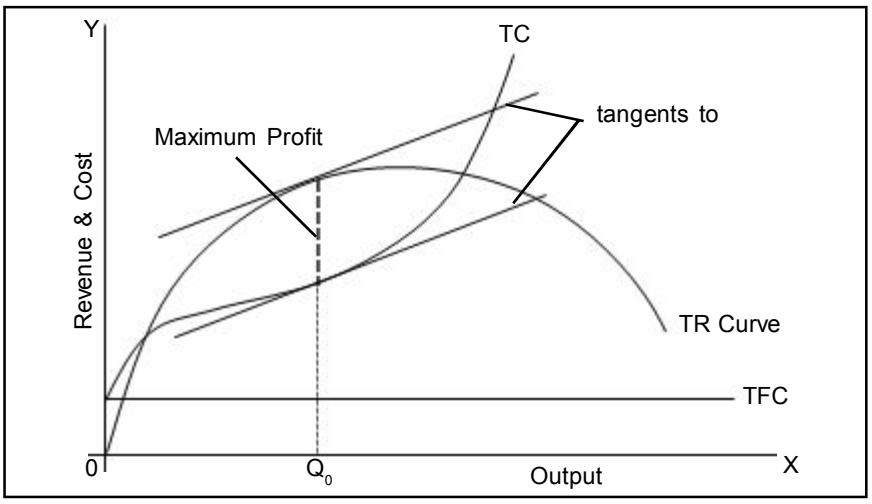
Equilibrium in Economics is defined as a situation where there is no further tendency for a change. This is not a state of rest or inertia. Different forces are at work but opposing forces completely balance each other in equilibrium position. As a result, the participants in the economic activity have no reason to change their plans. Every one is happy in the equilibrium position. At the individual level, equilibrium is seen as the situation that satisfies the *rationality* assumption. A consumer is said to be rational when he/she intends to maximize his utility or satisfaction; similarly, a producer is seen to be rational when he/whe wants to maximize his/her profit, and so

on. In the first section of this unit, we will discuss how and when a firm attains its equilibrium. This will be followed by an illustration of the concept of break-even point which is very crucial for a firm that wants to remain in business. In the third section of the unit, we will explain the equilibrium of the industry as a whole within which the firm operates. The pros and cons of the rationality assumption, i.e., the goal of profit maximization will be taken up in the final section of the unit.

9.3 CONDITIONS OF FIRM'S EQUILIBRIUM

Total Revenue– Total Cost Approach: A firm is said to attain equilibrium when it maximises its profit and the maximisation of profit is possible for optimal combination of price and output. At the point of equilibrium, the firm has no reason to change its plan regarding its volume of output or price. For profit maximization, the firm has to take into account both the revenue and cost sides of production. The profit is obtained by deducting the total cost of producing a commodity from the total revenue that is earned by selling it. Thus, profit maximisation naturally implies maximizing the difference between total revenue and total cost. This has been shown with the help of the following figure 9.1.

Fig. 9.1: Profit Maximisation with the help of TR & TC curves



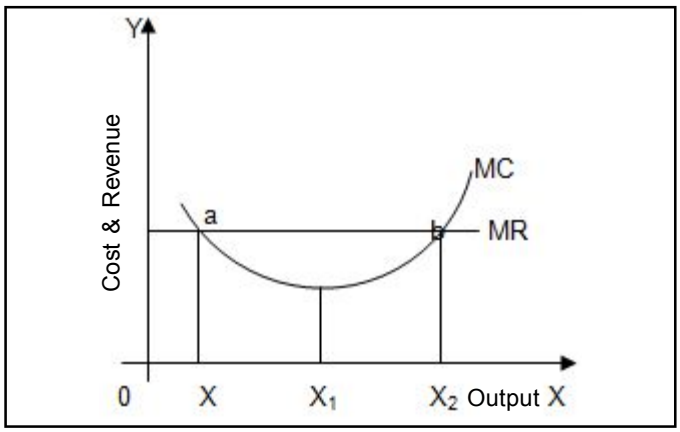
In the above figure 9.1, total revenue (TR) and total cost (TC) are shown. Revenue and cost have been shown along the Y-axis, while output has been shown along the X-axis. (Please note that these curves represent

a firm under imperfect competition. We shall disucss the case of perfect competition in the next unit)

In the above figure, it has been seen that the firm maximises its profit at $0Q_0$ level of output. This is because, corresponging to this level of output, the gap (i.e., difference) between TR and TC curves is the maximum, as the tangents drawn to TR and TC curves are parallel.

Marginal Revenue– Marginal Cost Aproach: Another way to discuss profit maximisation is with the help of marginal cost (MC) and marginal reveneu (MR) curves. A profit maximizing firm will compare his marginal cost (MC) of production to his marginal revenue (MR) from the product. We know that the marginal cost of production is the addition made to the total cost by the production of an additional unit of output. Thus, it is the cost incurred on the last unit of the produced good. Similarly, the marginal revenue is the addition made to the total revenue by the sale of an additional unit of the product. Thus, it is the revenue earned by the last unit of the product. The producer will go on producing as long as his marginal revenue is greater than his marginal cost as the difference between the two constitutes his marginal profit. The production will stop for a profit maximizing firm only when the MC and MR are equal and the firm can not earn any more profit by producing more of the product as marginal cost will exceed the marginal revenue beyond that level of output. Now let us draw the MC and MR curves for a firm both under perfect competition and imperfect competition. Let us consider perfrect competition first. Under perfect competition, the MR curve is horizontal to the output axis and MC curve is usual U shaped. This has been shown in Figure 9.2

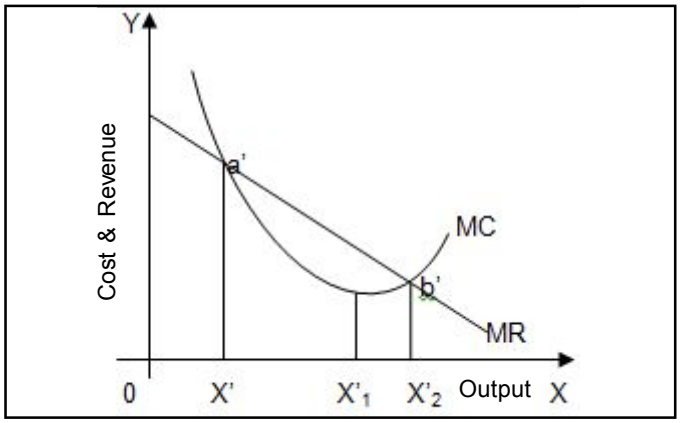
Fig. 9.2: Equilibrium of a firm Under Perfect Competition



In the above figure 9.2 we see that the MC curve cuts the MR curve at 'a'. Now at this point a, MC is equal to MR. But the firm sees that it can bring MC below MR by producing more of the output. This will give the firm more profit and it will increase its output beyond its current output level 0X. We see that if the firm increases its output to $0X_1$ then it would be able to produce at the minimum point of the MC curve and thereby maximize the gap between MC and MR. But the goal of the firm is not to maximize profit for a particular unit of output, but to maximize its total profit. This will prompt the firm to increase its level of output further, as the MC will lie below MR even beyond the present level of output $0X_1$. Thus, the firm will be producing more and once again will reach a level where MC becomes equal to MR. In our diagram, it has been seen that the firm reaches this stage at output level $0X_2$. Beyond this level of output, the firm can not increase its output, because, by doing so the firm would only incur losses. This is because beyond this level MC curve lies above the MR. Therefore the firm would be producing at $0X_2$ level of output.

Now, let us consider the case of imperfect competition. The attainment of equilibrium under imperfect competition has been shown with help of the following figure 9.3.

Fig. 9.3: Equilibrium of a Firm under Imperfect Competition



In the above figure 9.3 we see that the MC curve is cutting the MR curve at a' and b'. Now at a', MC is equal to MR. But the firm sees that it can bring MC below MR by producing more of the output. This will give the firm more profit and it would increase its output beyond the output level 0X'. It can be seen that if the firm increases its output from 0X' to $0X'_1$ then the firm would be able to produce at the minimum point of its MC curve and thereby maximize the gap between MC and MR. But the goal of the firm is not to maximize the profit for a particular unit of output, but to maximize its total profit. This will prompt the firm to increase its output further, as the MC will lie below MR even beyond this present level of output $0X'_1$. Thus, the firm will increase its production volume and once again will reach a level where the MC becomes equal to MR. In figure 9.3, the firm reaches this stage at output level $0X'_2$. Beyond this point, the firm can not increase its output. This is because beyond this level, MC curve lies above the MR.

Thus, from the above two figures 9.2 and 9.3, it can be seen that a firm attains equilibrium while producing $0X_2$ and $0X'_2$ levels of output in the two forms of market, viz., pefect competition and imperfect competition respectively. This means, $0X_2$ and $0X'_2$ levels are the equilibrium levels of output, where the profits of the individual firms concerned are maximized. Thus, we observe that at the equilibrium level of output, MC cuts MR from below. This enables us to get the conditions of equilibrium for a profit maximizing firm or producer. These are as follows :

- In equilibrium, MC must be equal to MR; and
- The MC curve must cut the MR curve from below.



CHECK YOUR PROGRESS

Q.1: State whether the following statements are True or False:

a) Equilibrium of a firm means its profits are maximized.

b) At equilibrium, marginal revenue earned by a firm is higher than the marginal cost.

Q.2: Fill up the blank :

a) In equilibrium there is no ..... tendency for a change.

b) At equilibrium, MC equals .....

Q.3: State the two conditions of equilibrium of a firm. (Answer in about 30 words).

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9.4 BREAK-EVEN POINT

The cost of producing an output can be divided into two main parts: fixed cost and variable cost. Fixed costs are those that remain the same irrespective of volume of output. These include: interest on fixed capital, rent on the building, and salary to the administrative staff and so on. Variable costs are those that vary with the level of output. When there is no production, the variable cost is zero. Payment on wages, raw material costs, fuel and electricity cost for running the machine etc. are included in the variable cost. When a particular volume of output generates an amount of revenue which is just enough to cover all the fixed and variable costs of production, it is called the break-even level of output. This output is called the break-even point for the firm. In other words, at the break-even point the profit of the firm is zero. The expression for the break-even level of output can be derived as follows.

We know, π = P.Q – (Q.AVC + TFC), where,

π : profit, P : price, Q : quantity, AVC : average variable cost,

TFC : total fixed cost

By solving this equation for Q, we get the following expression :

π = P.Q – Q.AVC – TFC

P.Q – Q.AVC = π + TFC

Q (P- AVC) = π + TFC

Q = (π + TFC) / (P- AVC)

Thus, break-even level of output Q = TFC / (P- AVC), as π = 0

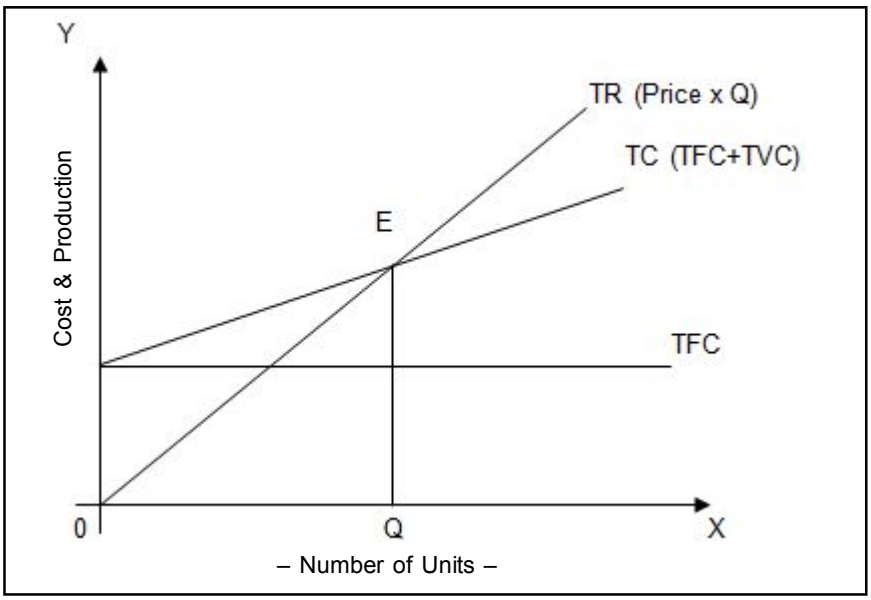
Now, if we assume TFC to be Rs.10,000, P to be Rs.20 and AVC = Rs.15, then–

Break-even level of output Q = 10000/ (20 -15)

10000/5 = 2000

The break even point can also be shown graphically. This has been shown with the help of the following figure 9.4.

Fig. 9.4: Break-even point



In the above figure 9.4, TFC is the total fixed cost curve and TC (TFC+ Total Variable Cost) is the total cost curve. TR depicts the total revenue (selling price x number of units). TR intersects TC at E. Hence at E the total cost equals total revenue. Thus, E is the break even point and OQ is the break even volume of output.



CHECK YOUR PROGRESS

Q.4: State whether the following statements are True or False.

a) Fixed costs of a firm change with the level of output.

b) Payment of wages and the cost of raw materials are the components of variable cost.

Q.5: Fill up the blank:

a) Profit = Total Revenue – .....

b) TC = ... + TVC.

Q.6: What is the break even point of a firm? (Answer in about 30 words)

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9.5 EQUILIBRIUM OF AN INDUSTRY

An industry is said to be in equilibrium when the supply of the commodity brought to the market by the producing firms exactly balance the demand for the commodity. The demand-supply equality in the market implies that whatever is brought to the market is sold and there is no buyer in the market who did not get the amount he/she wanted to buy. Thus, the industry equilibrium is a situation where the plans of buyers and sellers are in perfect harmony. The amount that is bought and sold is called the *equilibrium output* and the price at which this buying and selling occurs is called the *equilibrium price*. At equilibrium price neither the buyers nor the sellers have any reason to change their current plans. In other words, when the industry is in equilibrium, price and output remain where they are and there is no further tendency for a change. The situation of industry equilibrium can be explained by constructing a table using hypothetical quantities and prices of a commodity, say, X.

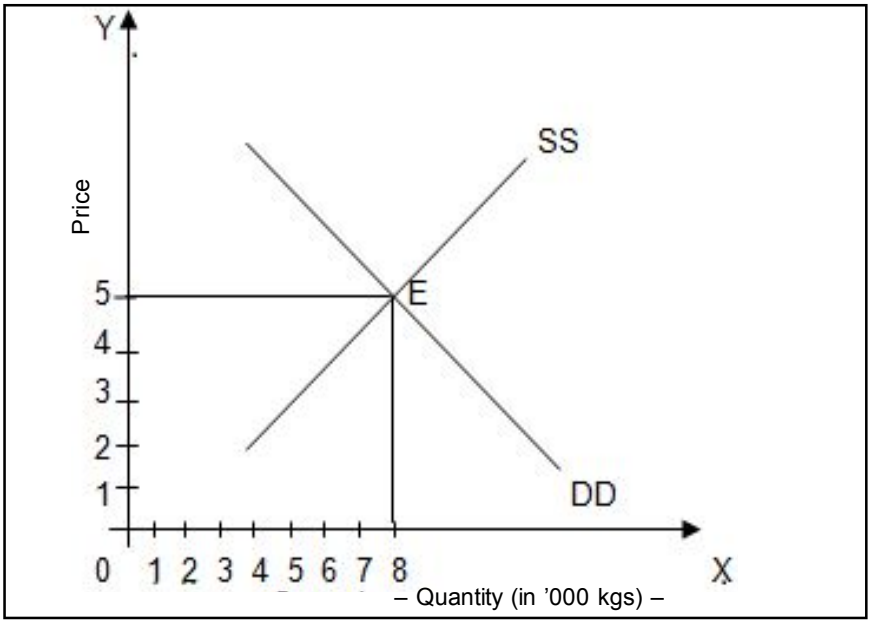
Table 9.1: Equilibrium of an Industry

Price (Rs)	Quantity Demanded (in '000 kgs)	Quantity Supplied (in '000 kgs)
3	10	6
4	9	7
5	**8**	**8**
6	7	9
7	6	10

In table 9.1, the demand and supply schedules are constructed on the basis of the law of demand and supply. Therefore, as price increases, demand decreases, but supply increases. We see that at price Rs. 5, both the demand and the supply of X is 8,000 kg. Thus, Rs.5 is the equilibrium price and 8,000 kg is the equilibrium quantity bought and sold. Since demand and supply are equal and market is cleared, the market is said to be in equilibrium. At no price, other than Rs. 5, the market will be in equilibrium. For instance, when the market price is below Rs. 5, demand is more than supply. This creates a situation of *excess demand* in the market. In response, the sellers increase price and this leads to an increase in the supply and fall in the demand for X. The demand equals supply at price Rs.5 and at this price there is no need for any change either in quantity demanded or supplied. Similarly, at price higher than Rs. 5, the supply is more than the demand. This creates a situation of excess supply in the market. In response, the sellers have to reduce price and this leads to an increase in demand and reduction in supply. Once again when the price is brought down to Rs. 5, demand supply equality is attained implying market equilibrium. It can be shown graphically.

Graphically, the market equilibrium has been shown with the help of figure 9.5 shown below.

Fig. 9.5: Equilibrium of the Industry



In the above figure 9.5, DD is the demand curve and SS is the supply curve of the commodity X. Quantity of X is measured along the horizontal axis (X-axis) and price of X is measured along the vertical axis (Y-axis). From the figure it can be seen that following the laws of demand and supply, the DD curve is downward sloping and SS curve is upward sloping. The two curves are intersecting at point E. This signifies the equality between demand and supply. Hence E is the point of industry equilibrium. Correspondingly, we get P* (Rs.5) as the equilibrium price and Q* (8,000 kg) as the equilibrium quantity. At any price below Rs.5, DD is to the right of SS indicating excess demand. Similarly, at any price above Rs.5 SS is to the right of DD indicating excess supply.



CHECK YOUR PROGRESS

Q.7: State whether the following statements are True or False:

a) DD > SS means excess demand.

b) When the market price is below the equilibrium price, there will be excess demand in the market.

c) A firm attains equilibrium means all firms in the industry attain equilibrium.

Q.8: Fill in the blanks:

a) The price at which demand equals supply is called ..... price.

b) The level of output corresponding to the market equilibrium price is called .....

Q.9: When an industry is said to be in equilibrium? (Answer in about 20 words)

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9.6 INCORPORATING NORMAL PROFIT INTO AVERAGE COST PRICES

Normal profit of a firm may be treated as a component of total fixed costs. It is the opportunity cost of using entrepreneurial abilities in the production of a good, or the profit that could be received by entrepreneur in another business venture. Like the opportunity costs of other resources, normal profit is deducted from revenue to determine economic profit. It is, however, never included as an accounting cost when accounting profit is computed.

Normal profit is the opportunity cost of using entrepreneurship in production. The notion that entrepreneurship incurs an opportunity cost in production is often overlooked in the business world, because, it does not involve an explicit payment, which is, accounting cost. For most business firms, normal profit is invariably combined with economic profit and simply designated as accounting profit.

For example, a worker might be paid Rs.100 a day to work in a farm in order to compensate him for Rs.100 he would have earned as a construction worker. In a similar manner, the entrepreneur who organizes the production of some manufactured product, such as detergent powder, foregoes profit that could be earned organizing the production of another good, such as, detergent soap. This foregone profit is an opportunity cost of the entrepreneur, it is normal profit, and is deducted from revenue to calculate

economic profit. Thus, it is a part of cost of production. This is the reason why we say that a firm earns normal profit when its total revenue equals total cost. Correspondingly, as long as average revenue is equal to the average cost of production, there is just normal profit. This is because normal profit is included in the average cost. Normal profit plays a key role in the long-run production decision of a firm, that is, whether or not to remain in business. As a general rule, a firm will shut down production and leave business if it cannot make normal profit even in the long run as it is not remunerative for the entrepreneur.

9.7 VALIDITY OF PROFIT MAXIMISATION DOCTRINE

In the late 1930s great dissatisfaction started emerging with the traditional theory of the firm. The standard assumptions and marginalistic behavioural rules of the firm were questioned. Several empirical works appeared in England and the USA that brought to the fore the weaknesses in traditional theory of the firm. One of the glaring weaknesses was found to be the presumed profit maximising goal of the firm. In the following we are briefly summing up what critics have to say about the profit maximisation doctrine.

Firstly, it is argued that firms cannot attain the goal of profit maximisation because of the lack of necessary knowledge, information, and ability. Firms do not know with certainty their average revenue and cost curves, and hence cannot apply the MC = MR principle. *Secondly,* it is pointed out that firms do not have a single goal. They pursue a multitude of goals and profit maximisation is only one of them. Quite a few alternative goals have been suggested. These may be grouped as follows:

- **Managerialism:** Managers try to maximise their own utility function. The goals here are salaries, prestige, market share, job security and so on.
- **Behaviorism:** Given the uncertainty in the real world, managers do not seek to maximise anything. They only attempt to pursue satisfactory goal, satisfactory growth, and so on.

- **Long-Run Survival and Market Share Goals:** Many entrepreneurs keep their survival in the market over indefinite future as the single most important goal. Some also endeavour to attain and retain a constant market share.
- **Entry Prevention and Risk Avoidance:** Some studies also suggest that the goal of the firm is to prevent new entry into the market. This is done to avoid the risk of dealing with unpredictable behaviour of new entrants.

In the face of above arguments, the supporters of profit maximisation doctrine fall back on the 'survival of the fittest' argument. They argue that only profit maximisers survive in the long-run. Maximisation of profits leads to faster accumulation of financial assets which allow them to grow faster than the non-profit maximisers. Eventually, they turn out to be the fittest and the rest are eliminated.

There are positive as well as negative elements in the arguments of both pro-and anti-profit maximisation doctrine. The empirical evidence also is in no way conclusive in one way or the other. The commonly accepted empirical findings may be stated as follows:

- For a modern firm there is a multiplicity of goals.
- All models accept that there is a minimum profit boundary that limits all other goals of the firm.



CHECK YOUR PROGRESS

Q.10: State whether the following statements are True or False:

a) Normal profit is deducted from revenue to calculate economic profit.

b) Normal profit is a part of cost of production.

Q.11: Fill in the blanks:

a) A firm will ..... production and leave business if it cannot make ..... even in the long run.

b) Firms cannot attain the goal of profit maximisation because of the lack of .....

Q.12: What alternative goals to profit maximisation can a firm have? Briefly state any two. (Answer in about 50 words)

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9.8 LET US SUM UP

- A firm is said to attain equilibrium when it maximizes its profit. At the point of equilibrium the firm has no reason to change its plan regarding its volume of output or price.
- The profit is obtained by deducting the cost of producing a commodity from the revenue that is earned by selling it. Thus, profit maximisation naturally implies maximising the difference between the revenue and the cost.
- The two conditions of equilibrium of a firm as follows:
  - MC must equal MR; and
  - The MC curve must cut the MR curve from below.
- When a particular volume of output generates an amount of revenue which is just enough to cover all the fixed and variable costs of production, it is called the break-even level of output. In other words, at the break-even point the profit of the firm is zero.
- The break-even level of output Q = TFC / (P – AVC), where Q is output, TFC is total fixed cost, P is price, and AVC is average variable cost.
- An industry is said to be in equilibrium when the supply of the commodity brought to the market by the producing firms exactly balance the demand for the commodity.

- The amount that is bought and sold when the demand equals supply is called the *equilibrium output* and the price at which this buying and selling occurs is called the *equilibrium price*.
- Normal profit of a firm may be treated as a component of total fixed costs. It is the opportunity cost of using entrepreneurial abilities in the production of a good, or the profit that could be received by entrepreneurship in another business venture.
- In the late 1930s great dissatisfaction started emerging with the traditional theory of the firm. Several empirical works appeared in England and the USA that brought to the fore the weaknesses in traditional theory of the firm. One of the glaring weaknesses was found to be the presumed profit maximising goal of the firm.
- There are positive as well as negative elements in the arguments of both pro-and anti-profit maximisation doctrine. The empirical evidence also is no way conclusive in one way or the other.



9.9 FURTHER READING

1) Ahuja, H.L. (2006); *Modern Economics*; New Delhi: S. Chand & Co. Ltd.
2) Dewett, K.K. (2005); *Modern Economic Theory*; New Delhi: S. Chand & Co. Ltd.
3) Koutsoyiannis, A. (1979); *Modern Microeconomics*; New Delhi: Macmillan.
4) Sundharam, K.P.M. & Vaish, M.C. (1997); *Microeconomic Theory*; New Delhi: S.Chand & Co. Ltd.



9.10 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: a) True, b) False

Ans. to Q. No. 2: a) In equilibrium there is no further tendency for a change.

b) At equilibrium, MC equals MR.

Ans. to Q. No. 3: The two conditions of a firm's equilibrium are:

i) MC = MR, and

ii) MC must cut MR from below.

Ans. to Q. No. 4: a) False, b) True

Ans. to Q. No. 5: a) Profit = Total Revenue – Total Cost

b) TC = TFC + TVC.

Ans. to Q. No. 6: Break even point is the point at which the total revenue of a firm equals its total cost.

Ans. to Q. No. 7: a) True, b) True, c) False

Ans. to Q. No. 8: a) The price at which demand equals supply is called equilibrium price.

b) The level of output corresponding to the market equilibrium price is called equilibrium output.

Ans. to Q. No. 9: An industry is said to be in equilibrium when the supply of the commodity brought to the market by the producing firms exactly balance the demand for the commodity.

Ans. to Q. No. 10: a) True, b) True

Ans. to Q. No. 11: a) A firm will shut down production and leave business if it cannot make normal profit even in the long run.

b) Firms cannot attain the goal of profit maximization because of the lack of necessary knowledge, information, and ability.

Ans. to Q. No. 12: Alternative goals to profit maximization a firm may have are:

- Managerialism: Managers try to maximize their own utility function. The goals here are salaries, prestige, market share, job security and so on.
- Long-run survival and market share goals: Many entrepreneurs keep their survival in the market over indefinite future as the single most important goal.



9.11 MODEL QUESTIONS

A) Very Short Questions (Answer each question in about 75 words):

Q.1: *'A firm earns normal profit when its total revenue equals total cost.'* Validate the argument.

Q.2: *'Equilibrium is not a state of rest or inertia'.* Do you agree with this statement? Justify in about 50 words.

Q.3: What is break-even point? Why this concept is necessary?

B) Short Questions (Answer each question in about 100-150 words):

Q.1: Discuss the concept of break-even with the help of a suitable figure.

Q.2: *'Normal profit earned by a firm is incorporated in the average cost price of a product.'* Discuss.

Q.3: Discuss the validity of the doctrine of profit maximization.

C) Long Questions (Answer each question in about 300-500 words) :

Q.1: With the help of suitable example and figure explain how does a firm attain equilibrium?

Q.2: With the help of suitable example and figure explain how does an industry attain equilibrium?

*** ***** ***

UNIT 10: MARKET STRUCTURE: PERFECT COMPETITION

UNIT STRUCTURE

10.1 Learning Objectives

10.2 Introduction

10.3 Concept of Market and Revenue Curves

- 10.3.1 Classification of Market Structure
- 10.3.2 Concepts of Total Revenue, Average Revenue and Marginal Revenue

10.4 Perfect Competition

- 10.4.1 Equilibrium of Firm in the Short-run
- 10.4.2 Equilibrium of the Industry in the Short-run

10.5 Perfect Competition: Long-run Analysis

- 10.5.1 Equilibrium of Firm in the Long-run
- 10.5.2 Equilibrium of the Industry in the Long-run

10.6 Let Us Sum Up

10.7 Further Reading

10.8 Answers to Check Your Progress

10.9 Model Questions

10.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- define market
- classify market into different forms
- discuss perfect competition and equilibrium of a firm and industry both in the short-run and in the long-run.



Products: include.

Goods: Those, which are tangible; like – books, foods, torch light, batteries etc.

Services: Those, which are intangible; like- the services of a barber, cobbler, lawyer, nurse etc.

10.2 INTRODUCTION

We all buy and sell various kinds of ***products*** in a market. In general, whenever we talk of a market, we have a place in mind, where buyers interact with sellers and buy ***goods*** and ***services*** in exchange of money.

In this unit, we shall try to get a deeper insight into this concept 'market'. We shall try to define the term market in business and economics sense, and shall discuss the evolution of this concept. We shall also try to explain the classification of markets on the basis of different parameters.Again, we shall make an attempt to explain the equilibrium of a firm / industry under one of the major market structures: viz, perfect competition. This unit will be helpful for us in relating the theoretical principles of market with the day-to-day maket envirionment.

10.3 CONCEPT OF MARKET AND REVENUE CURVES

As we have said, by the term market, we in general understand a particular place or locality where goods are sold and purchased. However, in economics, the term 'market' does not mean a particular geographical place or locality. Thus, to define market in economics, the concept of a particular place or locality is not much important. What is important is the contact between the buyers and the sellers so that transaction (i.e., sale and purchase of commodities) can take place at an agreed price.

Thus, the essentials of a market are: a) commodity which is to be dealt with; b) the existence of buyers and sellers; c) a place, be it a certain region, a country or the entire world; and d) a communication between buyers and sellers, which ensures only one price for a commodity at a time.



Barter System: The system where goods and services were exchanged directly without using a separate unit of account or medium of exchange

Plastic money or electronic money: Credits cards, Debit cards, etc. which facilitate cashless transaction.

Evolution of Market: When goods were exchanged for goods in the ***barter system***, markets were very simple. But with the evolution of time, increasing needs and with improvement in science and technology, markets have become complex. Medium of Exchange has evolved from goods to money (metallic and paper); and from money it is now taking the shape of ***plastic money*** or ***electronic money***. Similarly the geographic coverage of a market has also widened from the local market to the global market. Today, advancement in telecommunication has brought the concept of electronic commerce, which facilitates business on a global scale.

10.3.1 Classification of Market Structure

Market structure refers to the type of market in which firms operate. Market structure may be classified:

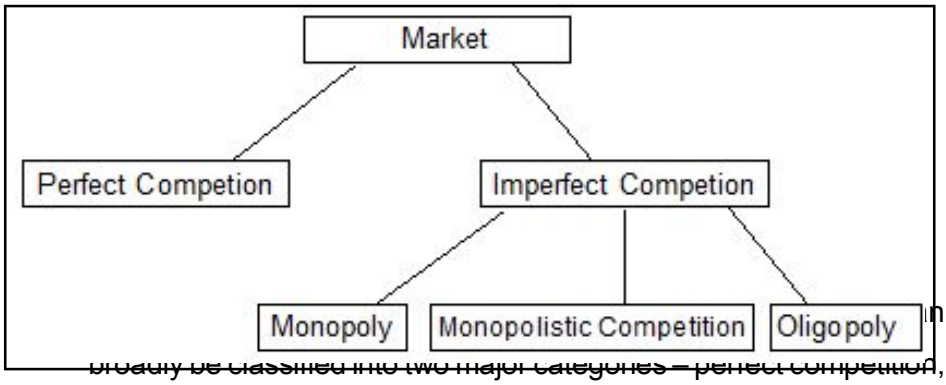
- On the basis of area as local, national and world markets;
- On the basis of time, as market price on any particular day or moment; short-period price, long-period price, or ***secular*** maket price covering a generation; and
- On the basis of nature of competition– perfect competition and imperfect competition.

Here, we shall basically discuss market structure on the basis of nature of competition. Nature of competition can be distinguished based on the following three criteria:

a) Number of Sellers in the industry,
b) Entry barriers into the industry, and
c) Nature of the product.

Thus, based on these above criteria, classification of market structure has been shown in the following tree diagram 10.1.

Fig. 10.1: Classification of Market Structure



In broadly be classified into two major categories – perfect competition, imperfect competition. Market structure under imperfect competition can be further classified as monopoly, monopolistic competition and oligopoly. In the following table 10.1, we shall try to look at the individual characteristics of these market structure with regard to the above three criteria.

Table 10.1: Individual Characteristcs of Different Types of Market

Market Type	Number of Sellers	Entry Barrier	Nature of Product
Perfect Competition	Many, small, Independent	None	Homogenous
Monopoly	One	Very high	Homogenous
Monopolistic Competition	Many, small, virtually independent	None	Differentiated
Oligopoly	Few, interdependent	Substantial	Homogenous or Differentiated

10.3.2 Concepts of Average Revenue,Total Revenue and Marginal Revenue

Before discussing in detail about the different market structures, we shall try to look at the relationship among different concepts of average revenue (AR), marginal revenue (MR) and total revenue (TR). We shall also look at shapes of AR and MR under these major market structures: viz, perfect competition and imperfect competition in general.

Average Revenue: Consumers pay for the goods and services they buy. These constitute the earning of revenue/income of the sellers. Thus, the whole income received by a seller from the sales of a given amount of the product is called his total revenue. If we divide total revenue by the number of units sold, we can attain the average revenue. Converesely, by multiplying average revenue with the number of units sold, we can attain the total revenue.

Thus: Average Revenue = $\frac{\text{Total Re venue}}{\text{Total units sold}}$

Symbolically, AR = $\frac{TR}{Q}$ or, TR = AR x Q

where, AR = Average revenue, TR = Total Revenue, Q= Total units sold.

Marginal Revenue: Marginal revenue on the other hand is the net revenue earned by selling an additional unit of the product.

Thus: Marginal Revenue = $\frac{\text{Change in Total Revenue}}{\text{Change in Total units sold}}$

Symbolically, MR = $\frac{\Delta TR}{\Delta Q}$

where, MR = Marginal revenue, TR = Total Revenue, Q= Total units sold, Δ means change in.

Now we will discuss the shapes of the average and marginal revenue curves under perfect and imperfect competition.

AR and MR Curves of a Firm under Perfect Competition: A firm under perfect competition has to accept the prevailing market price and can sell any amount of output in the market at that price. Thus, a firm under perfect competition will earn AR, TR and MR similar to the following table 10.2

Table 10.2: Total, Average and Marginal Revenue Schedules

Number of units sold (Q)	Price or Average Revenue	Total Revenue (AR x Q)	Marginal Revenue
(1)	(2)	(3)	(4)
1	14	14	14
2	14	28	14
3	14	42	14
4	14	56	14
5	14	70	14

Based on the above schedule, the shapes of AR and MR curves of a perfect competitive firm has been shown in the following figure 10.2.

Fig. 10.2: AR and MR Curves of a Firm under Perfect Competition



It can be seen from figure 10.2 that the firm's AR and MR curves are the same. The slope of the curves is horizontal.

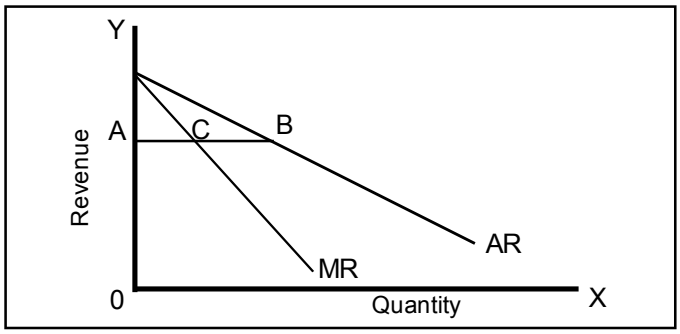
AR and MR Curves of a Firm under Imperfect Competition: Unlike perfect competition, a firm under imperfect competition does not have to sell all its amount at a fixed market price. This means that the firm can sell more units of the product as its price falls. We have shown a hypothetical schedule of AR, TR and MR in table 10.3 in the next page.

Table 10.3: Total, Average and Marginal Revenue Schedules

Number of units sold (Q)	Price or Average Revenue	Total Revenue (AR x Q)	Marginal Revenue
(1)	(2)	(3)	(4)
1	20	20	20
2	19	38	18
3	18	54	16
4	17	68	14
5	16	80	12

Based on the above schedule, the shapes of AR and MR curves of a firm under imperfect competition has been shown in the following figure

Fig. 10.3: AR and MR Curves of a Firm under Imperfect Competition



It can be seen from figure 10.3 that unlike perfect competition, the firm's AR and MR curves under imperfect competition are not the same. It is to be noted that both the curves are downward sloping. Again, the slope of the marginal revenue curve is twice as much steeper as that of the average revenue curve. This is because it can be seen from the above table 10.3 that as sale increases by one unit, average revenue falls by one unit of price (as its number of units sold increases by one unit), marginal revenue falls by two units of price. Thus if we draw a ***perpendicular*** line on the y-axis from any point of the AR curve, say AB as in figure 10.3, the MR curve will cut it in the middle. Thus, AC = half of AB.



Perpendicular: A straight line which make 90^0 angle on the axis on which it is drawn. Such a line will also be parallel to the other axis. Thus, a perpendicular line drawn on y-axis will be a parallel line to the x-axis.

LET US KNOW



In real market situation, perfect competition rarely exists. Many economists, therefore, question the usefulness of studying perfect competition. Though unreal, the study of perfect competition helps us to understand as to what may happen, if such a situation actually arises. And secondly, it also helps us to understand the real imperfect market structure – how much they deviate from perfect competition. In many advanced countries the markets of home and car insurance, internet service providers are highly competitive, though not perfectly competitive. Again, the market of products like detergents, toothpastes etc. constitute the examples of monopolistic competition. In Indian

context, the Indian Railways constitutes the example of monopoly in case of passenger carriage through railways. On the other hand, the market of passenger cars can be said to be good example of oligopoly.



ACTIVITY 10.1

Try to give some examples of the market structures like: Monopoly, monopolistic competition and oligopoly. Justify your choice of examples based on the criteria mentioned in table 10.1.

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CHECK YOUR PROGRESS

Q.1: Define market. (Answer within 50 words)

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Q.2: What are the different categories of a product? Give examples of each of the categories. (Answer within 50 words)

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10.4 PERFECT COMPETITION

Perfect competition is described as the market structure having no rivalry among the individual firms. Thus, the concept of perfect competition is totally opposite to our general idea, where we mean by competition 'rivalry'

among the individual firms. In the subsequent sections, we shall discuss equilibrium of firm and industry both in the short run and in the long run under this market structure.

Again, under perfect competition firms face two cost conditions: ***identical cost conditions*** and ***differential cost conditions***. We shall be confining our discussion only to identical cost conditions. Identical cost conditions will help us generalize our discussion from an individual firm to all other firms and thereby to industry as a whole. We shall now look at the assumptions on which this market structure rests.



Identical Cost Condition assumes that the firms in the industry face similar cost conditions. Thus, it becomes possible to generalise from a firm's analysis to the analysis of the whole industry.
The reverse is the case with ***differential cost condition***.

Assumptions of Perfect Competition: The assumptions of perfect competition are as follows:

- **Large Number of Sellers and Buyers:** Presence of large number of buyers and sellers implies that it is not possible either for the individual firms or the individual buyers to affect the price or output in the market. That means, in perfect competition, individual firms have zero market power. Thus, an individual firm under perfect competition is a price taker.
- **Product Homogeneity:** This assumption of perfect competition ensures that neither the buyers nor the sellers have any ground to differentiate among the products and, hence, ask for a different price. *(For the concept of product homogeneity, please refer to 'Let us know' in the next page).*
- **Free Entry and Exit of Firms:** This assumption is supplementary to the assumption of large number of sellers in the industry.
- **Profit Maximisation:** The only goal of a firm in perfect competition is profit maximization.
- **No Government Intervention:** There is no government intervention in the market in any form like: tariffs, subsidies, rationing of production or demand, etc.

The fulfilment of these above five conditions forms a market structure known as '**pure competition**'. This market form is different from perfect competition, which requires the fulfilment of the following additional assumptions:

- **Perfect Mobility of Factors of Production:** The factors of production including labour are fully mobile. Thus, labourers are fully mobile between different jobs and there is no labour union.
- **Perfect Knowledge:** All sellers and buyers possess complete knowledge of the conditions of the market. Information is free and costless.



LET US KNOW

Product Homogenity: It is the quality of goods, services or factors which ensures that they cannot be differentiated in the minds of suppliers and consumers. A range of commodities is said to be homogeneous if all of them in that range are perfect substitutes for each other. The commodities may be physically distinct but economically homogeneous. The more the degree of homogeneity of products, the more will be the substitutability among them.

Short-Run: It is that period of time which is too short for all economic agents (firm, industry or a buyer) to fully respond to a change. In our present analysis of market, short-run is the period in which a) no firm can enter into or exit from the industry, and b) the individual firms cannot make any adjustments to its *fixed factor of production*.

Long-Run: It is that period of time which is sufficient for all economic agents to fully adjust to a change. The firms and industry can change both the variable and the fixed factors of production during this period.



CHECK YOUR PROGRESS

Q.3: State whether the following statements are True or False.

a) Absence of government intervention under perfect competition implies that fiscal instruments like subsidies, tax etc. are not utilised by government to regulate the market.

b) Perfect mobility of factors of production is a feature of pure competition.

Q.4: What is the basic difference between short-run and long-run. (Answer in about 50 words)

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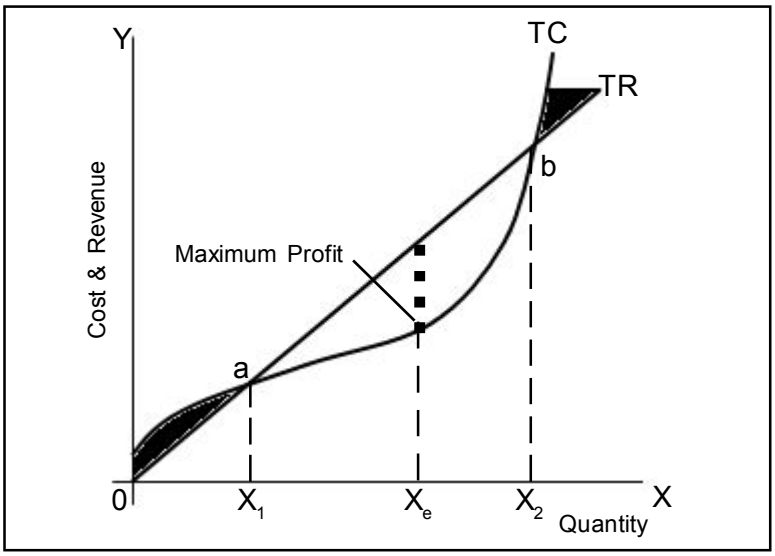
10.4.1 Equilibrium of a Firm in the Short-Run

We shall now discuss the equilibrium of an individual firm and the industry both in the short run and in the long run. Here we shall utilize different cost concepts .

While discussing the assumptions of perfect competition, we have seen that the only goal of the firm is profit maximisation. Profit is calculated by: TR – TC (TR = Total Revenue and TC = Total Cost). Thus, the firm will produce that output which yields the maximum profit. Now, as the price is constant, hence marginal revenue and average revenue are constant and equal to price. The equilibrium of a firm may be shown graphically in two ways: either by using TR and TC curves, or by using MR and MC (MR = Marginal revenue and MC = Marginal Cost) curves.

Using TR and TC Curves: The following figure 10.4 describes the equilibrium of a firm using TR and TC curves. The TR curve is a straight line through origin O, which means that price is constant at any level of output and TR (TR = Price x Quantity) increases proportionate to sales. This means that as sales increase, total revenue will also increase by the same proportion.

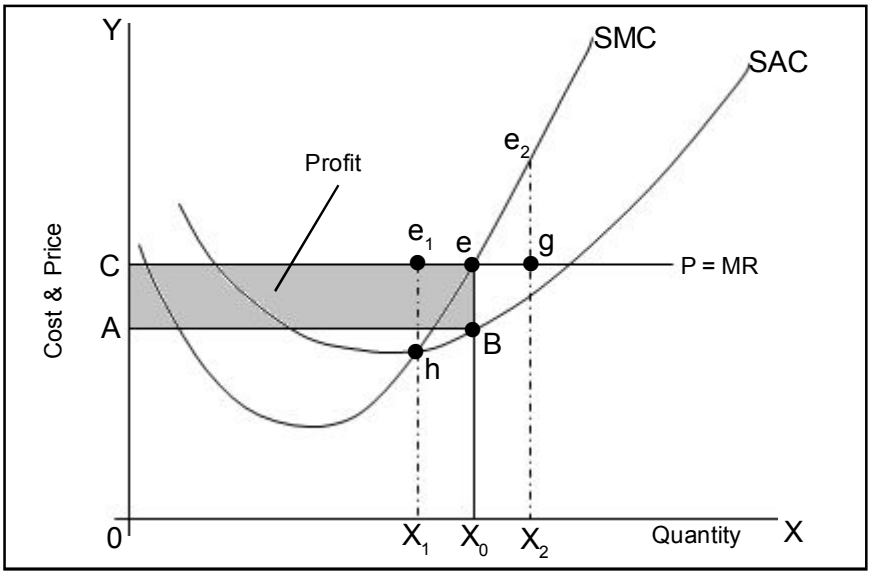
Fig. 10.4: Firm's Equilibrium in the Short-run: TR & TC Approach



In the above figure, the shape of the *TC* curve reflects the U shape of *AC* (Average Cost) curve (we have already discussed the shapes of the different cost curves in the previous chapter). We also know that the prime motto of a business firm is to earn maximum profits. The profit maximising firm will attain equilibrium at the output level, where profit (gap between *TR* and *TC*) is maximum, i.e., at the level of output where tangents drawn to the TC and TR curves are parallel. In figure 10.4, X_e is that point and thus is the equilibrium point. At output levels smaller than X_1 and larger than X_2, the firm will incur losses. Because, in both the cases, total cost of the firm will be more than total revenue the firm earns. To the left of *a,* (the point where quantity is X_1), it can be seen that that the Total Cost (TC) curve lies above the Total Revenue (TR) curve, and hence the firm will suffer losses. Similarly, towards the right of *b*, the same thing is observed.

Using MR and MC Curves: This approach of explaining equilibrium of firm is more beneficial as it uses price as an explicit variable; and also helps in explaining the behavioural rule that leads to profit maximisation. Following figure 10.5 explains equilibrium of firm using this approach:

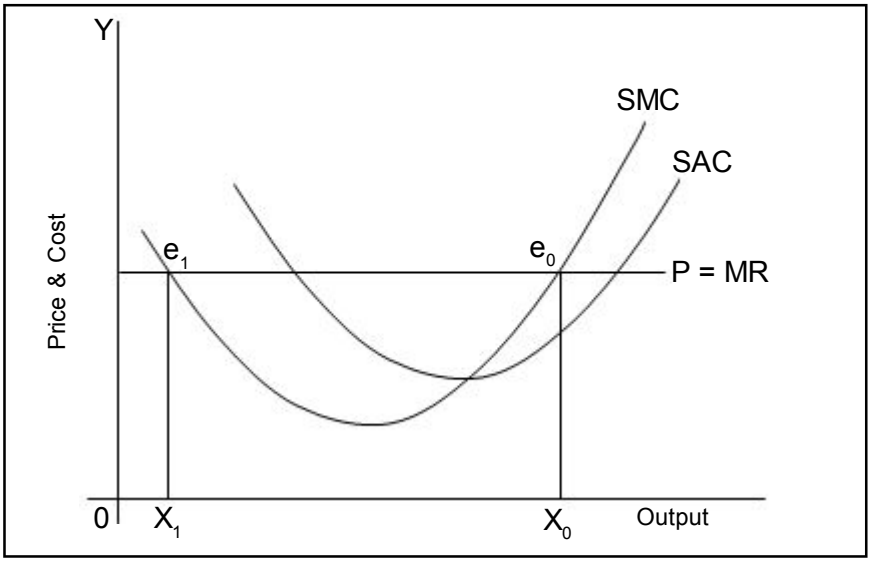
Fig. 10.5: Firm's Equilibrium in the Short-Run: MR & MC Approach



The firm attains equilibrium at that output level, where price=MC above the level of SAC (SAC means short-run average cost). In figure 10.5, *e* is that point and hence is the equilibrium point and x_0 is the equilibrium output. At any point left to x_0 output level, say at x_1, revenue is greater than marginal cost ($x_1e_1 > x_1h$), and this induces the firm to increase the output level to x_0. Similarly, any point right to x_0 output level, say x_2, the marginal cost of the firm is above revenue ($x_2e_2 > x_2g$), and this induces the firm to reduce output to the level x_0.

In figure 10.5, at point e, MR = MC, which means that the short run profit is maximised at the equilibrium output level, x_0. In fact, this is the first condition that must be fulfilled for firm's equilibrium. However, fulfilment of this condition does not always mean that the firm will necessarily be in equilibrium. It is possible, that in certain situations, MR=MC, but the firm is not in equilibrium. The next figure 10.6 explains this point. It is clear from the above figure 10.6 that the first condition of firm's equilibrium, i.e. MR=MC is fulfilled at two points: e_1 and e_0. The firm however, will not attain equilibrium at e_1, since profit is not maximised. The firm attains equilibrium at e_0, since profit is maximized $x_0 > x_1$.

Fig. 10.6: MR = MC Is Not the Sufficient Condition of Firm's Equilibrium



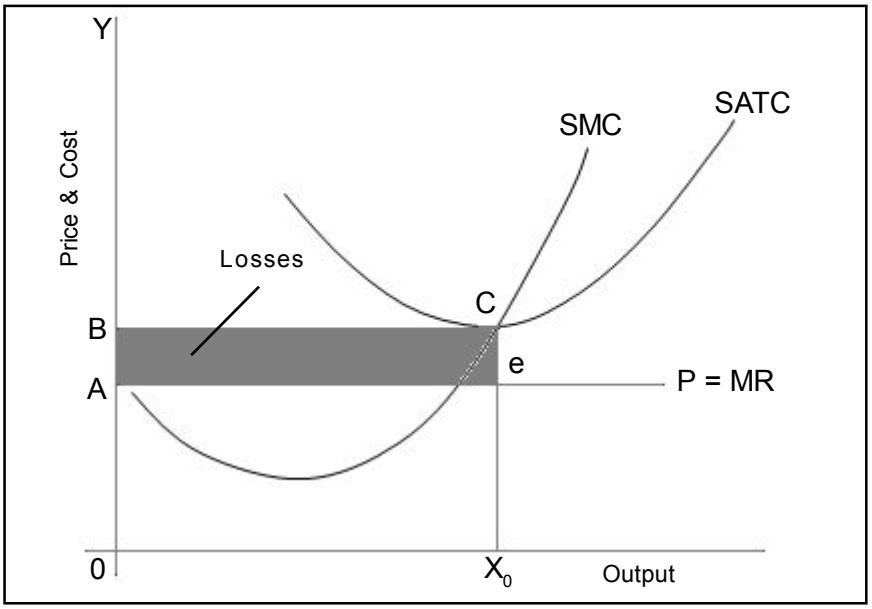
Thus, from the above figure it is clear that a second condition is required for firm's equilibrium. This condition can be stated as: MC cuts MR from below. Thus, we derive two conditions of firm's equilibrium:

a) MC = MR; and

b) MC cuts MR from below.

In case of figure 10.5, the firm earns excess profits of an amount of eB (price x_0e – SAC x_0B) per unit of output. And as the total output sold is $0x_0$ or AB, the excess profit earned by the firm amounts to the shaded area CABe. It is to be kept in mind that the firm, however, does not always earns excess profits while in short run equilibrium. To the contrary, the firm may have to suffer losses in the short-run while in equilibrium. This point has been explained with the help of the next figure 10.7.

Fig. 10.7: Firm's Short-run Equilibrium with Losses



It can be seen in figure 10.7 that the firm suffers losses. This is because, at equilibrium point e (MR = MC; and MC cuts MR from below), cost per unit X_0C > revenue X_0e. This means that the firm suffers total losses eC per unit of output. Thus, the firm suffers a total loss of AeCB (eC x OX_0 or eA).



CHECK YOUR PROGRESS

Q.5: MR = MC. Is this condition alone sufficient for a firm's equilibrium? Explain in about 50 words.

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Q.6: When does a firm under perfect competition earn excess proifts? Can the firm earn such excess profits in the long-run as well? (Answer in about 40 words)

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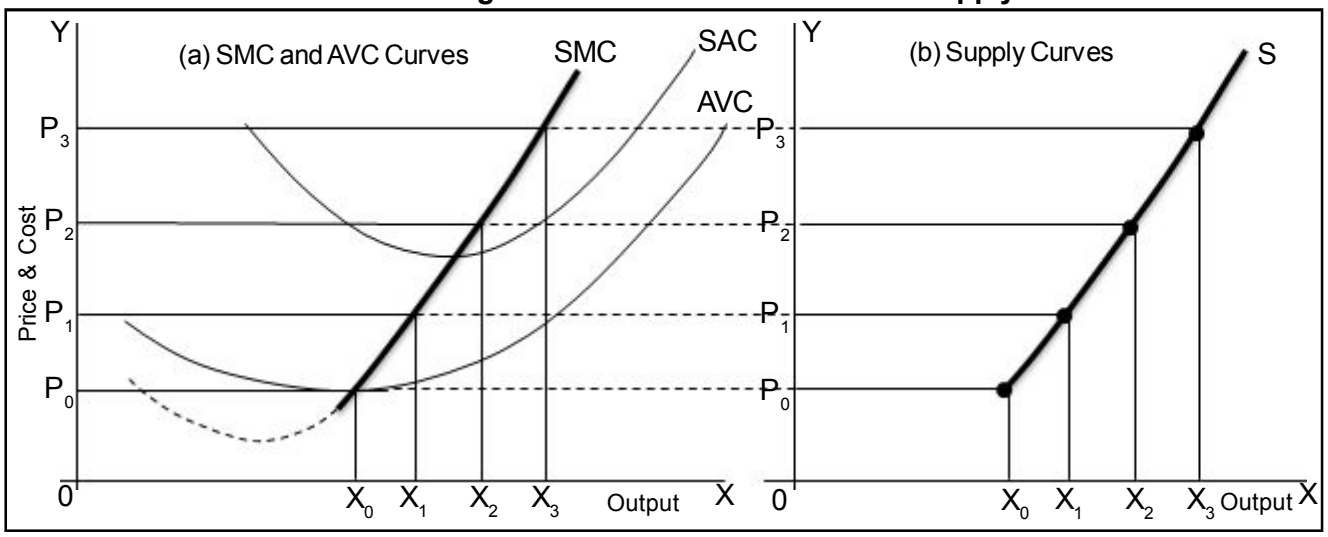
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In the subsequent sections, we shall discuss industry equilibrium. It is to be noted here that all along we have utilized SMC curves for discussing firm's equilibrium. We have not derived firm's supply curve. This is because we have assumed that the price is given and there are large numbers of firms; hence, it is unlikely that an individual firm will influence either industry supply or demand. But in case of the industry as a whole, the industry can influence the market demand or supply by changing the price. Hence, to discuss industry's equilibrium, it becomes imperative to deduce the industry supply curve.

As we have discussed firm's equilibrium under identical cost conditions in the above, hence derivation of a firm's supply curve will help us derive the industry's supply curve as well.

Derivation of the Firm's Supply Curve: Figure 10.8 depicted in the following shows how much a firm produces under perfect competition at a given price. By varying the price, we get different levels of output, and this gives firm's short run supply curve as has been shown by panel (b) in figure 10.8.

Fig. 10.8: Derivation of Short-run Supply Curve of a Firm



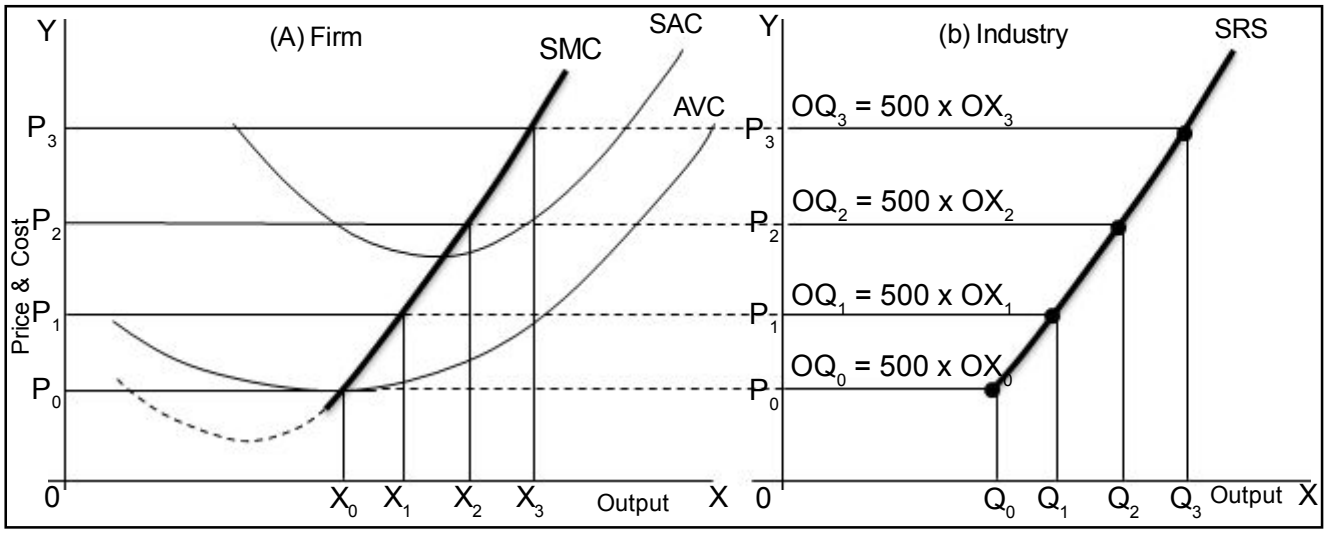
In the above figure, the minimum output the firm produces is $0X_0$, where price P_0 is equal to the minimum point on the *AVC* curve. For any price below P_0, the firm's revenue does not even cover the variable cost, and it does not pay the firm to produce any output.

From panel (a), for different levels of the price, we get different quantities supplied by equating price to MC. In figure 10.8 (b) we plot these prices and quantities to get the supply curve.

In the above, while deriving the short run supply curve of the firm we have assumed that the minimum price P_0 is equal to the minimum AVC. That is, we have assumed that the revenues of the firm must cover variable costs. In the long run, unless the revenues of the firm cover the fixed costs as well, the firm cannot stay in production.

Derivation of the Industry Supply Curve: As we have assumed identical cost conditions, hence the market supply curve can be obtained by lateral summation (horizontal addition) of short run supply curves (i.e., short run marginal cost curves) of all individual firms in the industry. This has been explained with the help of figure 10.9 as has been shown in the next page.

Fig. 10.9: Derivation of Short-run Industry Supply Curve

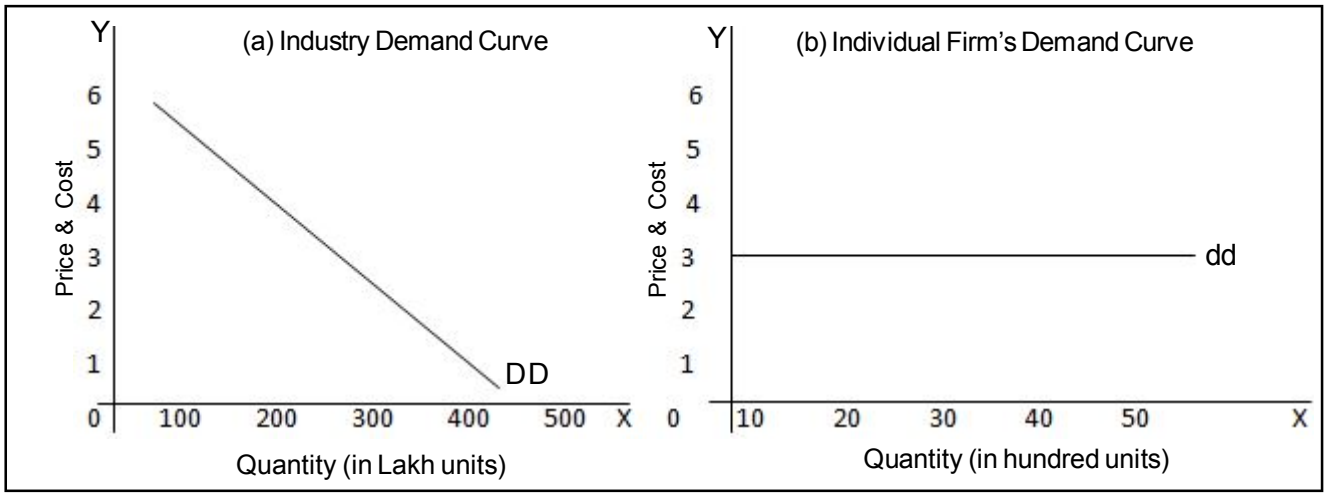


In figure 10.9, we reproduce the panel (a) of figure 10.8, which describes the supply curve (MC curve) of a single firm. Now if we suppose that there are 500 such firms in the industry, the multiplication of each output level of the individual firms will give us the short-run industry supply curve. Thus, $OQ_3 = 500 \times OX_3$; OQ2 = $500 \times OX_2$ and so on. While putting these different quantities OQ_3, OQ_2, OQ_1 and OQ_0 against the respective prices P_3, P_2, P_1 and P_0,

we get the industry supply curve SRS as has been shown in panel (b) of the figure 10.9.

Derivation of the Industry Demand Curve: We know that to explain equilibrium, we need to consider both the demand and the supply curve. We have derived the short-run industry supply curve. Now, let us see how is the shape of the industry supply curve? We have already seen that the demand curve of a competitive firm is horizontal straight line. But the shape of the industry's demand curve is negatively sloped. This has been shown in the following figure 10.10.

Fig. 10.10: Short-run Demand curve under Perfect Competition



In panel (a) of the figure the industry demand curve has been depicted, and in panel (b), the firm's demand curve has been shown. The demand curve for the industry as a whole is downward sloping, because the industry can, as a whole, change the market price, thus affecting consumers' demand. Therefore, the demand curve of industry (DD) represents the general law of demand.

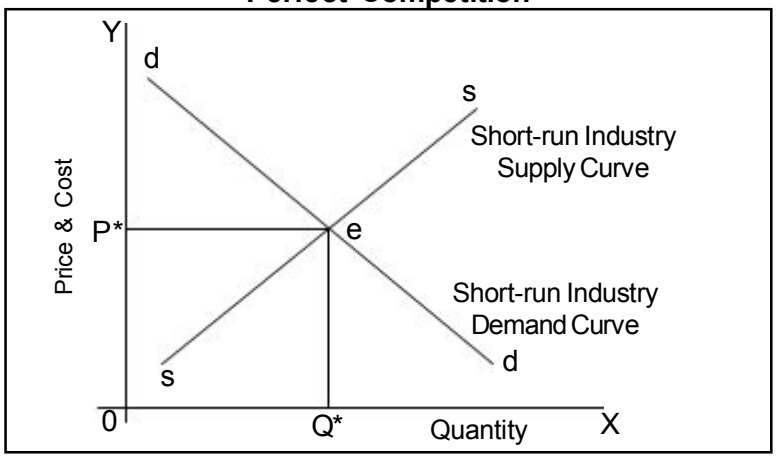
10.4.2 Industry Equilibrium in the Short-run

The industry equilibrium in the short run is attained at the point where the short-run demand curve intersects with the short-run supply curve. This has been shown in Figure 10.11. In figure 10.11, e is the point where demand curve dd intersects the supply

curve ss. Hence, *e* is the equilibrium point. Q* is the equilibrium quantity and P* is the equilibrium price.

It is to be noted here that though no individual firm can exert any influence on price, the collective action of suppliers and demanders determines the price.

Fig. 10.11: Determination of Equilibrium Price under Perfect Competition





CHECK YOUR PROGRESS

Q.7: State whether the following statements are True or False:

a) Under identical cost condition, it is possible to derive the industry supply curve through lateral summation of the individual firms' supply curves.

b) In the long-run, a firm willl continue its production even when its revenue does not cover fixed costs, but the variable costs are covered.

Q.8: Unlike firm's horizontal demand curve, the industry's demand curve is negatively sloped. Why? (Answer in about 50 words)

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10.5 PERFECT COMPETITION: LONG-RUN ANALYSIS

So far we have discussed the short-run equilibrium analysis of a firm and industry under perfect competition. In the subsequent sections, we shall discuss the long-run equilibrium analysis of a firm and industry under this market structure.

10.5.1 Equilibrium of a Firm in the Long-run

In the long-run, entry and exit of firms may take place. Again, in the long-run, existing firms can adjust the quantities of their fixed inputs as well. Thus, in the long-run we expect two things: (1) existing firms will make adjustments in their output and costs. (2) if after these adjustments, a firm is still unable to cover its total costs, it will exit the industry. And if existing firms are earning super normal profits, then new firms will be lured into the industry.

Thus, for a competitive firm to be in equilibrium in the long-run, the following three conditions must be fulfilled:

- Price = Marginal Cost
- Price = Average Cost
- LMC curve cuts LAC curve from below.

Again, as both the marginal cost and the average cost is equal to price, hence both these conditions can be combined as:

Price = Marginal Cost = Average Cost.

In the earlier course, you have already known the shapes and concepts of different cost curves. Thus, conceptually we have learnt that the marginal cost can be equal to average cost only at the point where the average cost is neither falling nor rising, i.e., at the minimum point of the average cost curve.

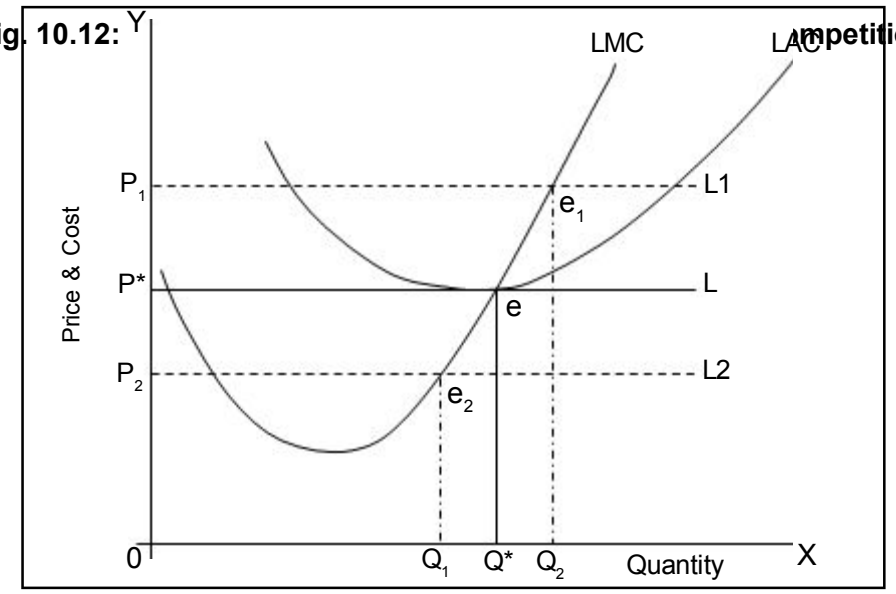
This gives us the condition of long-run equilibrium for a firm as:

Price = Marginal Cost = Minimum Average Cost.

LMC curve cuts LAC curve from below.

This has been explained in the following figure 10.12.

Fig. 10.12: Y



In the above figure 10.12, LAC is the long-run average cost curve and the LMC is the long-run marginal cost curve. The firm is in equilibrium at point e, where LMC curve cuts the LAC curve at its minimum. Corresponding to this equilibrium level, the equilibrium price is 0P*, and the equilibrium quantity is 0Q*. At this equilibrium level, the firm earns only normal profit.

The firm will not attain equilibrium at any other price or quantity level. Above the equilibrium price 0P*, let us consider price $0P^1$. At this price level, the firm's marginal cost will be higher than its average cost. Thus, the firm earns super-normal profits. This means that all the firms will earn super-normal profits; and this will attract entry of new firms to the industry. Thus, entry of new firms will ultimately lead the price to be settled at the level 0P*. Similarly, below price level 0P* as well, the firm does not attain equilibrium. Say, at price $0P_2$, the marginal cost of the firm will be below the average cost curve. This means that the firm will incur loss at price level $0P_2$. This means that all the firms will incur losses at this level. This will force some firms to exit from the industry. Thus, exit of firms will ultimately lead to increase in the price level to 0P*.

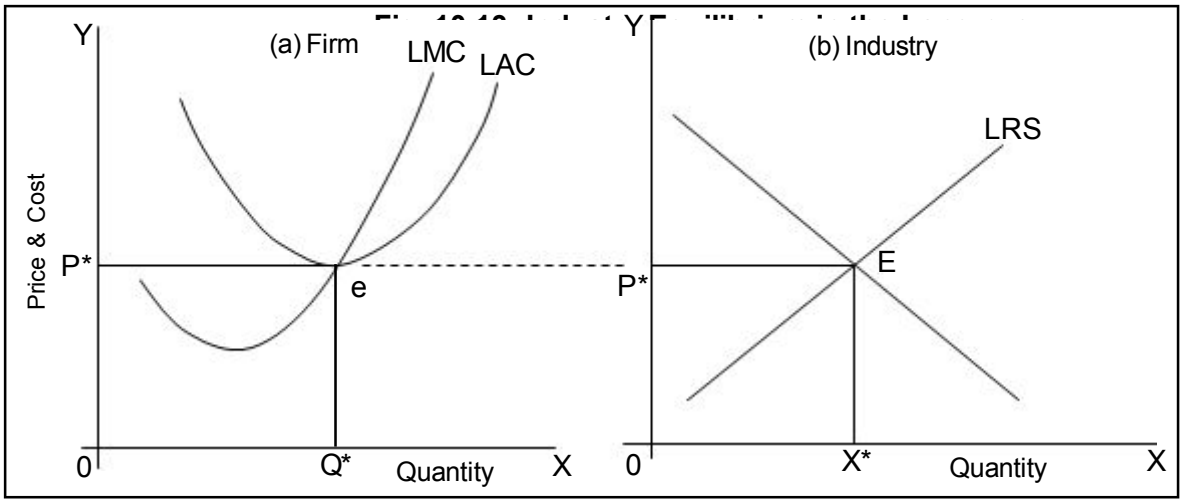
Thus, we can conclude from the above discussion, that a

firm under perfect competition in the long run will be in equilibrium, when: Price = MC = Minimum AC, and LMC curve cuts LAC curve from below.

10.5.2 Industry Equilibrium in the Long-run

In the above, we have seen how a firm under perfect competition attains equilibrium in the long-run. An industry in the long-run attains equilibrium when the following three conditions are satisfied:

- the long-run supply and demand for the product of the industry are equal;
- all firms in the industry are in equilibrium; and
- there is neither the tendency for the new firms to enter the industry nor the existing firms to leave it.



Panel (b) of the figure 10.13 depicts industry equilibrium in the long run. The long-run supply curve LRS intersects the long-run demand curve LRD at point E and hence long-run equilibrium is established at this point. Therefore, 0X* is the equilibrium quantity of the industry and 0P* is the equilibrium price. Corresponding to this point E, the firm's equilibrium has been shown in panel (a) of the figure. The firm attains equilibrium at point e, where the LAC curve intersects the LMC curve. Corresponding to this equilibrium level,

the equilibrium quantity is 0Q*, and the equilibrium price 0P*. As the firm has attained equilibrium at the minimum point of the LAC curve, hence the firm is earning normal profit only. Again, as we have assumed identical cost conditions, hence all the firms will be in equilibrium at this level and will be earning only normal profits. The equilibrium of all firms with normal profit ensures that there is neither the tendency of the existing firms to exit from the industry nor new firms are attracted to enter the industry.

Thus, we have seen that under perfect competition when the industry attains equilibrium in the long-run, all the three conditions are satisfied; i.e.,

- the long-run supply and demand for the product of the industry are equal;
- all firms in the industry are in equilibrium; and
- there is neither the tendency for the new firms to enter the industry nor the existing firms to leave it.



CHECK YOUR PROGRESS

Q.9: State the conditions under which a firm under perfect competition attains equilibrium in the long-run. (Answer in about 30 words)

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10.6 LET US SUM UP

- The essentials of a market are:
  - a commodity which is to be dealt with;
  - the existence of buyers and sellers;
  - a place, be it a certain region, a country or the entire world; and

- a communication between buyers and sellers, which ensures only one price for a commodity at a time.

- The market structure can broadly be classified into two categories– perfect competition and imperfect competition.
- Market structure under imperfect competition can be further classified into– monopoly, monopolistic competition and oligopoly.
- Market structure can be distinguished based on the three criteria:
  - number of sellers in the industry;
  - entry barriers into the industry;
  - nature of the product
- Two conditions must be fulfilled for a firm to be in equilibrium. These are:
  - MC = MR; and
  - MC cuts MR from below.
- And under perfect competition, a firm can earn excess profit or incur losses while attaining short-run equilibrium.
- The conditions of long-run equilibrium for a firm are:
  - Price = Marginal Cost = Minimum Average Cost.
  - LMC curve cuts LAC curve from below.
- Under perfect competition the industry attains equilibrium in the long run, when three conditions are satisfied :
  - the long run supply and demand for the product of the industry are equal;
  - all firms in the industry are in equilibrium; and
  - there is neither the tendency for the new firms to enter the industry nor the existing firms to leave it.



10.7 FURTHER READING

1) Ahuja, H.L. (2006); *Modern Economics*; New Delhi: S. Chand & Co. Ltd.
2) Chopra, P.N. (2008); *Micro Economics*; Ludhiana: Kalyani Publishers.

2) Dewett, K.K. (2005); *Modern Economic Theory*; New Delhi: S. Chand & Co. Ltd.

3) Koutsoyiannis, A. (1979); *Modern Microeconomics*; New Delhi: Macmillan.

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10.8 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: A market can be defined as a place or a common platform, where buyers and sellers interact to exchange goods and services at an agreed price.

Ans. to Q. No. 2: Products include:

Goods: Those, which are tangible; like– books, foods, torch light, batteries etc.

Services: Those, which are intangible; like- the services of a barber, cobbler, lawyer, nurse etc.

Ans. to Q. No. 3: a) True, b) False

Ans. to Q. No. 4: The basic difference between short-run and long-run is that during short-run an economic agent (a firm or an industry) can change only the variable factor of production. But in the long-run an economic agent can change both the variable and the fixed factors of production.

Ans. to Q. No. 5: No. This is because, it is possible that a firm fulfills the condition of MR = MC, but yet its profit may not be maximised. This may occur when the short-run MC curve cuts the MR curve when it (MC curve) is still falling, and hence minimum cost has not been yet achieved.

Ans. to Q. No. 6: A firm under perfect competition can earn excess profit only in the short-run. The earning of profit by an individual firm will attract new firms into the industry. As a result, in the long-run, a firm will be able to earn normal profit only.

Ans. to Q. No. 7: a) True, b) False

Ans. to Q. No. 8: Unlike the horizontal demand curve of a pefect competitive firm, the demand curve for the industry as a whole is downward sloping. This is because, the industry can as a whole change the market price; thus affecting consumers' demand. Thus, the demand curve of industry represents the general law of demand.

Ans. to Q. No. 9: A firm under perfect competition attains equilibrium in the long-run when two conditions are fulfilled: first, Price = MC = Minimum AC, and secondly, LMC curve cuts LAC curve from below.

10.9 MODEL QUESTIONS

A) Very Short Questions (Answer each question in about 75 words):

Q.1: What are the basic three criteria of market classification?

Q.2: What is the difference between pure competition and perfect competition?

Q.3: What is product homegenity?

C) Long Questions (Answer each question in about 300-500 words) :

Q.1: Describe the price and output determination of a firm in the short-run under perfect competition.

Q.2: Discuss the price and output determination of an industry in the short-run under perfect competition.

Q.3: Explain the price and output determination of firm in the long-run under perfect competition.

Q.4: Analyse the price and output determination of an industry in the long-run under perfect competition.

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UNIT 11: MARKET STRUCTURE: MONOPOLY

UNIT STRUCTURE

11.1 Learning Objectives

11.2 Introduction

11.3 Monopoly Competition: Definition and Classification

- 11.3.1 Demand and Marginal Revenue Curves
- 11.3.2 Equilibrium of the a Monopoly: Short-run and Long-run
- 11.3.3 Price Discrimination: Degree and Possibility

11.4 Concept and Measurement of Monopoly Power.

11.5 Let Us Sum Up

11.6 Further Reading

11.7 Answers to Check Your Progress

11.8 Model Questions

11.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- define monopoly
- discuss various issues relating to monopoly
- explain price discrimination and its various degrees, possibility and profitability aspects
- discuss the concept of monopoly power.

11.2 INTRODUCTION

In our earlier units we have already come across the terms 'market and 'market equilibrium'. We have known that based on certain characteristics, market structures can be broadly classified into two categories: perfect competition and imperfect competition. Again, imperfect competition market structure can be further divided as: monopoly, monopolistic competition and oligopoly. These market structures can again be segmented into different types. In this unit, we will discuss basically about monopoly. We shall try to define this market structures, discuss

relevant issues therein and explain graphically how firms / industry attain equilibrium under this market form.

11.3 MONOPOLY COMPETITION: DEFINITION AND CLASSIFICATION

In the earlier unit, we have basically discussed perfect competition. We have, thus, seen that perfect competition is the market structure where there exists a large number of buyers and sellers and in which the individual power of any seller is nil. The monopoly is just the opposite of perfect competition. The word 'monopoly' has come from the Greek words *monos polein,* which means 'alone to sell'. This single seller is called a *monopolist*. The term is also sometimes used for a single group of sellers that acts as a price setter, although often a group is called ***cartel***. Thus, in simple terms, monopoly can be described as the market structure where there is only one supplier of the product, which has no close substitute in the market.



Cartel: A group of firms acting together to control output and price.

As there is only one seller of the product, therefore, the concept of firm and industry is the same in monopoly. In reality, the existence of a monopoly firm is as much rare as perfect competition. However, in some of our remote villages, where there is only one doctor, he may be seen as a monopoly supplier of medical services in the locality.



ACTIVITY 11.1

Do you notice in your locality that in some of the services/ products, there is often only one service provider/supplier? Just think of these services : cooking gas (LPG cylinders), electricity, landline telephone services, fire services, water supply, postal services etc. You may find that until recently, in some of these services there were only one supplier. Some of these still have only one supplier even today. Make a list of such services/ products in your locality. These could be interesting examples of monopoly in your area.

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LET US KNOW

There must be some reasons behind emergence of a monopoly. These factors may facilitate the monopoly industry by preventing new entrants into the industry. According to Prof. E.A.G. Robinson, there are four such sets of factors: a) legal prohibition (e.g., patents and licensing), b) control of a necessary factor of production, c) advantage of large scale of production and d) existence of goodwill (establishment of ***brand names*** in the market).

Patent: A patent is a set of exclusive rights granted by a state to an inventor or his assignee for a fixed period of time in exchange for a disclosure of an invention. The exclusive right granted to a patentee in most countries is the right to prevent or exclude others from making, using, selling, offering to sell or importing the invention.

Social Monopolies: There exists a category of monopolies known as social monopolies or public utilities. These monopolies are socially favoured to remain as monopolies, as large scale and single-handed operations of such monopolies benefit the society. Examples like: defence services (civil and military), public road construction, water supply services are important in this category.



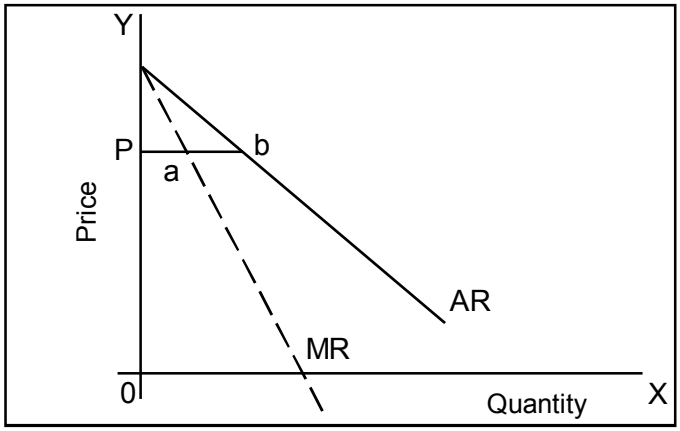
Brand Name: Its a name or identity of a product that sets it apart from its competitors.

11.3.1 Demand (Average Revenue) and Marginal Revenue Curves under Monopoly

The discussion about demand (or,average revenue) and the marginal revenue curves becomes necessary for the discussion of equilibrium analysis. Unlike perfect competition, the monopoly firm can control either price or output in the market (the monopoly firm cannot however control both output and price). The monopolist can sell larger amount of the product in the market by charging a lower price and vice versa. This characteristic of the monopolist ensures a downward sloping demand curve– exhibiting the general

law of demand (the law of demand has already been discussed in our earlier units). The shape of the demand curve and the marginal curve of the monopolist firm has been shown with the help of the following figure 11.1

Fig. 11.1: AR and MR Curves of a Monopoly Firm



In the above figure 11.1, it has been seen that the monopolist demand curve AR slopes downward. The MR curve also slopes downward and lies below the AR curve. The MR curve slopes at a much steeper rate than the AR curve. We have already discussed earlier that under imperfect competition, the slope of the MR curve is twice as much steep as the slope of the demand curve.



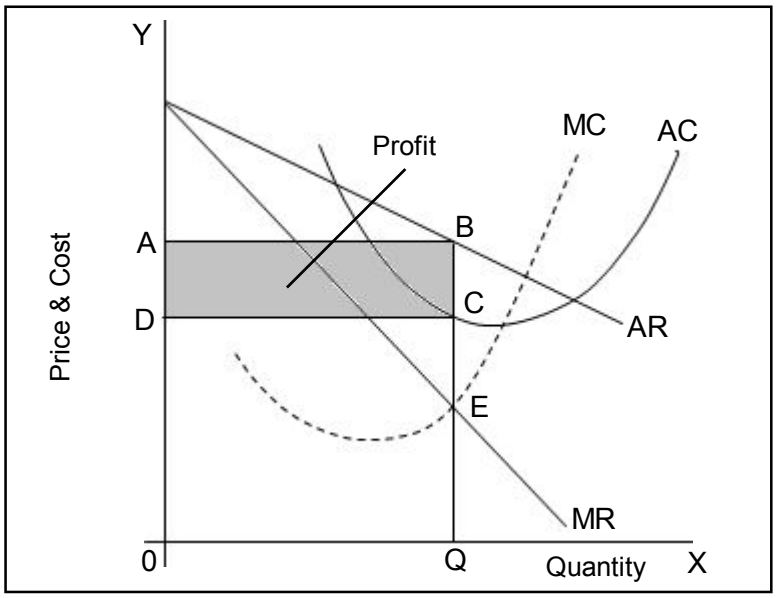
LET US KNOW

Shape of Cost Curves: The shapes of cost curves under monopoly are not much different from those under perfect competition as we have discussed in the earlier unit. The only difference is that a firm under perfect competition can purchase any quantity of factors of production at constant price, but the monopolist may have to pay higher prices for more such factors of production. This induces the MC curve of the monopolist to rise at a higher rate than that of the perfect competitive firm. Again, due to this difference, the monopolist will not have any fixed cost curve in the long run. However, like perfect competiitve firm, the monopoly firm will have both the variable cost curves and the fixed cost curves in the short-run.

11.3.2 Equilibrium of a Monopoly Firm: Short-run and Long-run

The price-output equilibrium of a monopolist can be easily explained with the help of the following figure 11.2. In figure 11.2, AR is average revenue or demand curve, MR is the marginal revenue curve, MC is the marginal cost and AC is the average cost curve.

Fig. 11.2: Short-run Equilibrium of a Monopoly Firm



In the figure it has been seen that upto 0Q output, marginal revenue is greater than marginal cost. But beyond 0Q output level, marginal revenue is less than marginal cost, which means losses to the monopoly firm. Therefore, the monopolist will be in equilibrium at 0Q output level, where marginal revenue equals marginal cost.

Therefore, in short-run equilibrium: MR = MC

Again, from the figure it can be seen that corresponding to the equilibrium output 0Q, the equilibrium price is QB (=0A). Now, from this equilibrium price-output levels, we can find out the total amount of profit the monopoly firm earns. In the above figure we see that the monopoly firm earns QB price (hence average revenue) per unit of output. But QC is the average cost (as point C touches the AC curve; and as cost has been calculated on the horizontal

axis along with price) per unit of output. Thus, the firm earns a profit (AR – AC) of BC(QB – QC) per unit of output. Therefore, the total profit of the monopoly firm is:

= BC x 0Q

= BC x CD = ABCD (the shaded rectagle area in the figure).



LET US KNOW

Does the monopoly firm earn profit all the time? In some rare cases, a monopoly firm may also incur losses. This may happen when the product is newly introduced in the market, and, hence the consumer does not know about it. Thus, in such initial phases, it is possible that the cost of product is more than revenue earned by it (as demand is low in the market).

Long-run Equilibrium of the Monopoly Firm: We have discussed in the earlier unit how a firm under perfect competition attains long-run adjustment: through entry of new firms into or exit of existing firms from the industry. As compared to the market size, if the short-run average cost of the monopoly firm is not optimal, then to increase profit in the long-run it can opt for adjustment in its size of operation. Thus, the monopoly firm will choose that operation / production size which will be optimum for its market demand level.



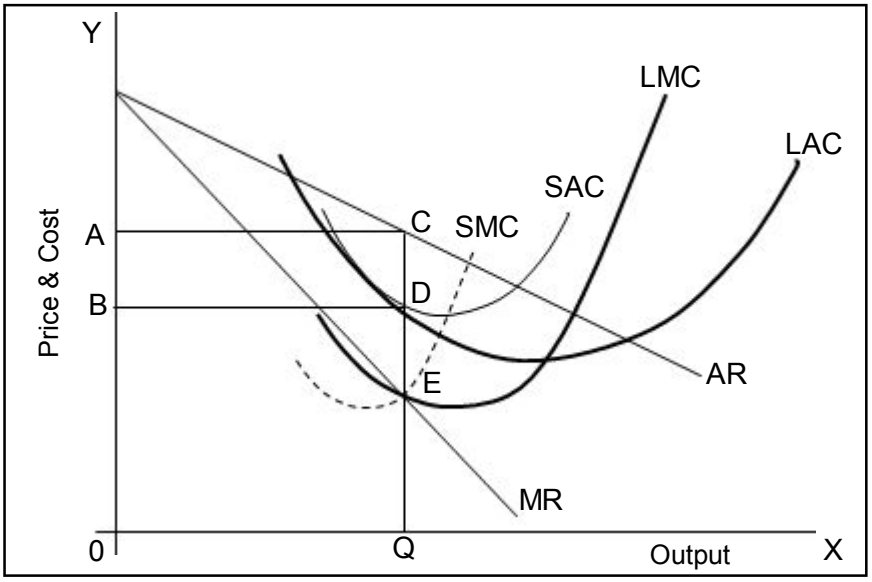
LET US KNOW

How does the monopolist make the adjustment in its long run operation scale? A monopoly firm can make this adjustment in three ways; by setting up a plant of a) less than optimal scale, b) optimal scale, or c) greater than optimal scale.

We have seen in the short-run equilibrium analysis that the monopoly firm attains equilibrium at that output level where MR = MC. Similarly, in the long-run after the adjustment in its operation scale, the monopoly firm will attain equilibrium where long-run marginal cost equals the maginal revenue levels, i.e., where long-

run MC curve cuts the MR curve (it is to be noted that only the cost condition of the monopoly firm can vary in the long run, while the revenue condition remains the same. Hence, the revenue curves of the monopoly will remain the same even in the long run). This has been shown graphically with the help of the following figure 11.3.

Fig. 11.3: Long-run Equilibrium of a Monopoly Firm



From the above figure it can be seen that the long-run marginal cost curve (LMC) and the marginal revenue curve (MR) intersects at point E. So, point E is the long-run equilibrium point. Corresponding to this equilibrium level, equilibrium output is 0Q, and the equilibrium price is 0A. In the long run, the firm will operate at a point on the long-run average cost curve (LAC) at which the short-run average cost is tangent to it. This is because it is only at the tangency point that short-run marginal cost (SMC) of the optimal plant equal the long-run marginal cost (LMC).



ACTIVITY 11.2

What profit does the monopoly firm earn in the long-run? We have already seen in section 11.3.2 that the total profit the monopoly firm earns while attaining short-run

equilibrium. Now, with the help of the above figure 11.3 and the previous discussion about the short-run equilibrium of the monpoly firm, find out the total profit the monopoly firm will earn in the long-run.

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11.3.3 Price Discrimination: Degree and Possibility

An important feature of monopoly form of market is that the monopolist can charge different prices for the same good at the same time for reasons not associated with differences with cost. This is known as price discrimination. Let us consider the following example. A tea producer has a manufacturing plant in Dibrugarh. He sells tea at Rs. 120/- per kg in Dibrugarh. He also sells it at the Guwahati market at Rs. 150/- per kg. He charges Rs. 30/- more in the Guwahati market to cover his transportation cost of Rs. 30/- per unit of the product. As the difference in the prices between these two markets is equal to the difference in the transport cost, hence we can not call this as price discrimination. But if for example, the producer sells tea at more than Rs. 150/- per kg (say Rs. 170/- per kg) in the Guwahati market then we can say that the producer is practising price discrimination.

Thus, price discrimination is said to occur when a firm charges a different price to different group of consumers for an identical good or service, for reasons not associated with costs. Another name of price discrimination is yield management.



LET US KNOW

We must be careful to distinguish between *price discrimination* and *product differentiation.* Differentiation

of the product gives the supplier greater control over price and the potential to charge consumers a premium price because of actual or perceived differences in the quality / performance of a good or service.

Degrees of Price Discrimination: British economist A C Pigou in his book *The Economics of Welfare* (1920) has identified three degrees of discriminating power of a monopoly firm leading to three types of price discrimination.

- **First degree price discrimination:** First degree price discrimination occurs when the monopoly firm charges a different price for each of the individual unit of the product, even to the same consumer. The maximum price that a consumer is willing to pay for a unit of output is called the *reservation price.* The perfectly discriminating monopolist charges the reservation price for each unit of the output. The first degree is also called *perfect price discrimination.* This type of price discrimination is very difficult to implement.
- **Second degree price discrimination:** This degree of price discrimination occurs when the monopolist is able to charge several different prices for different ranges or groups of output. For example, we need to pay monthly electricity bills based on different prices charged for different slots of energy consumption. Say we need to pay Rs. 2 for first 100 units of electricity consumption in a month. Again a higher price, say Rs.2.50 can be charged for subsequent units (starting from 101st unit to a certain limit). This type of price discrimination is also seen in the case of telephone bills for different units of calls. Magazines also offer different price range for different period of subscription order.
- **Third degree price discrimination:** The third degree price discrimination occurs when the monopolist partitions the market into two or more group of customers and charges different prices to the different groups (the price is uniform for member within a

group). For example: an office stationery supplier can charge different prices from different offices.



ACTIVITY 11.3

You have thus come to know about the concept of price discrimination and its different types. Now, from your own observation, try to put forward some examples of price discrimination. Also, try to justify as to which type (degree) of price discrimination your examples will fit?

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Possibility for Price Discrimination: Operation of price discrimination requires the fulfilment of the following conditions:

- The market must be divided into sub-markets with different price elasticities (the concept of price elasticities has been discussed in the earlier units).
- The buyer of a product cannot resell the product to another buyer; this means the sub-markets are separate.



CHECK YOUR PROGRESS

Q.1: State whether the following statements are True or False:

a) Price discrimination is of four degrees.

b) Differences in prices of a product in two separate markets due to difference in transportation cost is called price discrimination.

Q.2: Fill in the blanks:

a) The word 'monopoly' has come from the Greek words *monos polein,* which means .....

b) *The Economics of Welfare* was written by .....

c) Another name of first degree of price discrimination is .....

Q.3: When is the second degree price discrimination said to occur? Mention some examples. (Answer in about 50 words)

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11.4 CONCEPT AND MEASUREMENT OF MONOPOLY POWER

From the above discussion, we can say that a firm has some amount of monopoly power if it can alter the price of the commodity, through an adjustment in the level of output. Thus, the concept monopoly power relates to the abililty of the monopolist to control price and output of the commodity. In this sense, the degree of monopoly power is indicated by the extent of influence that a monopoist can exercise on price and output.

Monopoly power can be measured with the help of a number of techniques. These include: the Lerner index, measure of monopoly power based on price discrimination, measure of monopoly power based on profit rates, use of concentration ratios to measure monopoly power, and the Herfindahl index. In this unit, we shall take up two methods, viz., the Lerner index and the rate of profit rate earned.

The Lerner Index: We all know that the basic characterstic of monopoly is the ability of the monopolist to charge a price higher than the marginal cost (MC) of production of the commodity. Based on this fact, Abba Lerner developed a tool to measure monopoly power which is known as the Lerner Index.

The Lerner index is defined as (price - marginal cost)/price. Now, let us consider this fact. Profit maximisation of a firm means MC = MR. Again, price is same as AR. Thus, the Lerner index can be written as:

(AR – MR) / AR.

And this Lerner index is nothing, but the measure of monopoly power.

It should be noted here that in perfect competition, MC = MR = AR. As such, monopoly power is nil.

But in monopoly, MR is less than AR(MR < AR). Thus, MC is less than AR(MC < AR). Thus, under monopoly, Lerner index is non-zero and hence, the greater the value of Lerner index the higher will be the monpoly power.

From the concept of Lerner index, relation between the degrees of elasticity of demand of a product and the degree of monopoly power can be established. Thus, it can be inferred that higher the elasticity of the product, lower the monopoly power and vice versa. The Lerner index is very simple from theoretical perspective, however, to appply the concept in real situation, is very tought. The Lerner index is also known as the method of measuring monopoly power by excess of price over marginal cost.

Measurement of Monopoly Power Based on Profit Rates: It is obvious that a monopoly can earn higher profits than a perfect competitive firm. Owing to the characteristics of the market firms, unlike a perfect competitive firm, a monoplist can earn super normal profit. Thus, the rate of profit earned by the monopolist can indicate the monopoly of the monopolist firm. Higher the monopoly power, higher would be the rate of profit earned by the monopolist. The concept though sounds very simple, but not very easy to put into practice. This is because, the rate of supernormal profit can be known only when we know the rate of normal profit. But in Economics, there is always a debate regarding what actually is the normal rate of profit.



CHECK YOUR PROGRESS

Q.4: State whether the following are true or false.

a) The Lerner index measures the monopoly power of a firm based on the elasticity of demand of the product.

b) In monopoly, MR is greater than AR.

Q.5: What is Lerner index? Who introduced the concept? (Answer in about 40 words)

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11.5 LET US SUM UP

- Monopoly can be described as the market structure where there is only one supplier of the product, which has no close substitute in the market.
- Price discrimination is a special feature of monpoly. It is said to occur when a firm charges a different price to different groups of consumers for an identical good or service, for reasons not associated with costs. Another name of price discrimination is yield management. It shows the control of the monoplist over price and output of the product.
- The concept monopoly power relates to the abililty of the monopolist to control price and output of the commodity. In this sense, the degree of monopoly power is indicated by the extent of influence that a monopoist can exercise on price and output.
- Monopoly power can be measured with the help of a number of devices. The Lerner index is one of such devices. It is defined as (price-marginal cost)/price. In monopoly, MR = MC. Hence, symbolically the Lerner index can be written as: (AR – MR) / AR.
- Monopoly power can also be calculated with the help of rate of profit. Higher the monopoly power higher would be the rate of profit earned by the monopolist.



11.6 FURTHER READING

1) Ahuja, H.L. (2006); *Modern Economics*; New Delhi: S. Chand & Co. Ltd.

4) Chopra, P.N. (2008); *Micro Economics*; Ludhiana: Kalyani Publishers.

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11.7 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: a) False, b) False

Ans. to Q. No. 2: a) alone to sell

b) A. C. Pigou

c) perfect price discrimination.

Ans. to Q. No. 3: Second degree of price discrimination occurs when the monopolist is able to charge several different prices for different ranges or volume of output. For example, we need to pay monthly electricity bills based on different prices charged for different slots of energy consumption. Say we need to pay Rs. 2 for first 100 units of electricity consumption in a month. Again a higher price, say Rs.2.50 can be charged for subsequent units.

Ans. to Q. No. 4: a) True, b) False

Ans. to Q. No. 5: The Lerner index is defined as (price - marginal cost)/ price. In monopoly, MR = MC. Hence, symbolically the Lerner index can be written as: (AR - MR) / AR. This Lerner index is nothing, but the measure of monopoly power.

Abba Lerner introduced the Lerner Index.



11.8 MODEL QUESTIONS

A) Short Questions (Answer each question in about 100-150 words):

Q.1: Discuss the concept of price discrimination.

Q.2: What are the different degrees of price discrimination?

Q.3: Write a short note on the concept and measurement of monopoly power based on the approach of Lerner index.

B) Essay-Type Questions (Answer each question in about 300-500 words):

Q.1: Describe how does a monopoly firm attain equilibrium in the long-run.

Q.2: Discuss the concept of monopoly power. How would you measure monopoly power using the Lerner index?

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UNIT 12: MARKET STRUCTURE: IMPERFECT COMPETITION

UNIT STRUCTURE

12.1 Learning Objectives
12.2 Introduction
12.3 Monopolistic Competition: Meaning and Characteristics
12.4 Product Differentiation and Selling Cost
12.5 Concepts of Oligopoly and Duopoly
12.6 Let Us Sum Up
12.7 Further Reading
12.8 Answers to Check Your Progress
12.9 Model Questions

12.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- define the market structure of monopolistic competition and discuss its characteristics
- discuss the concepts of product differentiation and selling cost
- briefly enumerate the meaning and basic features of oligopoly and duopoly.

12.2 INTRODUCTION

In the earlier units, we have already discussed the market structures, viz., perfect competition and monopoly. In this unit, we will discuss basically about monopolistic competition. The concepts of oligopoly and duopoly have also been discussed in brief. The concept of product differentiation and the role of selling cost under imperfect competition shall also be dicussed. Apart from these the concepts of oligopoly and duopoly form of market shall also be discussed in brief.

12.3 MONOPOLISTIC COMPETITION: MEANING AND FEATURES

Monopolistic competition is the mid-way between the two extreme market forms we have already discussed, i.e., perfect competition and monopoly. The term monopolistic competition was first used by E. H. Chamberlin in his book *"TheTheory of Monopolistic Competition".* Monopolistic competition refers to a market structure in which there are many firms selling closely related, similar but not identical products. This market structure is much more realistic than the other two market stuctures we have discussed already. The assumptions of this market form are:

- **Large Number of Sellers and Buyers:** This is the first assumption of monopolistic competition. Presence of large number of firms/ sellers implies that each seller can satisfy only a small share of the market demand. And the sellers face stiff competition in the market.
- **Differentiated Products that are Close Substitutes:** The producers under monopolistic competition produce differentiated products. But the product of an individual producer is a close substitute of other products produced by other producers.
- **Free Entry into and Exit from the Market:** Free entry into and exit from the industry is also another important feature of monopolistic competition. This feature though sound similar with perfect competition, but is technically different. Because under perfect competition, a firm entering new in the industry has to produce indentical products already existing in the industry. But in case of monopolistic competition, new firms may introduce new products in the market. Such products may have some difficulty in competing with the well established brands.
- **Selling Cost:** Every firm under monopolist competition may incur individual selling costs (cost on advertisement, etc) to promote its product.
- **Imperfect Knowledge:** Imperfect knowledge on the part of the consumers about the products of different sellers is also an important

feature of this market form. This is important because even when two products of two different sellers may be identical in terms of quality, but the monopolistic firms try to show variabillity in them to attract the consumer towards the product.

Characteristics of Monopolistic Competition: Unlike perfect competition, monopolistic competition is said to exist in reality. The important characteristics of monopolistic competition are as follows:

- **Large Number of Firms:** In the monopolistic form of market, there exists large number of firms. While saying this, it should be kept it mind that this does not mean that there would be 1000 or 2000 number of firms in the market. Even the presence of 25, 30, 50 or 60 number of individual firms are considered as constituting fairly large number of firms in the industry.

  The presence of large number of firms in the industry is quite significant. First, the presence of large number of firms in the industry implies that an individual firm will have only limited control over the pricing decision of its own product. Secondly, it also implies that these firms are unlikely to form any group either to regulate price or quantity of the products available in the market.

- **Product Differentiation:** We have already mentioned that the producers in the monopolistic market produces differentiated yet identical products which are close substitutes of each other. Consider the followng figure 12.1.

  Figure 12.1 shows the different brands of Neem herbal toothpastes available in the market. Without going much into detail on the features like brand name, price and volume etc. it is not much easy to make any differentiation among these. Yet, they can be distinguished. Thus the products are similar though not identical.

Fig. 12.1: Different brands of Neem herbal toothpaste



- **Close Substitutes:** We have already mentioned that the products brought out in the market are similar, yet are differentiated. As such, such products are close substitute to each other. The figure 12.1 supports this point. This is the reason, why most of the buyers like to try new brands. If a buyer is using Dabur Herbal Toothpaste for quite some days, in the next occassion he may choose to try any of the other alteranatives.
- **Selling Cost:** Another aspect of monopolistic competition is the presence of selling cost. This means that to attract more consumers, a particular firm may opt to undertake certain promotional schemes. In the above figure, the Neem Active brand (in the centre) has launched a promotional scheme by providing 25% extra (125 gram in place of 100 gram).



ACTIVITY 12.1

In your day-to-day life, you often see advertisements in the Newspapers, TV or in other media. Collect a few such advertisements of a product. What you think about the advertisements? Do you consider the advertisement to be worth

considering, or just a technique to attract, or rather fool consumers? Also try to keep a track if other substitute brands have subsequently gone for similar or counter-advertisements. If yes, try to analyse why.

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CHECK YOUR PROGRESS

Q.1: State whether the following statements are True or False:

a) In the monopolistic form of market, there exist large number of firms which are dependent on each other.

b) In monopolistic market, pricing decision of an individual firm is not dependent on others.

c) Selling costs relate to cost of advertising and other promotional measures.

Q.2: How the prevalence of imperfect knowledge on the part of the consumers help the business firms in the monopolistic form of market gain? (Answer in about 40 words)

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12.4 PRODUCT DIFFERENTIATION AND SELLING COST

Product Differentiation: While discussing the characteristics of monopolistic competition, we have already mentioned that product differentiation is a key feature of this market structure. In fact, this

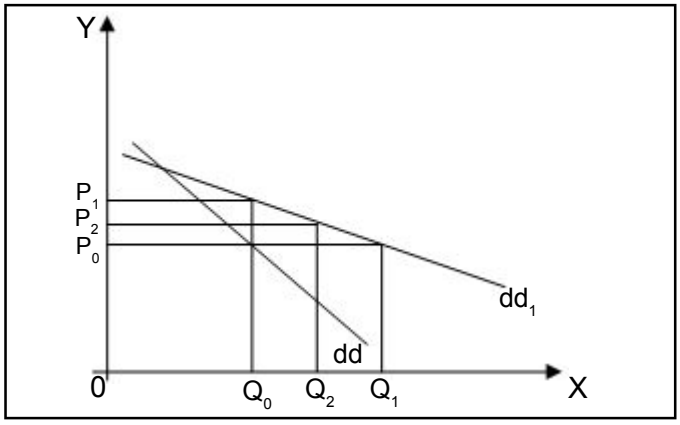
characteristic differentiates this market structure from perfect competition. Otherwise, monopolistic competition closely resembles perfect competition. Thus, the fundamental difference between the two market structures is that products are no more homogenous.

We have also mentioned that there are close substitutes in the market. Thus, under the monopolistic form of market, firms make deliberate attempts to make their products look different from other firms' products. While saying that the products are differentiated, we must remember that while a firm makes every attempt to make its products appear somewhat different and superior to those produced by other firms, product differentiation in practice, however, may be real or apparent. *Real differentiation* means that there are some differences either in physical or chemical composition of a product or in the taste and appearance of that product. *Apparent differentiation* is said to occur when there are not much differences in terms of the physical or chemical composition of the product; but firms try to differentiate the products through attractive packaging, or by other techniques of selling.

A product can also be marketed as superior using local advantage. When products are differentiated more buyers are likely to be attracted. As a result, the firm gains extra control over demand and market conditions. The demand curve of a firm will then alter to the advantage of a firm. It will become more flexible and shift upwards. The capacity of a firm to alter the demand curve for its own product is the most important analytical feature of monopolistic competition. Under no other form of market do producers attempt to influence the demand which is entirely based on consumer behavior.

The nature of change in the demand curve as a result of product differentiation has been shown with the help of the following figure 12.2.

Fig. 12.2: Shift in the Demand Curve as a result of Product Differentiation



From the above figure 12.2 it can be seen that the original demand curve of the firm is dd. Let us suppose that along this demand curve, the firm sells $0Q_0$ amount of the product at the corresponding price P_0. As a result of product differentiation, the demand curve of the firm moves upward and becomes flatter. The new demand curve of the firm is dd_1. Thus, it can be seen that along the new demand curve dd_1, the firm can sell higher volume of the product $0Q_1$, if he chooses to sell the product at the prevailing price P_0. Alternatively, if the firm wants to sell the same volume $0Q_0$ as before, it can sell that amount by charging a higher price P_1. The firm can also choose P_2 price (higher than P_0 but lower than P_1) and sell $0Q_2$ amount of the product.

Selling or Advertising Cost: Selling Cost (SC) is another major feature of a monopolistic competitive market. In fact, selling cost along with product differentiation enables the firm to maintain some control over market conditions and influence the shape of the demand curve. Both features are interdependent. Whenever a *product* is *differentiated* it is necessary to inform buyers; and advertisement is the only medium through which buyers can be told about superiority of that product. Selling cost by itself is *apparent product differentiation*. When a product does not have any genuine qualitative difference from the other products available in the market, buyers can be made to treat the product differently through advertisements. So whenever products are differentiated and advertised, the market becomes a monopolistic competition market. The presence of

selling cost increases the firm's cost of production. In order to recover it, firms have to charge a higher price. The net effect of a monopolistic competitive market is pricing goods at a higher rate. Consumers have to bear this extra expenditure.

12.5 CONCEPTS OF OLIGOPOLY AND DUOPOLY

In the previous units and in the earlier sections of this unit, we have so far discussed the market structures like perfect competition, monopoly and the imperfect competition. Thus, we have come to know that perfect competition is actually an ideal market structure which rarely exists in practice. The opposite of this market structure is the monopoly, where there exists only one seller in the market. While existence of monopoly can also be a reality though rare, monopolistic competition reflects the most practical market situation we find in reality.

The above three are undoubtedly the most prominent market structures dealt with in Economics. However, there still exists a few market structures. Oligopoly and duopoly are among them. Let us first deal with oligopoly. Oligopoly, is a market form where the market or the industry is controlled or dominated by a small group of sellers/companies also known as oligopolists. Thus, it is very much clear that in this form of market, there exists more than one seller but at the same time the number of sellers is not as large as is found in a perfectly competitive market. It is much like monopoly where the small group is made up of major sellers/companies which collectively exert control over the supply of a particular product (good or service) and its price in the market. Since the number of competitors in an oligopoly is few, each of the oligopolist is most likely to be aware of the actions of the others and hence the decision of one company influences and is influenced by the decision of the others. Hence, strategic planning by the oligopolists' needs to consider the responses of other market players as well.

Underlying Assumptions: Oligopoly rests on the following assumptions:

- **Existence of a Few Firms:** There exists a few firms in the market.
- **Control over Supply and Price:** Each firm produces a large share of the total volume of the product; so it can affect the price by its own action.
- **Entry of New Firms:** No doubt it is very difficult for a new firm to enter into the market but it is not completely blocked. Financially sound firm can only enter into the market.
- **Competition in Quality:** The firms compete with each other in the quality of the product also. The firms spend a sufficient amount on research.
- **Interdependence:** In Oligopoly there is an interdependence on each other. Because the policies of each firm affect the price and output of other firm.
- **Advertising:** A heavy amount is spent on the advertisement by the oligopoly to attract the consumers.



LET US KNOW

A very good example of the oligopoly form of competition is the auto industry. Let us consider the case of small passenger cars. The players in the market in this segment include: Maruti Suzuki, Tata, Hyundai, Honda, Fiat, Hindustan Motors, Toyota, Chevrolet, Ford, Volkswagen etc. Now, you can easily guess that huge investment worth thousands of crores of rupees is needed to make this industry. As such, there exist high entry barrier in this form of market. Again, even when the pricing decisions of the products of these companies are taken by the individual industry concerned, yet the influence of other brands of products of other manufacturers of the industry can not be ruled out.

Another example of the oligopoly form of market is the 'cartel'. The cartel is a type of oligopoly in which the participating firms may employ restrictive tactics such as collusion and market sharing to

escalate prices and restrict production just as in a monopoly. The OPEC (Organization of the Petroleum Exporting Countries) which has a prominent effect on the international oil prices is an example of cartel.

Duopoly: Duopoly is said to occur when there are only two firms which control the total supply of the market. Each firm produces the large share of the total out put and it can affect the price of the market. If both firm are producing the similar commodity it will be called pure duopoly. On the other hand, if there is some difference in their products then it will be called differential duopoly. Duopoly is also called as the simplest form of oligopoly.



LET US KNOW

Examples of duopoly are not many. The most popular example of duopoly is between Visa and Mastercard who exercise a major control over the electronic payment processing market in the world. If you have a credit/debit card, you must have seen any of the logos as shown alongside.

Pepsi and Coca-cola are the two major shareholders in the soft drinks market. In the market, there are so many brands of soft drinks, e.g., Limca, Mirinda, Sprite, Fanta, Lehar etc. You can find that the brands are either from CocoCola or Pepsi. Of course, there are other brands in the market which are not from these companies, but their market shares in terms of the global soft drink market are not much significant.

Similarly, in the commercial jet aircraft market, Airbus and Boeing are the main leaders which constitute. duopolies in the commercial jet aircraft market.

The duopoly market structure may be studied on two basic grounds: a) by ignoring any mutual dependence between the two sellers and b) recognising mutual dependence between the two sellers. The Cournot-Edgeworth solutions explains the duopoly market situations by ignoring

mutural dependence between the two sellers. On the other hand, Chamberlin explains the model of the duopoly market when we assume that there is mutual dependence between the two sellers.



CHECK YOUR PROGRESS

Q.3: State whether the following statements are True or False.

a) Duopoly is a variety of oligopoly where there are more than two firms in the industry.

b) Product differentiation and selling cost are important features of monopoly.

c) In oligopoly, there exists high degree of entry barriers.

d) 'Product group' is found in oligopoly.

Q.4: What type of entry barriers does there exist in the oligopoly market? (Answer in about 30 words).

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Q.5: How does the consumer gain and lose in the monopolistic form of market? (Answer in about 50 words).

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Q.6: Define the term oligopoly. (Answer in about 30 words)

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12.6 LET US SUM UP

- Monopolistic competition is the mid-way between the two extreme market forms i.e., perfect competition and monopoly. The term monopolistic competition was first used by E. H. Chamberlin.
- Unlike perfect competition, monopolistic competition is said to exist in reality.
- Existence of large number of firms, product differentiation, close substitutes and selling cost are some of the unique features of monopolistic competition.
- Consumer benefit as well as suffers as a result of product differentiation and selling cost.
- Under the monopolistic form of market, firms make deliberate attempts to look their products different from other firms' products. This is called product differentiation.
- Product differentiation may be real or apparent. *Real differentiation* means that there are some differences either in physical or chemical composition of a product or in the taste and appearance of that product.

  Apparent differentiation is said to occur when there are not much differences in terms of the physical or chemical composition of the product; but firms try to differentiate the products through attractive packaging, or by other techniques of selling.
- Oligopoly, is a market form where the market or the industry is controlled or dominated by small group of sellers/companies also known as oligopolists.
- Duopoly is said to occur when there are only two firms which control the total supply of the market.

  If both firms are producing the similar commodity it will be called pure duopoly.



12.7 FURTHER READING

1) Ahuja, H.L. (2006); *Modern Economics*; New Delhi: S. Chand & Co. Ltd.

4) Chopra, P.N. (2008); *Micro Economics*; Ludhiana: Kalyani Publishers.

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8) Maddala, G.S. & Miller, E. (2004); *Microeconomics: Theory and Applications*; New Delhi: Tata McGraw-Hill.

9) Pindyck, R.S. & Rubinfeld, D.L. (2006); *Micoreconomics*; New Delhi: Prentice-Hall India.

10) Sundharam, K.P.M & Vaish, M.C. (1997); *Microeconomic Theory*; New Delhi: S. Chand & Co. Ltd.



12.8 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: a) False, b) True, c) True

Ans. to Q. No. 2: Due to imperfect knowledge on the part of the consumers under monopolistic competition, different sellers try to convince the consumers that the products offered by them are of superior quality, even when the products of those different sellers may actually be identical.

Ans. to Q. No. 3: a) False, b) Fales, c) True, d) False

Ans. to Q. No. 4: Theoretically, entry of new firms in the oligopolistic form of market is not completely blocked. However, entry barrier to the industry is considerably very high, because only a financially sound firm can enter into the market.

Ans. to Q. No. 5: Under monopolistic form of market, the consumer gains as he/she is able to choose from a range of differentiated products.

The consumer loses in the sense that he/she has to pay a higher price, which basically occurs on account of the selling cost of the monpolistic firm.

Ans. to Q. No. 6: Oligopoly, is a market form where the market or the industry is controlled or dominated by small group of sellers/ companies also known as oligopolists.



12.9 MODEL QUESTIONS

A) Short Questions (Answer each question in about 100-150 words):

Q.1: Discuss how does product differentiation affect the demand curve of a monopolistic firm.

Q.2: Write a short note on oligopoly form of market.

B) Essay-Type Questions (Answer each question in about 300-500 words):

Q.1: Discuss the features of monopolistic competition. Critically explain how prevalance of product differentiation and selling cost affect the consumer.

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UNIT 13: EQUILIBRIUM UNDER MONOPOLISTIC COMPETITION

UNIT STRUCTURE

13.1 Learning Objectives

13.2 Introduction

13.3 Equilibrium under Monopolistic Competition

- 13.3.1 Equilibrium of a Firm: Short-run
- 13.3.2 Equilibrium of a Firm: Long-run
- 13.3.3 Group Equilibrium: Short-run and Long-run

13.4 Excess Capacity

13.5 Let Us Sum Up

13.6 Further Reading

13.7 Answers to Check Your Progress

13.8 Model Questions

13.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- define the market equilibrium under monopolistic competition-short run and long run
- explain the product equilibrium and group equilibrium and distinguish their differences
- give the concept of excess capacity.

13.2 INTRODUCTION

In the earlier unit, we have already discussed the market structures of monopolistic competition as an important branch of imperfect competition. Under this we have got the meaning, nature and significance alongwith various characteristics of monopolistic competition. We have also got the concepts of oligopoly and duopoly. In this unit, we will discuss basically about equilibrium under monopolistic competition. Here both short run and long run product and group equilibrium will be discussed. Moreover the concept and significance of excess capacity will also be given.

13.3 EQUILIBRIUM UNDER MONOPOLISTIC COMPETITION

As we have already discussed the underlying assumptions of the monopoly form of market, we can now take up how an individual firm attains equilibrium in this form of market. We shall first analyse how an individual firm attains equilibrium in the short-run.

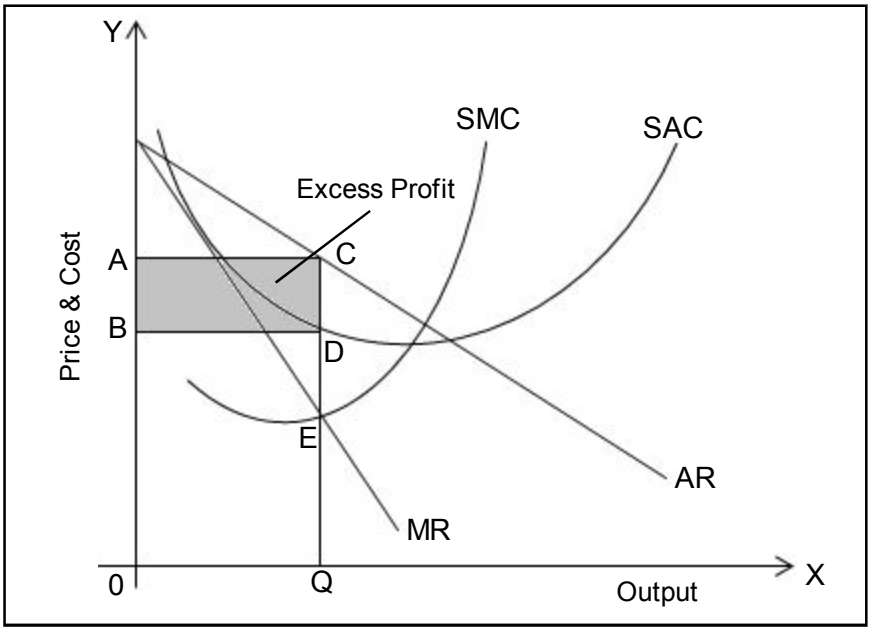
13.3.1 Equilibrium of a Firm: Short-run

As in monopoly, firms under monopolistic competition face a downward sloping demand curve. But this does not mean that under monopolistic competition firms are likely to earn large profits. Monopolistic competition is also similar to perfect competition: as there is free entry and large number of firms. Like perfect competition, the potential to earn profits will attract new firms with competing brands, driving any super-normal profits down to zero. The condition of short-run equilibrium of a monopolistic competitive firm is similar to that of a monopoly firm, i.e.

Marginal Revenue = Marginal Cost

This has been explained with the help of figure 13.1.

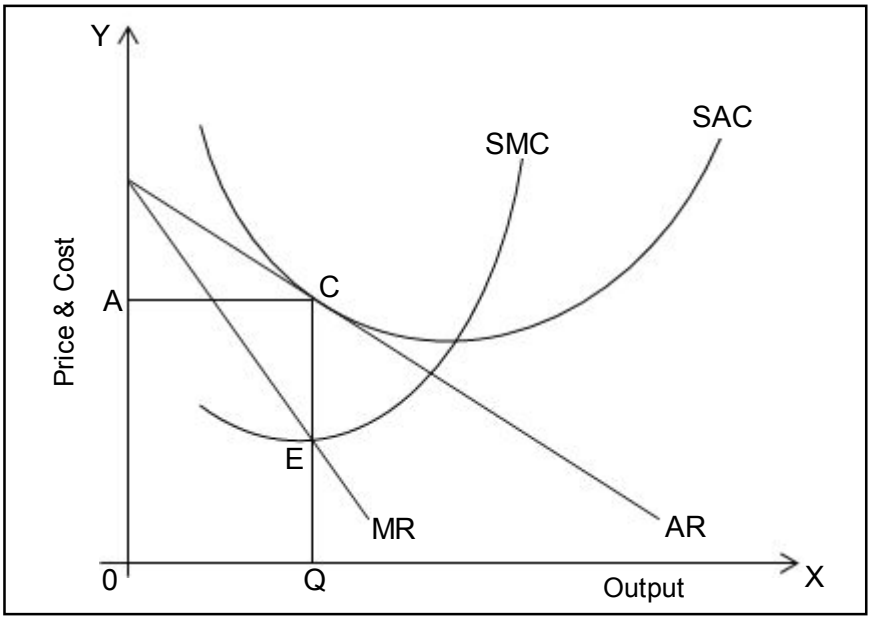
Fig. 13.1: Short-run Equilibrium of a Monopolistic Competition Firm



In figure 13.1, AR is the average revenue and MR is the marginal revenue curves. SAC and SMC are short-run average cost and short-run marginal cost curves respectively. The firm attains equilibrium at point E, where SMC curve intersects the MR curve. Corresponding to this equilibrium point E, 0Q is the equilibrium output and QC (or 0A) is the equilibrium price. It can be seen from the figure that the cost per unit of output is QD, while the revenue earned per unit of output is QC. Thus, the firm earns CD amount of profit per unit of output. This amounts to a total profit of ABCD (DC x 0Q or BD). Such short-run profit earned by individual firms under monopolistiic firms is also termed as excess profits.

In monopolistic form of market, it is also possible that a firm under monopolistic competition earns either normal profit or incurs losses while attaining short-run equilibrium. These have been shown with the help of figures 13.2 and 13.3 respectively.

Fig. 13.2: Short-run Equilibrium of a Monopolistic Competitive Firm (earning normal profit)

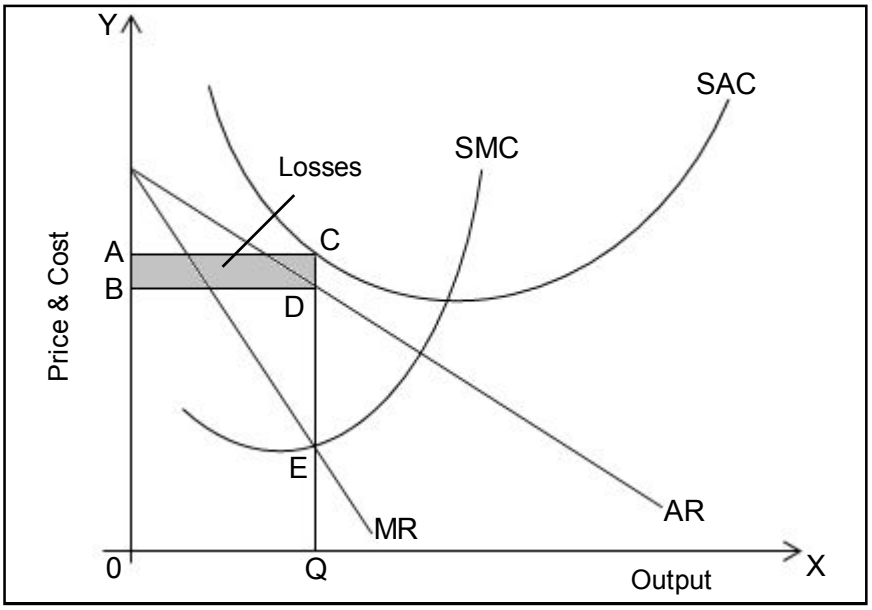


From the above figure 13.2 it has been seen that the firm attains equilibrium at point E where SMC is tangent to the marginal revenue curve MR. The corresponding level of output is 0Q while the equilibrium price is 0A. It can be further seen that at this

equilibrium level, the firms earns normal profit as price earned per unit (0A) is equal to cost incurred per unit of production (QC).

The following figure 13.3 represents the situation when the firm in short-run equilibrium incurs losses.

Fig. 13.3: Short-run Equilibrium of a Monopolistic Competitive Firm (incurring losses)



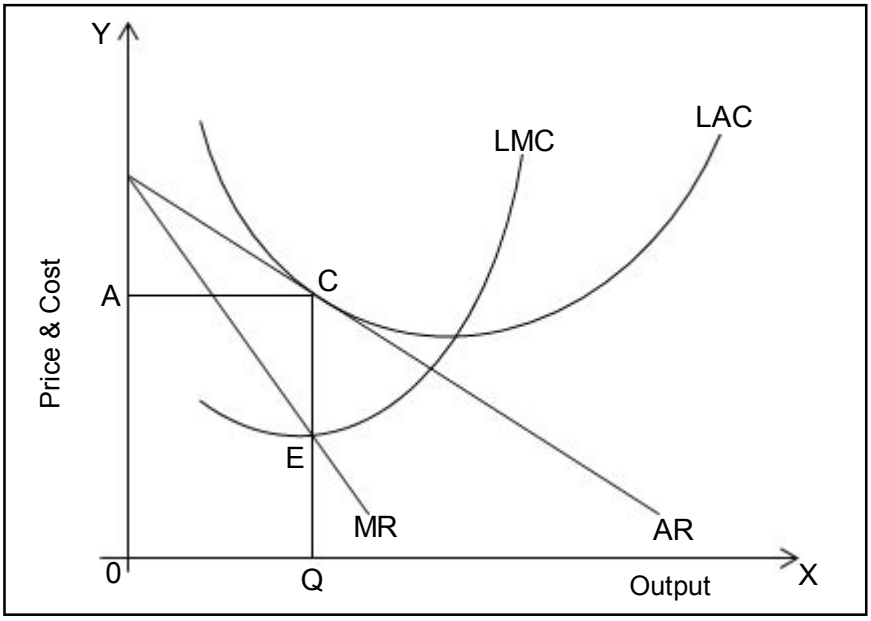
Thus, from the above figure 13.3 it can be seen that the firm attains equilibrium at point E, where the marginal revenue curve of the firm MR intersects the short-run marginal cost curve SMC. when it earns 0B amount of average revenue while incurs 0A amout of average cost. As such, the firm incurs loss of AB amount per unit of the product. For 0Q quantity, the losses amount to ABCD.

13.3.2 Equilibrium of a Firm: Long-run

In the above discussion we have seen how an individual firm may earn profit in the short-run. Such earning of profits encourages other firms to enter into the industry. As new firms enter into the industry and as they introduce competing brands, existing firms will lose market share and sales; its demand curve will shift down. Thus, the entry of new firms will ultimately lead to disappearing of any excess profit. Therefore, firms in the long-run

will be earning only normal profit. This has been shown graphically with the help of figure 13.4.

Fig. 13.4: Long-run Equilibrium of a Firm under Monopolistic Competition



From the above figure 13.4 it has been seen that the firm attains equilibrium at point E where marginal revenue equals marginal cost. Thus, 0Q is the equilibrium level of output and 0A is the equilibrium level of price. This in fact is also long-run equilibrium because at the equilibrium price (0A), the long-run average cost curve (LAC) is tangent to the average revenue (AR), which means that the firm earns only normal profit.

Thus, from the above discussion we have seen that a firm under monopolistic market structure will attain equilibrium:

In the short-run when: Marginal Revenue = Marginal cost

In the long-run when: Marginal Revenue = Marginal cost; and Long-run Average Cost = Average Revenue



CHECK YOUR PROGRESS

Q.1: State whether the following statements are True or False:

a) The firm under monopolistic competition faces a downward sloping demand curve.

b) A firm under monopolistic competition can earn super-normal profits even in the long-run.

Q.2: Fill in the Blanks:

a) Monopolistic competition is similar to perfect competition as there are ..... and .....

b) Every firm under monopolistic competition may incur individual ..... to promote its product.

Q.3: Mention the conditions of long-run equilibrium of a monopolistic firm. (Answer in about 30 words)

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13.3.3 Group Equilibrium: Short-run and Long-run

So far, we have discussed above how an individual firm under monopolistic competition attains equilibrium in the short-run as well as in the long-run. Let us now discuss 'group equilibrium'. Group equilibrium means analysis of price and output determination of a number of firms under monopolistic market structure. It should be noted here that due to the unique characteristic of product differentiation in the monopolistic form of market, i.e., due to the presence of heteregenous product in the market, it is very difficult to sum up individual demands of the individual firms and derive at the industry market demand. Owing to such problem, E. H. Chamberlin used the concept of 'product group' in lieu of 'industry' and tried to analyse market equilibrium under monopolistic competition.

The term 'product group' means the set of products of the various sellers in the market which are close substitutes to each other. While discussing 'substitutability' among the various brands of homogeneous products in the market Chamberlin cosidered two main aspects of the products, viz., technological substitutability and economic substitutability. *Technological substitutability* means that the products are homogeneous in terms of technological parameters and fulfils the same wants of the consumer. *Economic substitutability* means that the products fulfil the same wants of the consumers and have prices that are also similar. On the basis of these two aspects, a product group can be defined as the bundle of individual product of individual sellers in the market. Such individual product have high elasiticity of demand and it shifts to a considerable amount when prices of other products in the group changes. This means that the products in the bundle of products have cross price elasticities.



LET US KNOW

There is a difference between the concepts 'group' and industry'. *Group* refers to a number of firms producing products which are close substitutes to each other. *Industry* on the other hand refers to the firms which produce identical products. Thus, in the case of perfect competition, we used the term 'industry', while in this unit (in case of monopolistic competition), we shall use the term 'group'.

For the analysis of group equilibrium, Chamberline had undertaken two assumptions. These two assumptions are:

- The demand and cost curves of all the products in the group are uniform. However, this does not mean that the products of the firms will not differentiate. This has been termed as 'Uniformity assumption'.
- The number of firms in the group are so large that the individual decision of a firm regarding price and output is unlikely to have

any effect on its rivals. This assumption has been named 'symmetry assumption' by Stigler.

Based on these assumptions, Chamberlin put forward three different models for the analysis of group equilibrium in the monopolostic form of maket. These models are:

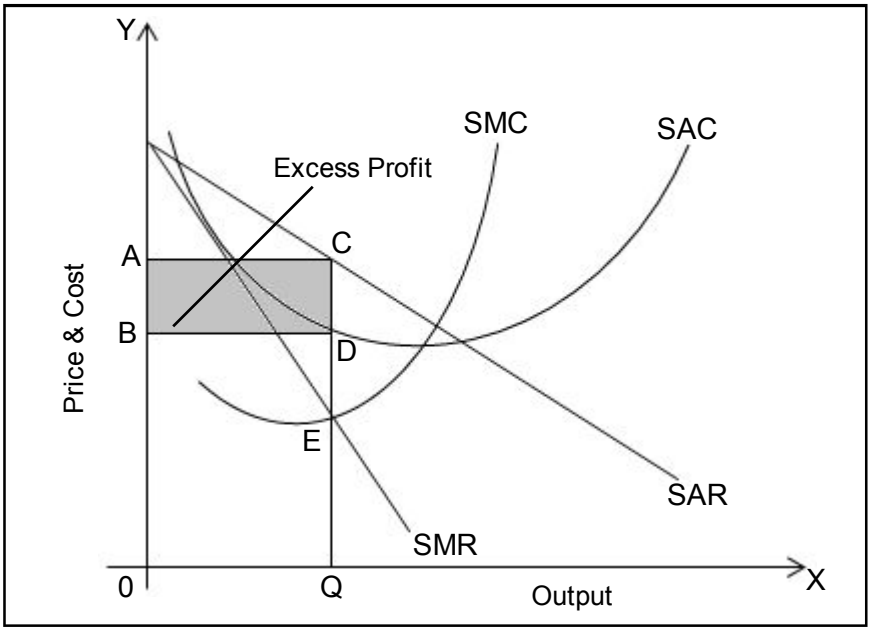
- *First model:* The first model shows how the group of firms earns super normal profit in the short run. It also shows how in the long run entry of new firms into the group would wipe out any super-normal profit, such that an individual firm earns only normal profit.
- *Second model:* The second model shows how in the long run the group attains equilibrium by adjusting their prices in the market, instead of entry of new firms into it. Chamberlin showed it by bringing in new demand curve into the model alongwith the existing demand curve. Such demand curve is called 'actual sales curve' or 'share of the market'. The 'actual sales curve' shows the acutal sales of the firm at each price accounting for the adjustment of price of other firms in the group.
- *Third model:* The third model is the combination of the above two. Here the group attains equilbrium in the long run by both price adjustment and entry and exit of new firms. At the equilibrium level of output, as usual, all existing firm earn only normal profit.

Of these three models, let us consider the first model and analyse how the gourp attains equilibrium in the short-run and the long-run period.

Short-run Group Equilibrium: It should be noted that within the group if a firm launched a successful brand in the market, and if this brand is earning supernormal profits in the short-run, this will attract other existing firms to imitate the design. And thus, in the long -run, this will ultimately lead to disapearing of any such supernormal profits. Again, if the whole group is earning supernormal profit in the short-run, this will attract new firms to

enter into the industry. The new firms will also imitiate the design of such successful brands and, thus, will wipe out the supernormal profit in the long-run; unless new firms are barred to enter the group either economically or legally. The short-run group equilibrium has been shown with the help of the following figure 13.5.

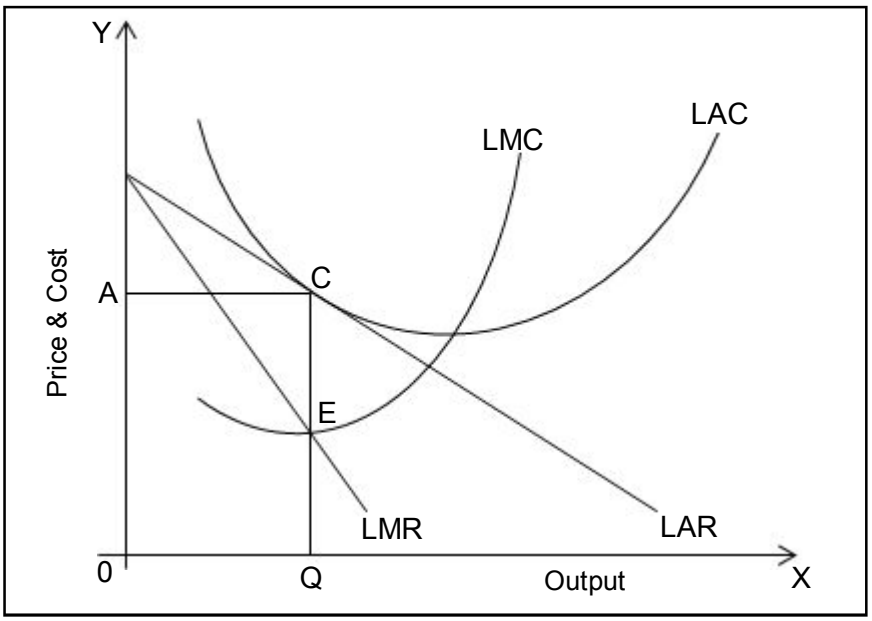
Fig. 13.5: Short-run Group Equilibrium



From the above figure 13.5 it has been seen that the group's short-run demand curve is SAR and the marginal revenue curve is SMR. The average cost curve of the group is SAC, while the marginal cost curve is SMC. The group attains equilibrium at point E, where the marginal cost curve has intersected with the marginal revenue curve. At this equilibrium point E, the group is earning super normal profit as average revenue (or price) per unit of product (QC) is higher than the per unit average cost (QD). Thus, the group will earn total supernormal profit equal to the area ABCD (the shaded area in the figure).

Long-run Group Equilibrium: Earning of super-normal profits will encourage entry of new firms into the group. This will finally lead to the earning of only normal profits in the long-run. This has been shown in the following figure 13.6.

Fig. 13.6: Long-run Group Equilibrium



From the above figure 13.6 it has been seen that the group's long-run demand curve is LAR and the marginal revenue curve is LMR. The long-run average cost curve of the group is LAC while the long-run marginal cost curve is LMC. The group attains long-run equilibrium at point E, where the long-run marginal cost curve (LMC) has intersected the long-run marginal revenue curve (LMR); and where long-run average cost curve (LAC) is tangent to long-run average revenue curve (LAR). At this equilibrium point E, the group is earning only normal profit as long-run average cost is equal to long-run average revenue.

Thus, from the above discussion we have seen that the group will attain equilibrium:

In the short-run when: Marginal Revenue = Marginal cost

In the long-run when: Long-run Marginal Revenue = Long-run Marginal cost; and Long-run Average Cost = Long-run Average Revenue.



CHECK YOUR PROGRESS

Q.4: Fill in the blanks:

a) ..... means that the productsare homogeneous in term of technological parameters and fulfils the same wants of the consumer.

b) E.H. Chamberlin used the concept of ..... in lieu of ..... and tried to analyse market equilibrium under monopolistic competition.

Q.5: What is the difference between the concepts "group' and 'industry'? (Answer in about 50 words)

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Q.6: The demand curve of the monopolistic firm does not touch the long-run average cost curve at its lowest point at the point of equilibrium. Why? (Answer in about 50 words)

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13.4 EXCESS CAPACITY

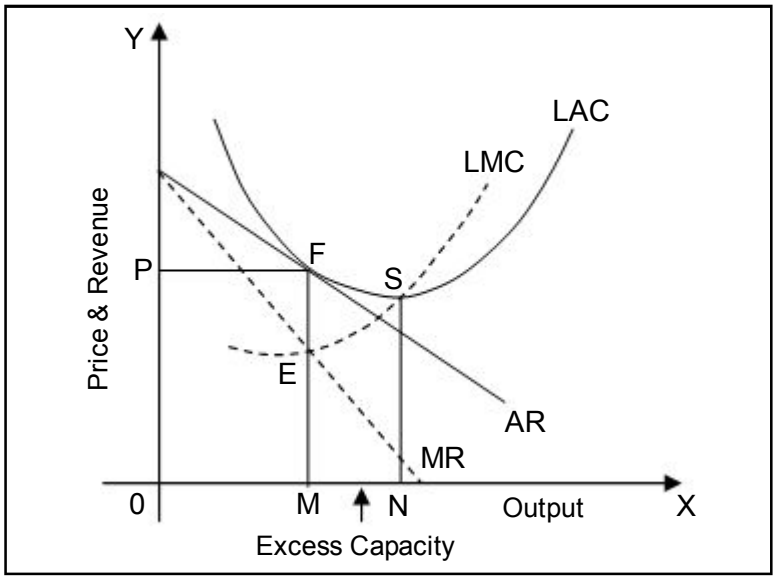
The concept of excess capacity has come up in the theories of Chamberlin's monopolistic competition and Joan Robinson's imperfect competition. They have revealed that a firm under monopolistic competition or imperfect competition in long-run equilibrium produces an output which is less than socially optimum or ideal output which leads to excess capacity. This means that firms operate at the point on the falling portion of long-run average cost curve that is, they do not produce the level of output at which long-run average cost is minimum. Thus a firm under monopolistic

competition produces less than the socially optimum or ideal output, that is, the output corresponding to the lowest point of long-run average cost curve. This is in sharp contrast to the position of the firm in long-run equilibrium under perfect competition, which operates at the minimum point of the long-run average cost curve.

The amount by which the actual long-run output of the firm under monopolistic competition falls short of the socially ideal output is a measure of excess capacity which means un-utilised capacity. We can show the existence of excess-capacity under imperfect or monopolistic competition from Figure 13.7. A firm under monopolistic competition depicted is in long-run equilibrium at output OM at which its marginal revenue is equal to marginal cost and price is equal to average cost (Average revenue curve AR is tangential to average cost curve LAC at point F corresponding to output OM).

You will notice that at output OM long-run average cost is still falling and goes on falling up to output ON. This means that the firm can expand its production up to ON and reduce his long-run average cost to the minimum. Ideal output is the output at which long-run average cost is minimum.

Fig. 13.7: Excess capacity under Monopolistic Competition



Therefore, the firm is producing MN less than the ideal output. Thus MN output represents the excess capacity which emerges under

monopolistic competition. It is worth nothing that the concept of excess capacity refers only to the long run.

Causes of Excess Capacity: There are two main causes of the emergence of excess capacity under monopolistic competition. Let us discuss them one after another.

First, the most important cause of the existence of excess capacity under monopolistic competition is down-ward-sloping demand curve (or average revenue curve) of the firm. A downward-sloping curve can be tangent to a U-shaped average cost curve only at the latter's falling portion.

Secondly, under monopolistic competition, as has been emphasised by Chamberlin, a very large number of firms enter the industry in the long run. They are attracted by excess profits in the short run enjoyed by the existing firms. This results in sharing of market demand among many firms so that each firm produces a smaller output than its full or optimum capacity.

Benefits of Excess Capacity: Although excess capacity puts an additional cost to the society but many modern economists are of the view that excess capacity under monopolistic competition is desirable in some respects. According to them, excess capacity under monopolistic competition provides some benefits which increase consumer welfare.

The excess capacity comes into existence mainly due to product differentiation under monopolistic competition. Now, this product differentiation leads to product variety which is highly beneficial to the consumers.

The ability to choose among a wide variety of clothes, furniture, restaurant meals and other types of styles of product designs add greatly to the satisfaction or welfare of the consumers. Therefore, according to this view, social benefits of excess capacity should be weighed against the cost to the society of excess capacity.



CHECK YOUR PROGRESS

Q.7: Give the definition of excess capacity.

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Q.8: What is the reason for the emergence of excess capacity in a monopolistic market?

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Q.9: Is there any benefit of excess capacity?

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13.5 LET US SUM UP

- A firm under monopolistic competition attains equilibrium under the following conditions:
  In the short-run when: Marginal Revenue = Marginal cost
  In the long-run when: Marginal Revenue = Marginal cost; and Long-run Average Cost = Average Revenue
- E. H. Chamberlin used the concept of 'product group' in lieu of 'industry' and tried to analyse market equilibrium under monopolistic competition. He puts forward three different models for the analysis of group equilibrium in the monopolostic form of maket.
- The term 'product group' means the set of products of the various sellers in the market which are close substitutes to each other.

- A group under monopolistic competition attains equilibrium under the following conditions:

  In the short-run when: Marginal Revenue = Marginal cost

  In the long-run when: Long-run Marginal Revenue = Long-run Marginal cost; and Long-run Average Cost = Long-run Average Revenue
- The concept of excess capacity has come up in the theories of Chamberlin's monopolistic competition and Joan Robinson's imperfect competition.

  They have revealed that a firm under monopolistic competition or imperfect competition in long-run equilibrium produces an output which is less than socially optimum or ideal output which leads to excess capacity.
- There are two main causes of the emergence of excess capacity under monopolistic competition.

  First, is the downward sloping demand curve (or average revenue curve) of the firm.

  Secondly, a very large number of firms enter the industry in the long run.



13.6 FURTHER READING

1) Ahuja, H.L. (2006); *Modern Economics*; New Delhi: S. Chand & Co. Ltd.

4) Chopra, P.N. (2008); *Micro Economics*; Ludhiana: Kalyani Publishers.

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7) Koutsoyiannis, A. (1979); *Modern Microeconomics*; New Delhi: Macmillan.

8) Maddala, G.S. & Miller, E. (2004); *Microeconomics: Theory and Applications*; New Delhi: Tata McGraw-Hill.

9) Pindyck, R.S. & Rubinfeld, D.L. (2006); *Micoreconomics*; New Delhi: Prentice-Hall India.

10) Sundharam, K.P.M & Vaish, M.C. (1997); *Microeconomic Theory*; New Delhi: S. Chand & Co. Ltd.



13.7 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: a) True, b) False

Ans. to Q. No. 2: a) Monopolistic competition is similar to perfect competition as there are free entry and large number of firms.

b) Every firm under monopolistic competition may incur individual selling cost to promote its product.

Ans. to Q. No. 3: The conditions for attaining long-run equilibrium by a firm under monopolistic competition are:

Marginal Revenue = Marginal cost; and

Long-run Average Cost = Average Revenue

Ans. to Q. No. 4: a) Technological substitutability means that the products are homogeneous in term of technological parameters and fulfils the same wants of the consumer.

b) E.H. Chamberlin used the concept of product group in lieu of industry and tried to analyse market equilibrium under monopolistic competition.

Ans. to Q. No. 5: The difference between 'group' and 'industry' is that: 'group' refers to a number of firms producing products which are close substitutes to each other. Industry on the other hand refers to the firms which produce identical products.

Ans. to Q. No. 6: The demand curve of the monopolistic firm does not touch the long-run average cost curve at its lowest point because, as the demand curve of the firm is downward sloping, hence under monopolistic competition, it is not possible that the firm's long-run average cost curve be tangent to its average revenue curve.

Ans. to Q. No. 7: The concept of excess capacity has come up in the theories of Chamberlin's monopolistic competition and Joan Robinson's imperfect competition.

They have revealed that a firm under monopolistic competition or imperfect competition in long-run equilibrium produces an output which is less than socially optimum or ideal output which leads to excess capacity.

Ans. to Q. No. 8: There are two main causes of the emergence of excess capacity under monopolistic competition.

First, is the downward sloping demand curve (or average revenue curve) of the firm.

Secondly, a very large number of firms enter the industry in the long run.

Ans. to Q. No. 9: Many modern economists are of the view that excess capacity under monopolistic competition is desirable in some respects. The excess capacity comes into existence mainly due to product differentiation under monopolistic competition. Now, this product differentiation leads to product variety which is highly beneficial to the consumers.

The ability to choose among a wide variety of clothes, furniture, restaurant meals and other types of styles of product designs add greatly to the satisfaction or welfare of the consumers.



13.8 MODEL QUESTIONS

A) Short Questions (Answer each question in about 100-150 words):

Q.1: Distinguish between Group and Industry.

Q.2: What is excess capacity? Mention two reasons for the emergence of excess capacity in monopolistic competition.

Q.3: Write a short note on the benefits of excess capacity.

B) Essay-Type Questions (Answer each question in about 300-500 words):

Q.1: How does a firm under monopolistic competition attain equilibrium in the short run and in the long run?

Q.2: How does a group under monopolistic competition attain equilibrium in the long run?

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UNIT 14: BASIC CONCEPTS OF NATIONAL INCOME

UNIT STRUCTURE

14.1 Learning Objectives

14.2 Introduction

14.3 Basic Concepts of National Income

14.4 Gross National Product(GNP), Net National Product(NNP), Per Capita Income(PCI), Disposable Income

14.5 Importance of National Income

14.6 Let Us Sum Up

14.7 Further Reading

14.8 Answers to Check Your Progress

14.9 Model Questions

14.1 LEARNING OBJECTIVES

After going through this unit you will be able to:

- give the basic concepts of national income
- give the concepts of gross national product, net national product, per capita income, disposable income
- explain the importance of national income.

14.2 INTRODUCTION

In this unit we are going to discuss the basic concepts of national income. Along with the basic concepts we will further discuss the Gross National Product (GNP), Net National Product (NNP), Per Capita Income (PCI), Disposable Income etc. We will also make a discussion about the importance of national income.

14.3 BASIC CONCEPTS OF NATIONAL INCOME

National income can be viewed from different angles and, depending on the purpose of study, various concepts of national income are used that

basically proxy the same entity. In addition, there are various aggregates that are derived from the broad concept of national income. The different aggregates that are used to indicate the economic status of a nation and other related aggregates are explained in this section in a simple manner.

National Income is one of the basic concepts in macroeconomics. National Income means the total income of the nation, The aggregate economic performance of the whole economy is measured by the national income data.

National Income refers to the money value of all final goods and services produced by the normal residents of a country while working both within or outside the domestic territory of a country in an accounting year. National Income also includes net factor income from abroad.

Symbolically, Y = PG + PS

Where, Y = National Income, P = Price, G = Goods, S = Service

Traditional Definitions of National Income:

- **Marshall:** ‘‘The labour and capital of a country acting on its natural resources produce annually a certain net aggregate of commodities, material and immaterial including services of all kinds... ...This is the true net annual income or revenue of the country or national dividend.’’
- **Pigou:** ‘‘National income is that part of objective income of the community, including of course income derived from abroad, which can be measured in money.’’
- **Fisher:** ‘‘The national dividend or income consists solely of services as received by ultimate consumers, whether from their material or from their human environments. Thus, a piano, or an over coat made for me this year is not a part of this year's income, but an addition to the capital. Only the services rendered to me during this year by these things are income.’’

Keynesian Approach To National Income: Keynes has suggested three approaches to national income:

1) **Income-Expenditure Approach:** According to this approach, national income is equal to total expenditure on consumption and investment goods.

2) **Factor-Income Approach:** According to this approach, national income is measured as the aggregate of incomes received by all the factors of production.
3) **Sales Proceeds Minus Cost Approach:** According to this approach, national income is defined as the aggregate sales proceeds minus cost.

Modern Approach To National Income: Modern economists consider three aspects of national income and emphasise the fundamental identity between these three aspects. These three aspects are: (a) product aspect (b) income aspect, and (c) expenditure aspect. In one of the publications of the United Nations, national income has been defined in three ways:

a) 'Net National Product' as the aggregate of the net value added in all branches of economic activity during a specified period, together with the net income from abroad.
b) 'Sum of the distributive shares' as the aggregate of national income accrued to the factors of production (in the form of wages, profits, interest, rent, etc) in a specified period.
c) 'Net National Expenditure' as the sum of expenditure on final consumption of goods and services, plus domestic and foreign investments.

Modern economists consider national income as a flow of output, income and expenditure, When goods are produced by the firms, the factors of production are paid incomes in the form of wages, profits, interest, rent, etc. These income receipts are spent by the household sector on consumption goods and their savings are mobilised by the producers for investment spending. Thus, there is a circular flow of production, income and expenditure, Obviously, income, output and expenditure flows are always equal per unit of time. Thus, there is a tripple identity:

Output = Income = Expenditure.



CHECK YOUR PROGRESS

Q.1: What is meant by national income?

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Q.2: Give a traditional definition of national income.

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Q.3: What are the Keynesian approaches to national income?

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Q.4: What are the aspects of modern approach to national income?

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14.4 GROSS NATIONAL PRODUCT(GNP), NET NATIONAL PRODUCT(NNP), PER CAPITA INCOME(PCI), DISPOSABLE INCOME

Gross National Product (GNP): When we add the net factor income from abroad to the figure of GDP we get the Gross National Product of the country. The net factor income from abroad refers to the surplus of factor income earned from foreign countries by the residents of the country over the factor income earned by the foreigners within the domestic territory of the country. This surplus may be positive or negative. Thus, we may write:

GNP = GDP + Net Factor Income from Abroad

Net National Product (NNP) : During the process of production a part of the capital assets get used up. This is called wear and tear of capital or consumption of capital or simply the depreciation of capital. In order to find out the net addition made to the national output we must deduct this depreciation from the GNP. Thus, NNP of a country is its GNP less depreciation.

NNP = GNP- Depreciation

The NNP of a country may be viewed in two alternative ways. It may be seen as a sum of payments made to the factors of production engaged in the production of the national output or as the market value of the national output. The former will give us NNP at factor cost and the latter will give us NNP at market price. In a country where Government plays no role in the market, there cannot be any difference between the two. But with government intervention a discrepancy between the two arises . More specifically, in the NNP at market price, indirect tax gets included in the valuation of the product, while subsidies get left out. Therefore, indirect taxes and subsidies account for the differences between the two. We can obtain NNP at factor cost from NNP at market price by deducting indirect taxes but adding subsidies to it.

NNP at factor cost = NNP at market price – Indirect Taxes + Subsidies

We may note here that NNP at factor cost is popularly known as the National Income of a country.

The relation among the above concepts of national income can be shown with the help of the following figure 14.1:

Fig.14.1: Diagrammatic Representation of Different Concepts

<table>
<tr><td>Net Factor Income from Abroad</td><td rowspan="3">GNP</td><td>Depreciation</td><td></td></tr>
<tr><td rowspan="2">GDP</td><td rowspan="2">NNP

(at market price)</td><td>Indirect Tax-Subsidies</td></tr>
<tr><td>N I</td></tr>
</table>



ACTIVITY 14.1

From the above figure 14.1, relate the different aggregates of national income.

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Per Capita Income: Per Capita Income is a measure of the amount of money that is being earned per person in a certain area. Income per capita can apply to the average per-person income for a city, region or country and is used as a means of evaluating the living conditions and quality of life in different areas. It can be calculated for a country by dividing the country's national income by its population.

Per Capita Income does not always give an accurate representation of the quality of life due to the function's inability to account for skewed data. For instance, if there is an area where 50 people are making $1 million per year and 1,000 people making $100 per year the per capita income is $47,714, but that does not give a true picture of the living conditions of the entire population.

Personal Income: The entire national income of the country does not get distributed among the factors of production. At the same time there are certain incomes that accrue to the residents of the country but are not included in the national income. Consequently certain additions and subtractions are necessary to get the figure of personal income from national income. This is elaborated below:

Personal Income = National Income – Undistributed Income + Transfer Payments



LET US KNOW

Undistributed income includes undistributed dividends by the corporate sector, corporate tax liabilities and social insurance contributions made by the factors of production.

Transfer payments are those payments that do not correspond to any productive work. Such incomes of the residents are not generated by any productive activity but simply transferred from one source to another. Such payments usually include old age pensions, scholarships given to students, unemployment allowances, relief and so on.

Personal Disposable Income: This is that portion of the personal income of the residents of the country that is at its command or disposal. It is this income that reflects the purchasing power of the community. This is arrived at by deducting direct personal tax obligations such as income tax and other miscellaneous taxes (e.g., sanitation tax) of the income earners. Thus,

Personal Disposable Income = Personal Income – Direct Taxes paid by the households – Miscellaneous receipts of the government

Private Income: Factor income earned by the private enterprises and workers within the domestic territory and foreign countries and current transfers from government and net transfers from outside the country constitute the Private Income of the residents of a country.

Private Income = Factor income from net domestic product earned by the private sector + net factor income from abroad Current transfers from the government + Net other transfers from foreign countries.



CHECK YOUR PROGRESS

Q.5: Mention the different components under "domestic territory" of a country? (Answer in about 60 words).

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Q.6: Can the GDP and GNP of a country be equal? If yes, when?

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Q.7: State the relation between NNP at factor cost and NNP at market price.(Answer in about 20 words)

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Q.8: Why does Personal Income differ from National Income? (Answer in about 30 words)

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14.5 IMPORTANCE OF NATIONAL INCOME

The study of national income statistics is very important. It helps in analysing the actual performance of the economy and in preparing future policies. The increasing importance of the study of the national income is due to the following reasons :

- **Index of Economic Structure:** An important index of the economic structure of a country is national income estimates. National income estimates tell us how incomes are earned and spent in the country. The knowledge about the relative importance of various sectors of the economy and their contribution to national income are also provided by national income estimates.
- **Economic Welfare Indicator:** National income figures are an indicator of the economic welfare of the people of a country. With the help of these figures, we can compare the standard of living of the people of various countries. We can also compare the standard of living of the people of the same country at different times.
- **Measures Aggregate Yield:** National income statistics measure the aggregate yield of the economy.
- **Tools for Economic Planning:** National income estimates are the tools for economic planning. Because for framing an economic plan, a prior knowledge of the trends in national income is required.
- **Provide Information about Inflationary and Deflationary Gaps:** National income estimates provide information about inflationary and deflationary gaps in the economy. National income estimates also assist in formulating anti-inflationary and anti-deflationary policies.
- **Helpful in the Allocation of Burden of International Payments:** National income estimates help in allocating the burden of international payments among different nations.
- **Determination of Subscription and Quotas:** National income estimates enable us to determine the subscriptions and quotas of different countries to international organisations like IMF, IBRD, etc.

- **Help in the Determination of Grants-in-Aid:** National income estimates help the federal government to determine the amount of grants-in-aid to be provided to the state governments.
- **Basis of Budgetary Policies:** On the basis of national income statistics, government prepare their budgets and make necessary changes in the taxation and borrowing policies.
- **Importance in Defence and Development:** National income estimates help in determining the proper allocation of national product between defence and development of the economy.
- **Depreciation Provision:** National income estimates guide us to make provision for reasonable depreciation to maintain the capital stock of the country.
- **Helpful to the Government:** National income estimates help the government in making future plans for the expansion of public sectors.
- **Important for Less Developed or Developing Countries:** National income estimates throw light on the importance and backwardness of various sectors of the less developed or developing economics and help in formulating appropriate economic polices.
- **Help in Economic Analysis:** National income estimates help us in analysing the functioning, growth and anatomy of the economy.
- **Basis of Social Accounting:** The basis of social accounting or national income accounting is the national income figures.



CHECK YOUR PROGRESS

Q.9: How national income figures can be an indicator of economic welfare?

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Q.10: Mention how national income estimates are helpful for the government?

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Q.11: How national income estimates are helpful in formulating appropriate economic policies?

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14.6 LET US SUM UP

- National Income means the total income of the nation, The aggregate economic performance of the whole economy is measured by the national income data.
- National Income refers to the money value of all final goods and services produced by the normal residents of a country while working both within or outside the domestic territory of a country in an accounting year.
- National Income also includes net factor income from abroad.
- Keynes has suggested three approaches to national income:
  1) **Income-Expenditure Approach:** According to this approach, national income is equal to total expenditure on consumption and investment goods.
  2) **Factor-Income Approach:** According to this approach, national income is measured as the aggregate of incomes received by all the factors of production.
  3) **Sales Proceeds Minus Cost Approach:** According to this approach, national income is defined as the aggregate sales proceeds minus cost.

- Modern economists consider three aspects of national income and emphasise the fundamental identity between these three aspects. These three aspects are: (a) product aspect (b) income aspect, and (c) expenditure aspect.
- When we add the net factor income from abroad to the figure of GDP we get the Gross National Product of the country.
- NNP of a country is its GNP less depreciation.
- Per Capita Income is a measure of the amount of money that is being earned per person in a certain area.
- Transfer payments are those payments that do not correspond to any productive work.
- Personal Disposable Income is that portion of the personal income of the residents of the country that is at its command or disposal.
- Factor income earned by the private enterprises and workers within the domestic territory and foreign countries and current transfers from government and net transfers from outside the country constitute the Private Income of the residents of a country.
- The study of national income statistics is very important. It helps in analysing the actual performance of the economy and in preparing future policies.



14.7 FURTHER READING

1) Bakerman, W. (1993); *An Introduction to National Income Analysis*; 3rd Ed., New Delhi: Universal Book Stall.
2) NCERT (2007); *Introductory Macroeconomics* (Textbook in Economics for Class XII); New Delhi.
3) Rana, K.C. & Verma, K.N. (2009); *Macroeconomic Analysis*; Jalandhar: Vishal Publications.



14.8 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: National Income means the total income of the nation, The aggregate economic performance of the whole economy is measured by the national income data.

National Income refers to the money value of all final goods and services produced by the normal residents of a country while working both within or outside the domestic territory of a country in an accounting year. National Income also includes net factor income from abroad.

Ans. to Q. No. 2: A traditional definition of National Income is given by Marshall. According to him, "The labour and capital of a country acting on its natural resources produce annually a certain net aggregate of commodities, material and immaterial including services of all kinds... ...This is the true net annual income or revenue of the country or national dividend."

Ans. to Q. No. 3: Keynes has suggested three approaches to national income:

1) **Income-Expenditure Approach:** According to this approach, national income is equal to total expenditure on consumption and investment goods.
2) **Factor-Income Approach:** According to this approach, national income is measured as the aggregate of incomes received by all the factors of production.
3) **Sales Proceeds Minus Cost Approach:** According to this approach, national income is defined as the aggregate sales proceeds minus cost.

Ans. to Q. No. 4: Modern economists consider three aspects of national income and emphasise the fundamental identity between these three aspects. These three aspects are: (a) product aspect (b) income aspect, and (c) expenditure aspect.

Ans. to Q. No. 5: Domestic Territory of a country includes:

a) Area within the political frontier, inclusive of territorial waters;

b) Ships and aircrafts operated anywhere in the world by its residents;

c) Trawlers, oil and gas rigs, floating platforms operated by its residents in the international waters or used for the purpose of mining etc.

d) Consulates, embassies and defense establishments of the country on foreign shores.

Ans. to Q. No. 6: Yes, GDP and GNP of a country can be equal only when the net factor income from abroad is nil.

Ans. to Q. No. 7: The relationship between NNP at factor price and NNP at market price can be shown as: NNP at factor cost = NNP at market price – Indirect Tax + Subsidies

Ans. to Q. No. 8: Personal income differs from national income because:

i) not all incomes are distributed among the factors of production, and

ii) individuals get transfer payments which are not included in national income

Ans. to Q. No. 9: National income figures are an indicator of the economic welfare of the people of a country. With the help of these figures, we can compare the standard of living of the people of various countries. We can also compare the standard of living of the people of the same country at different times.

Ans. to Q. No. 10: National income estimates help the government in making future plans for the expansion of public sectors.

Ans. to Q. No. 11: National income estimates throw light on the importance and backwardness of various sectors of the less developed or developing economics and help in formulating appropriate economic polices.



14.9 MODEL QUESTIONS

A) Short Questions (Answer each question in about 100-150 words):

Q.1: What is meant by national income? State briefly the Keynesian approach to national income.

Q.2: Distinguish between:

a) Gross National Product and Net National Product

b) National Income at Market Prices and National Income at Factor Cost.

c) Personal Income and Personal Disposable Income.

d) Traditional Approach and Modern Approach of national income

Q.3: Explain the following concepts:

a) National Income.

b) Personal Income.

c) Disposable Income.

d) Value Added Method.

B) Essay-Type Questions (Answer each question in about 300-500 words):

Q.1: Discuss the modern approach to national income. Can we say it as an improvement over the traditional approach. Give reasons.

Q.2: Discuss the importance of national income.

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UNIT 15: NATIONAL INCOME ACCOUNTING AND CIRCULAR FLOW OF INCOME

UNIT STRUCTURE

15.1 Learning Objectives
15.2 Introduction
15.3 Methods of National Income Measurement
15.4 Difficulties in Measurement of National Income
15.5 Circular Flow of National Income
15.6 Let Us Sum Up
15.7 Further Reading
15.8 Answers to Check Your Progress
15.9 Model Questions

15.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- explain the various methods of national income measurement
- state the difficulties in measurement of national income
- give the idea of circular flow of national income.

15.2 INTRODUCTION

This unit is concerned with the methods of national income measurement. There are various methods by which we can measure national income. These methods are Output Approach, Income Approach and Expenditure Approach. We shall discuss the three approaches briefly in this unit. Moreover, the measurement of national income is not an easy process. There are various difficullties associated with it. These difficulties will also be discussed. Finally the idea of circular flow of national income will be discussed.

15.3 METHODS OF NATIONAL INCOME MEASUREMENT

The income of a country can be viewed from three different angles. It can be viewed from the side of production, distribution or dispension. This necessitates different methods and data for the calculation of national income. The basic idea about these methods are presented in this section.

There are three approaches to the measurement of National Income. These are:

A) Output Approach

B) Income Approach

C) Expenditure Approach

A) Output Approach: In this approach the aggregate value added in the different sectors of the economy is worked out. Here the national income accounting authority calculate the total value of the output produced in the economy during the accounting period by taking into account the values added at each stage of production in the various sectors of the economy. Such a method is known as the *Value Added Method*. This method involves the following steps:

i) Identification of the producing enterprises and classification of them into various industrial sectors according to their activities;

ii) Estimation of the net value added by each producing enterprise, industrial sector and then adding up of the net values created by all the sectors for the economy as a whole.

The value added method may be illustrated with the help of a simple example. Let us take Bread as the final product and see how values are added at different stages of production until it reaches the hands of the ultimate consumers. This has been shown in the following table 15.1.

Table 15.1: Product : Bread (Value in Rs. Crore)

Item	Buyer	Seller	Value	Value Added
Wheat	Flour Mills	Farmers	100	100
Flour	Bakeries	Flour Mills	150	50
Bread	Wholesalers	Bakeries	175	25
Bread	Retailers	Wholesalers	200	25
Bread	Consumers	Retailers	220	20
	Total Value Added			**220**

B) Income Approach: Also known as the Income Method, in this approach the sum of the incomes derived from different economic activities is estimated. Steps involved in this approach are as follows :

i) Identification and classification of the producing enterprises that employ factor inputs (i.e enterprises in the Primary , Secondary and Tertiary Sectors);

ii) Classification of factor payments (i.e wages, interest, profit etc.);

iii) Estimation of factor payments and aggregation of the same for the economy as a whole.

When we add the factor payments in all the industrial sectors we get the domestic factor income. Then by adding the net factor income from abroad to it we get the National Income of the country. Thus, **National Income**: Compensation to the employees + Mixed income of the self employed + All kinds of rent including imputed rent + All interest payments + All profits + Net factor income from abroad.

C) Expenditure Approach: The expenditure approach aggregates the consumption and investment expenditures occurring in the country during the accounting period to obtain the domestic expenditure at current price. It takes into account only the final purchases. The final expenditure on GDP consists of private final consumption expenditure, government final expenditure, gross fixed capital formation, change in stocks/inventories (unsold stock of goods consisting of raw materials, semi finished and finished products during the accounting period) and net exports of goods and services. Therefore,

GDP at market price = Private consumption expenditure + Private Investment expenditure + Government expenditure + Exports – Imports

GNP at market price = *GDP at market price* + Net factor income from abroad

National Income = GNP at market price -Depreciation – Indirect Taxes + Subsidies

From the above we can observe that the three approaches look at the three different phases of the circular flow of national income. These phases are- production, distribution and disposition. Although each approach requires different data and methods, they give rise to identical results as they estimate the same entity. The choice of a particular method depends on the nature of the sector and availability of data.

Important Inclusions and Exclusions : In the calculation of national income we need to be careful to include certain incomes/activities and exclude some others. Some of the important inclusions and exclusions are noted below :

Inclusions:

i) Value of production for self consumption;
ii) Own account production of fixed assets by government, enterprise and household;
iii) Imputed rent of owner occupied house;
iv) Purchase of new house by consuming households;
v) Work in progress at the site of production;
vi) Capital repairs like major alterations of the old buildings or adding a new room to the existing building;

Exclusions:

i) Transfer payments;
ii) Windfall gains and losses;
iii) Corporate tax and income tax should not be included separately;
iv) Duties and taxes paid from wealth or past savings;

v) All expenditures on the purchase of old shares and bonds from other people or new shares and bonds from producing enterprises; and

vi) All expenditures on intermediate goods and services.



CHECK YOUR PROGRESS

Q.1: State the components of National Income under expenditure approach. (Answer in about 30 words)

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Q.2: State four important exclusions from the calculation of national income.

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Q.3: Mention the steps to arrive at National Income from the GDP of a country.

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ACTIVITY 15.3

Illustrate the Value Added method of accounting giving your own example.

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15.4 DIFFICULTIES IN MEASUREMENT OF NATIONAL INCOME

There are many difficulties in measuring national income of a country. Some of these difficulties are discussed below:

Non Monetary Transactions: The first problem in National Income accounting relates to the treatment of non-monetary transactions such as the services of housewives to the members of the families. For example, if a man employs a maid servant for household work, payment to her will appear as a positive item in the national income. But, if the man were to marry the maid servant, she would be performing the same job as before but without any extra payments. In this case, the national income will decrease as her services performed remains the same as before.

Problem of Double Counting: Only final goods and services should be included in the national income accounting. But, it is very difficult to distinguish between final goods and intermediate goods and services. The difference between final goods and services and intermediate goods and services depends on the use of those goods and services. If by mistake one good or service is calculated in the national income estimates at its intermediate stage and it is calculated again at its final stage it is called as double counting. So there are possibilities of double counting in national income estimates.

The Underground Economy: The underground economy consists of illegal and uncleared transactions where the goods and services are themselves illegal such as drugs, gambling, smuggling, and prostitution. Since, these incomes are not included in the national income, the national income seems to be less than the actual amount as they are not included in the accounting.

Petty Production: There are large numbers of petty producers and it is difficult to include their production in national income because they do not maintain any account.

Public Services: Another problem is whether the public services like general administration, police, army services, should be included in national income or not. It is very difficult to evaluate such services.

Transfer Payments: In economics, a transfer payment (or government transfer or simply transfer) is a redistribution of income in the market system. These payments are considered to be non-exhaustive because they do not directly absorb resources or create output. In other words, the transfer is made without any exchange of goods or services. Individuals get pension, unemployment allowance and interest on public loans etc. are examples of transfer payments. But these payments creates difficulty in the measurement of national income as they are not given for any production or service in the present period. These earnings are a part of individual income and they are also a part of government expenditures.

Capital Gains or Loss: When the market prices of capital assets change and the owners make capital gains or loss, such gains or losses are not included in national income.

Price Changes: National income is the money value of goods and services. Money value depends on market price, which often changes. The problem of changing prices is one of the major problems of national income accounting. Due to price rises the value of national income for particular year appears to increase even when the production is decreasing.

Wages and Salaries paid in Kind: Additional payments made in kind may not be included in national income. But, the facilities given in kind are calculated as the supplements of wages and salaries on the income side.

Illiteracy and Ignorance: Due to illiteracy and ignorance of many section of people; information regarding household and individual income are not available to a large extent. This is specially visible in case of small scale agriculture and other cottage industry or business. As a result, there arises immense difficulties in the measurement of national income.

Apart from these, there are some other aspects or segments where national income accounting face difficulties. These are:

Second hand transactions;

Environment damages;

Calculation of depreciation;

Inadequate and unreliable statistics; etc.



CHECK YOUR PROGRESS

Q.4: What is the problem of double counting?

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Q.5: What are transfer payments?

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Q.6: How price change affect national income accounting?

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15.5 CIRCULAR FLOW OF NATIONAL INCOME

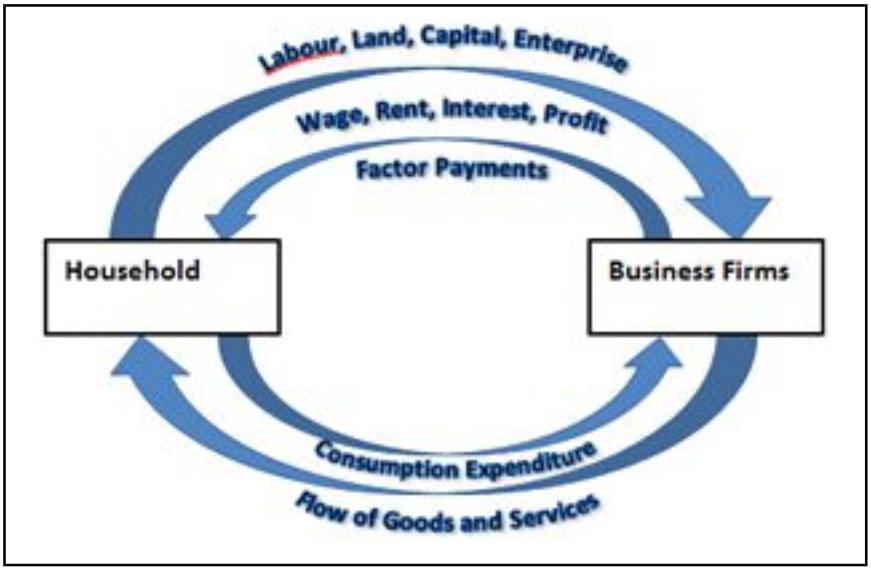
The circular flow of income or circular flow is a model of the economy in which the major exchanges are represented as flows of money, goods and services, etc. between economic agents. The flows of money and goods exchanges in a closed circuit and correspond in value, but run in the opposite direction. The circular flow analysis is the basis of national accounts and hence of macroeconomics.

The modern economy is a monetary economy. In the modern economy, money is used in the process of exchange. Money has facilitated the process of exchange and has removed the difficulties of the barter system. Thus money acts as a medium of exchange. The households supply the economic resources or factors to the productive firms and receive in return the payments in terms of money. It is thus clear that, in the monetary economy, there will be flows of money corresponding to the flows of

economic resources and the flows of goods and services. But each money flow is in opposite direction to the real flow.

Circular Income Flow in a Two Sectors Economy: Real flows of resources, goods and services have been shown in Fig. 15.1. In the upper loop of this figure, the resources such as land, capital and entrepreneurial ability flow from households to business firms as indicated by the arrow mark.

Fig. 15.1: Circular Flow of Income in a simple two sector Economy



In opposite direction to this, money flows from business firms to the households as factor payments such as wages, rent, interest and profits. In the lower part of the figure, money flows from households to firms as consumption expenditure made by the households on the goods and services produced by the firms, while the flow of goods and services is in opposite direction from business firms to households.

Thus we see that money flows from business firms to households as factor payments and then it flows from households to firms. Thus there is, in fact, a circular flow of money or income. This circular flow of money will continue indefinitely week by week and year by year. This is how the economy functions. It may, however, be pointed out that this flow of money income will not always remain the same in volume.

In other words, the flow of money income will not always continue at a constant level. In the year of depression, the circular flow of money

income will contract, i.e., will become lesser in volume, and in years of prosperity it will expand, i.e., will become greater in volume.

This is so because the flow of money is a measure of national income and will, therefore, change with changes in the national income. In year of depression, when national income is low, the volume of the flow of money will be small and in years of prosperity when the level of national income is quite high, the flow of money will be large.

In order to make our analysis simple and to explain the central issues involved, we take many assumptions. In the first place, we assume that neither the households save from their incomes, nor the firms save from their profits. We further assume that the government does not play any part in the national economy.

In other words, the government does not receive any money from the people by way of taxes, nor does the government spend any money on the goods and services produced by the firms or on the resources and services supplied by the households. Thirdly, we assume that the economy neither imports goods and services, nor exports anything.

In other words, in our above analysis we have not taken into account the role of foreign trade. In fact we have explained above the flow of money that occurs in the functioning of a closed economy with no savings and no role of government.



CHECK YOUR PROGRESS

Q.7: What is a circular flow of income?

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Q.8: What will happen to the circular flow of income in the year of depression?

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15.6 LET US SUM UP

- There are three approaches to the measurement of National Income. These are: Output Approach, Income Approach, Expenditure Approach.
- In output approach, the national income accounting authority calculate the total value of the output produced in the economy during the accounting period by taking into account the values added at each stage of production in the various sectors of the economy. Such a method is known as the *Value Added Method*.
- In Income approach the sum of the incomes derived from different economic activities is estimated to get the national income.
- The expenditure approach aggregates the consumption and investment expenditures occurring in the country during the accounting period to obtain the domestic expenditure at current price. It takes into account only the final purchases.
- In the calculation of national income we need to be careful to include certain incomes/activities and exclude some others.
- There are many difficulties in measuring national income of a country.
- The circular flow of income or circular flow is a model of the economy in which the major exchanges are represented as flows of money, goods and services, etc. between economic agents.



15.7 FURTHER READING

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15.8 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: The final expenditure on GDP consists of private final consumption expenditure, government final expenditure, gross fixed capital formation, change in stocks/inventories (unsold stock of goods consisting of raw materials, semi finished and finished products during the accounting period) and net exports of goods and services.

Ans. to Q. No. 2: Important exclusions from the calculations of national income are

i) Transfer payments;
ii) Windfall gains and losses;
iii) Corporate tax and income tax should not be included separately;
iv) Duties and taxes paid from wealth or past savings;
v) All expenditures on the purchase of old shares and bonds from other people or new shares and bonds from producing enterprises; and
vi) All expenditures on intermediate goods and services.

Ans. to Q. No. 3: The steps to arrive at National Income from the GDP of a country are as follows:

GDP at Market Price = Private consumption expenditure + Private Investment expenditure + Government expenditure + Exports – Imports

GNP at Market Price = *GDP at market price* + Net factor income from abroad

National Income = GNP at market price -Depreciation – Indirect Taxes + Subsidies

Ans. to Q. No. 4: Only final goods and services should be included in the national income accounting. But, it is very difficult to distinguish between final goods and intermediate goods and services. The difference between final goods and services and intermediate goods

and services depends on the use of those goods and services. If by mistake one good or service is calculated in the national income estimates at its intermediate stage and it is calculated again at its final stage it is called as double counting. So there are possibilities of double counting in national income estimates.

Ans. to Q. No. 5: In economics, a transfer payment (or government transfer or simply transfer) is a redistribution of income in the market system. These payments are considered to be non-exhaustive because they do not directly absorb resources or create output. In other words, the transfer is made without any exchange of goods or services. Individual get pension, unemployment allowance and interest on public loans etc. are examples of transfer payments.

Ans. to Q. No. 6: The problem of changing prices is one of the major problems of national income accounting. Due to price rises the value of national income for a particular year appears to increase even when the production is decreasing.

Ans. to Q. No. 7: The circular flow of income or circular flow is a model of the economy in which the major exchanges are represented as flows of money, goods and services, etc. between economic agents. The flows of money and goods exchanges in a closed circuit and correspond in value, but run in the opposite direction. The circular flow analysis is the basis of national accounts and hence of macroeconomics.

Ans. to Q. No. 8: In the year of depression, the circular flow of money income will contract, i.e., will become lesser in volume.



15.9 MODEL QUESTIONS

A) Short Questions (Answer each question in about 100-150 words):

Q.1: Discuss briefly the output approach of national income estimates.

Q.2: Mention the important inclusions and exclusions of national income estimates.

Q.3: Distinguish between income approach and expenditure approach of national income estimates.

B) Essay-Type Questions (Answer each question in about 300-500 words):

Q.1: Discuss all the three approaches of national income estimates with their limitations.

Q.2: Discuss the difficulties arise in case of national income estimates.

Q.3: Discuss the circular flow of national income with suitable diagram.

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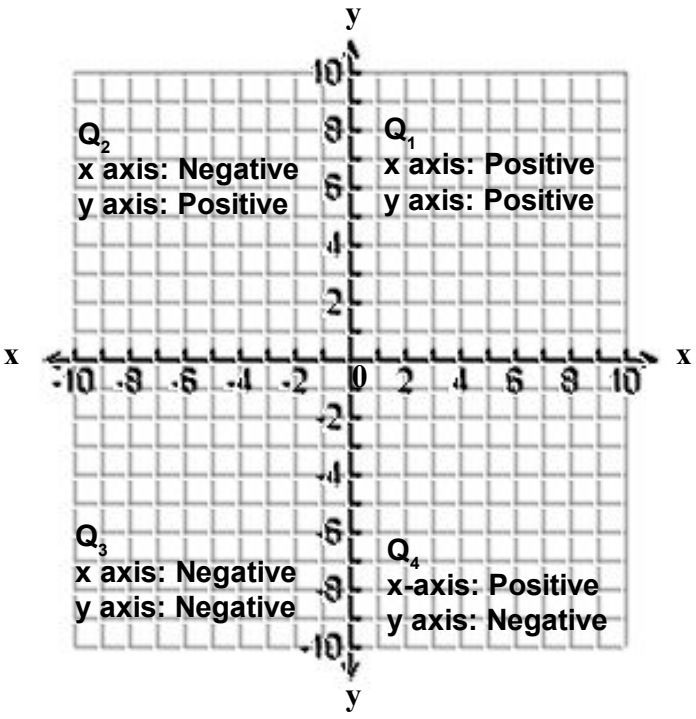
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APPENDIX - A
(GRAPHICAL REPRESENTATION IN ECONOMICS)

We have already seen that many of the concepts in Economics have been presented using tables and figures. Use of tables and figures make explanation of the concepts in Economics easier. For this it is very much necessary to interprete these tables and figures correctly. Otherwise our interpretations may be misunderstood and this may land us in trouble. Compared to tables, figures may be confusing, and complex. However, the utility of figures are in many cases more than tables. So we should interpret them correctly. This will be helpful in interpreting the theories better and fruitful. For this reason, this appendix has been included to let you know the basics of figures used in Economics.

The Graph Paper: Before discussing the different concepts of graphical analysis, it will be better for us to know the general format of a graph paper. Figures in Economics are drawn based on the general principles of Graphical representation. A graph paper looks like the following figure A.1

Figure A.1: A Graph Paper





The point '0' as has been seen in the mid-point of intersection of both the axes (x axis and y axis) is called as point of origin. Both variables are equal to zero at the point of origin.

In the above graph A.1 it can be seen that two lines: one vertical line (yy) and the other horizontal line (xx). The vertical line yy is called as y-axis while the horizontal line xx is called as x-axis. These lines intersect at the point 0. This is called the point of origin. At this point of origin, the curves make 90^0 angles and divides the entire graph paper in four parts: called as "Quadrant".

Thus, in the first quandrant Q_1 : values of x are positive, y also positive; in Q_2 : values of x are negative while values of y positive; in Q_3 : values of x negative, y also negative; and in the fourth quadrant i.e., Q_4: values of x positive while values of y are negative.

Generally, most of the figures in Economics are of two dimensions: thus uses the Q_1 quadrant of the graph, where both the values (x & y) are positive.

What do we show in a figure? In a figure, we show functional relationship between ***variables.*** It is to be noted that a functional relationship can be expressed in words, in a numerical schedule, in an equation, or in a graph. Let us consider a functional relationship expressed in a mathematical equation between two variables, say price and demand:

D = f(P); where, *D* refers to demand, *P* refers to price and *f* represents a functional relationship between the two.

(Please note: The above function is read as: 'Demand is a function of price'.)

However, in this appendix we shall not go deep into the different aspects of this mathematical relationships between the variables.



A **variable** is something measured by a number value of which varies. It used to analyse what happens to other things when the value of that number changes (varies).

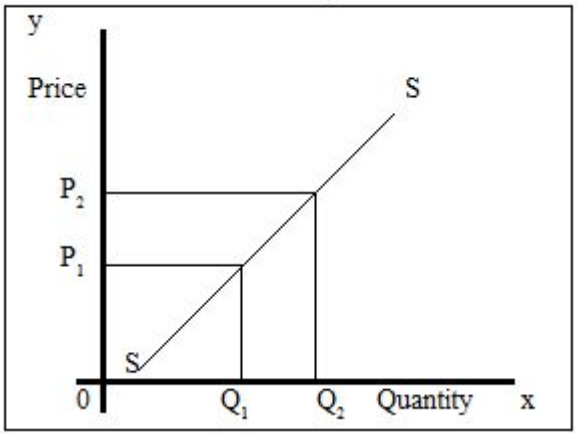


A **Dependent variable** is the one, which lies on the left hand side of the equality sign in an equation. It is called 'dependent' as value is 'dependent' or determined by those of the 'independent' or 'explanatory' variables on the right hand side.



The value of a dependent variables depends on the value of the independent variable. In general, in graphs in Economics, the dependent variable is shown on the x-axis, while the independent variable is shown on the y-axis.

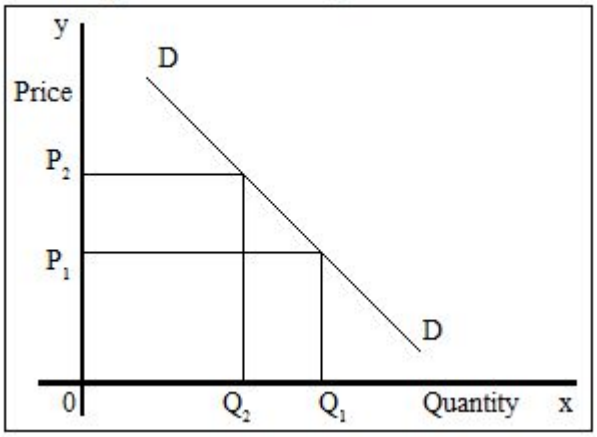
Figure A.2: Positive Relationship Between Price & Supply



The basic idea of a function is that it defines the relationship between two variables. In the last three units, we have seen that demand depends on price. Higher the price of a commodity, lower the demand for it; and vice versa. Thus, there exist a certain relationship between price and demand, when one goes up the other comes down. On the contrary, when price of a commodity increases, its supply also increases. Thus, supply and price move in the same direction. Such relationship

- relationship between demand and price, supply and price can be expressed in mathematical terms. One of the advantages of the functional relationship is that it defines which variable is ***dependent***, and which one is ***independent***. In case of demand and supply, we have seen that their movement depends on price. Thus, demand and supply are dependent variables, while price is independent variable.

Figure A.3: Negative Relationship between Price & Demand





Opposite relationship between two variables (say, price & demand), is also called negative or inverse relationship.

We have already distcussed that there are distinctions in relationship among the different vairables in economics. While price and demand moves in the opposite direction, price and supply moves in the same direction. These relationships among the varibles in fact determine the shape of the curves. In the following, we shall discuss about the important types of relationships among the variables.

Positive and Negative Relationships: Relationships between two variables is said to be positive, if both move in the same direction. Thus, relationship between price and supply show a positive relationship. A positive relationship is depicted with the help of the following figure A.2.

In the alongside figure A.2, price has been depicted on the y-axis and quantity has been depicted on the x- axis. It can be seen from the figure that as price goes up from P_1 to P_2, quantities supplied also goes up from Q_1 to Q_2. Thus the supply curve SS takes a positive movement depicting the positive relationship between price and supply.

Figure A.4

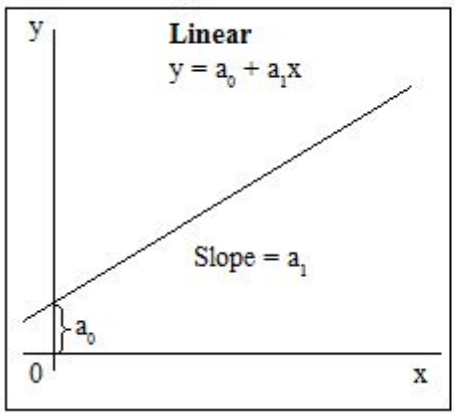
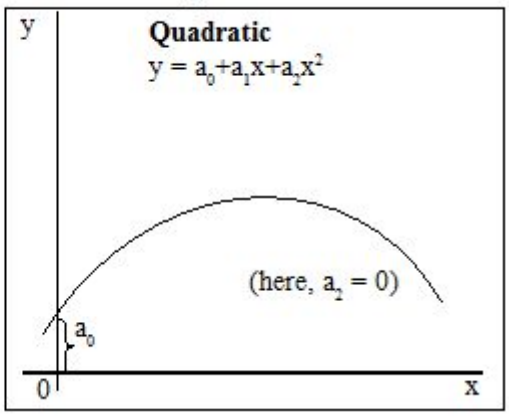


Figure A.5



Again, we have already discussed that price and demand move in the **opposite** direction. This makes the slope of the demand curve downward sloping as has been depicted in the alongside figure A.3. It can be seen from the figure that as price increases from P_1 to P_2, quantities demanded decrease from Q_1 to Q_2. Thus the demand curve DD takes a downward movement, depicting the negative or inverse relationship between price and demand.

Linear and Non-linear Curves: So far in the above, we have seen that the demand and the supply curves are straight lines. Such curves are called linear curves. Linear curves assume that the two variables (say price and demand or price and supply) change proportionately along the curve. For example, in a linear demand curve, if change of one rupee causes change in demand by 50 units, then change of two rupees will cause change in demand by 100 units. But in a non-linear demand curve, this change is not proportionate. And this is more practical and realistic. However, in most part of our discussion in this first year course, we shall use linear demand curves, for the sake of simplicity.

Shapes of Curves: Different types of mathematical functions result in different shapes of curves. Without going deeper into the mathematical functions, let us know the different shapes of curves and their names as depicted in the following figures.

Figure A.6

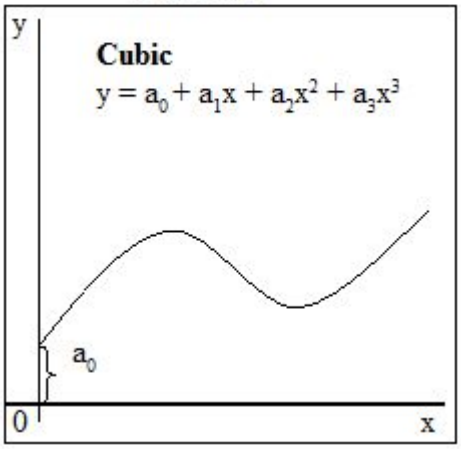


Figure A.7

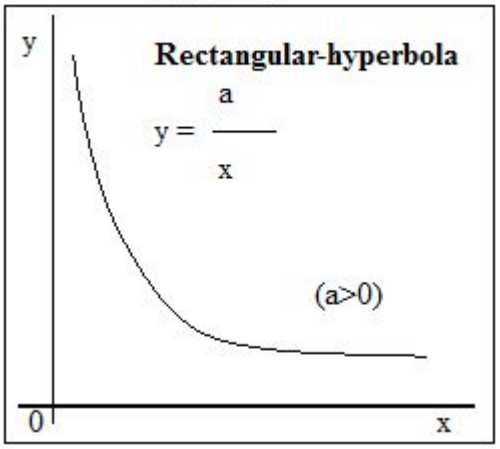


Figure A.8

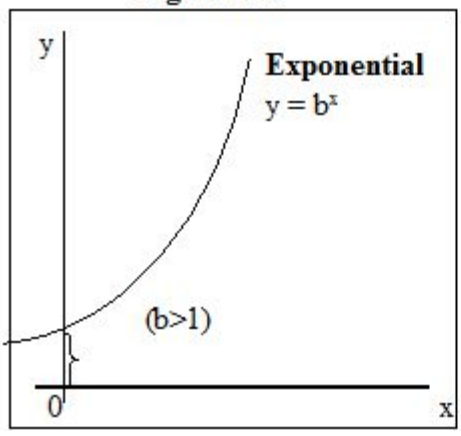
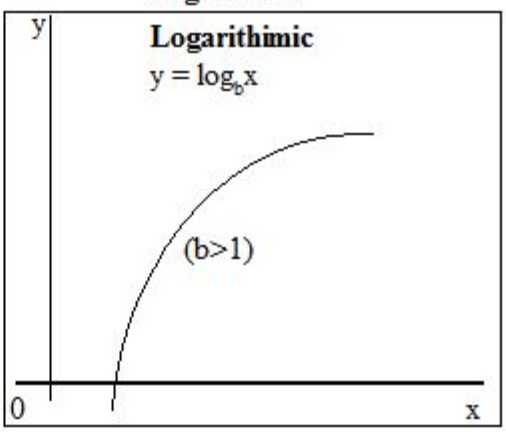


Figure A.9



Concept of Slope: We have seen in the above that different curves move in different shapes and direction. This movement of a curve is called 'slope'. Thus, slope means steepness of the curve. In a linear curve, this slope is measured in terms of proportion of RISE to RUN. Here, RISE represents change in quantity measured along the vertical axis and RUN refers to the change in quantity measured along the horizontal axis. This change may be either increase or decrease. Let us take the help of the following figure A.10 to clearly know the concept.

Figure A.10: Measurement of Slope of a Linear Curve

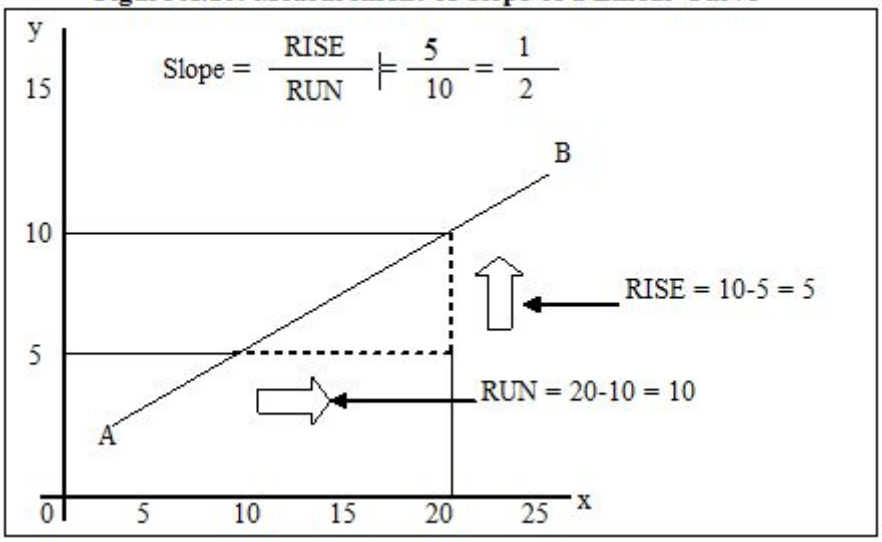
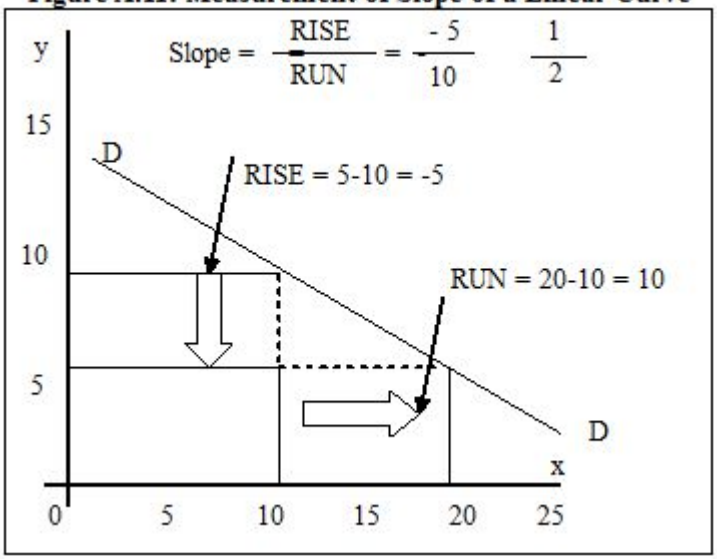
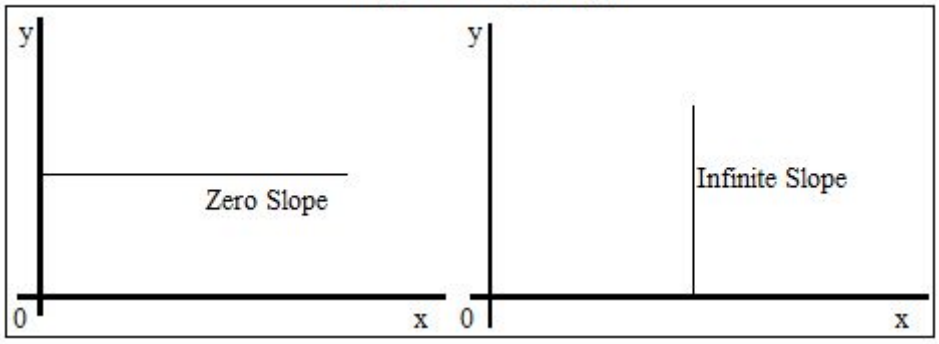


Figure A.11: Measurement of Slope of a Linear Curve



It can be seen from the above figure A.10 that the curve AB resembles the shape of a supply curve (upward rising) and depicts a positive slope. This slope will be however negative for a downard sloping curve, as has been shown in the following figure A.11.

Figure A.12 (a) & (b)



It is to be noted that in case of positive linear curve, the more the RISE of the curve, the higer will be slope. For example, in figure A.10, we can see that if the rise were 10 instead of 5, the slope of the curve would have been 1. Thus, it can be said that the flatter the positive linear curve (i.e., the more it moves away from the x axis) the more will be its slope. The opposite will be the case for the negatively sloped linear curve. The steeper the curve (more it comes near to the y-axis) the more will be the slope of the curve.

Now, let us consider the following two linear curves and their slopes as has been shown with the help of the alongside figures A.12 (a) and (b). From the figure it has been seen that a horizontal straight line (parallel to the x-axis) has no slope, while a vertically straight (parallel to the y-axis) has infinite slope.

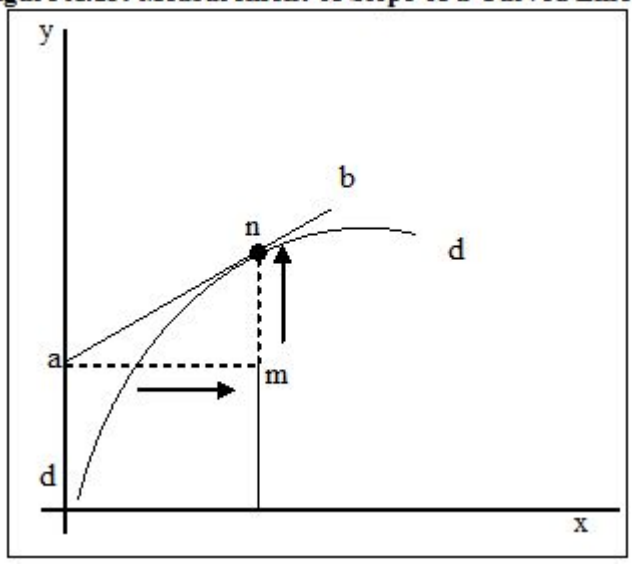
Slope of a Non-Linear Curve: We have seen that the slope of a straight line remains the same throughout the entire line. But this is not applicable in case of a curved line. Thus, the slope of a curved line varies at its different points. To measure the slope of a curve at a particular point, we need to draw a ***tangent*** on that point, and then measure the slope of that tangent. Thus, the slope of the tangent is the slope of the curve line at that point. It is to be remembered that we need to draw such tangents to measure the slopes of the curve at the respective points.



Tangent: A tangent is a straight line which touches a curve at a single point. The point whee the straight line touches the curve is called the point of tangency.

The measurement of slope of a curved line has been shown with the help of figure A.13. It can be seen that, after drawing the tangent at the particular point (where we want to measure the slope), the rest of the method is same with that of a straight line.

Figure A.13: Measurement of Slope of a Curved Line



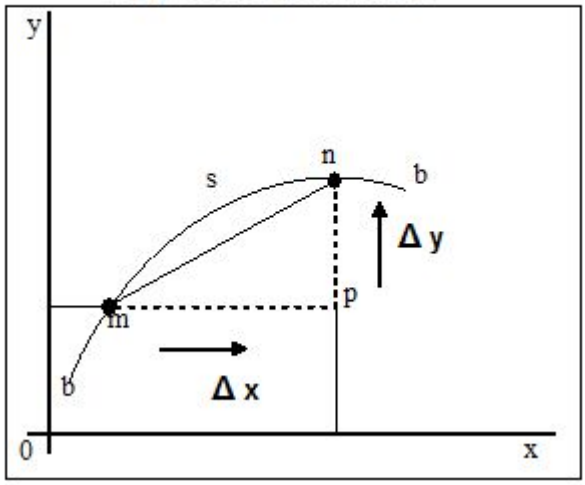
In the alongside figure A.13, slope of the dd curve at point n has been measured by drawing a tangent ab, which touches the point n of the curve. Slope of the tangent ab is:

$$\text{Slope} \quad \frac{\text{Rise}}{\text{Run}} \quad \frac{nm}{am}$$

Measurement of Slope of a Non-linear Curve Over a Range: In the above figure, we have measured the slope of the curve at a particular point n. Sometimes, it is required to calculate the slope

over a range of area in a non-linear curve. This has been explained with the help of the following figure A.14.

Figure A.14: Measurement of Slope of a Curved over a range in Non-linear curve



In the alongside figure A.14, we have measured the slope of the bb curve over the range (also called as '*arc*') msn. For this, we have to draw a straight line connecting the two end points viz., m and n. And to measure the slope of the mn line, we can follow the same process we did in case of figure A.13. Thus:

Slope of mn $= \frac{Rise}{Run} = \frac{\Delta x}{\Delta y} = \frac{np}{mp}$

Hence, the slope of the arc *msn* is: $\frac{\Delta x}{\Delta y} = \frac{np}{mp}$

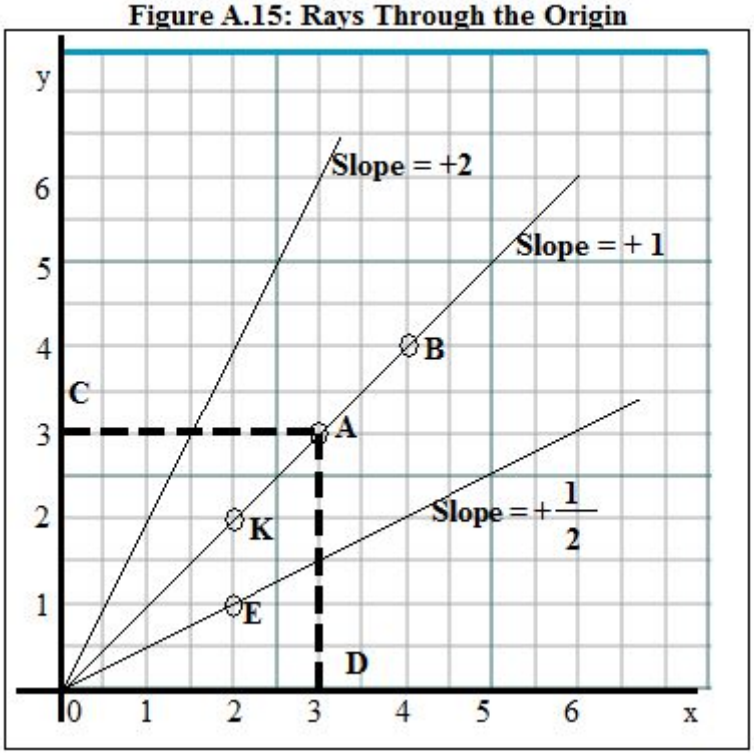


The symbol Δ (read as : 'Delta') means chane in. Thus, if we are given the values along the x and the y axes, we will be able to find the absolute value (i.e., slope) of the curve.

Rays Through the Origin and 45⁰ Lines:

Concept of Intercept: The point at which a linear curve cuts an axis is called the intercept of that axis. Thus, the point at which a linear curve cuts the vertical (y-axis) is called the y-intercept. Similarly, the x-intercept can also be defined. Now, lines, whose intercetp is zero are called rays through the origin. This has been shown in the next page.

Figure A.15: Rays Through the Origin



In the alongside figure A.15, slopes of the rays through origin have been shown. The line which make a slope of 1 also makes a 45⁰ angle with the horizontal axis. Hence, they are also called 45⁰ lines. A line above this 45⁰ line will have a slope greater than one. Similarly, a line below the 45⁰ line will possess slope less than 1. This can be easily seen from the figure.

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REFERENCES

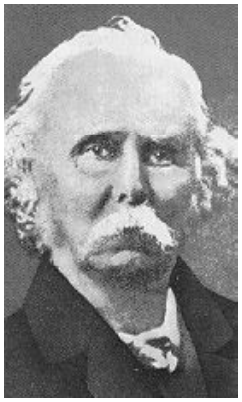
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APPENDIX - B
(LET'S KNOW THE GREAT ECONOMISTS)

In the last three units, we have already mentioned about some of the economists. We have mentioned about some more in the other five units in the second block. Therefore, in this appendix, we have made an attempt to present brief sketches of these economists. These economists have been presented in lexicographical order of their first names.



Adam Smith (1723-1790): Called as 'the Father of Economics', this philosopher and economist was born in Scotland. He was educated in Glasgow and Oxford universities. He became Professor of Moral Philosophy at the Glasgow University. Smith wrote on a wide area of subjects; Economics was just a part of it. His first published work "*The Theory of Moral Sentiments*" was published in 1759. He published "*An Enquiry Into the Nature and Causes of the Wealth of Nations*" on March 9, 1776. This book is considered the first modern work in the field of Economics. This book is considered as his "Magnum Opus" and is considered one of the most influential books on the subject.



Alfred Marshall (1842-1924): A British economist, Marshall spent most of his academic life as Professor in Economics at Cambridge University. His main contribution was in Microeconomics - the study of individual markets and industries. His most important publication was "*Priniciples of Economics*", published in 1890. In this book, Marshall emphasised that the price and output of a good are determined by both supply and demand. These supply and demand curves are like scissor blades that intersect at equilibrium. Marshall is also credited for the concepts of *'price elasticity of demand'* ,*'consumer's surplus' and 'producer's surplus'*. Marshall's other important works include: "*The Pure Theory of Foreign Trade*" (1879), "*Industry and Trade*" (1919), and "*Money, Credit and Commerce*" (1923).

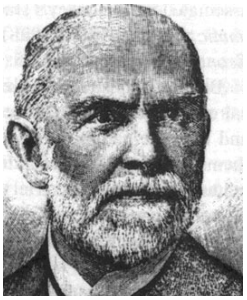


A. C. Pigou (1877-1959): Arthur Cecil Pigou, an English economist, succeeded Alfred Marshall to the Chair of Political Economy at Cambridge. He brought the concept social welfare into the scope of economic analysis. In particular, Pigou holds the credit for the famous distinction between private and social marginal products and costs and the idea that governments can, via a mixture of taxes and subsidies, correct such market failures - or 'internalize the externalities'. For the remedy of such market failures, he advocated a method, which became known as '*Pigovian Tax*'. He also contributed to the field of welfare economics, monetary economics and national income. His

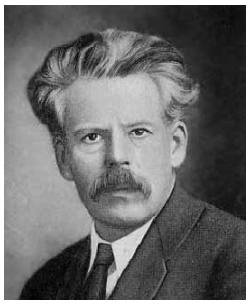
major books include: *"Wealth and Welfare"* (1912), *"Economics of Welfare"* (1920), *"Essays in Applied Economics"* (1923), *"Theory of Employment"* (1933), *"Employment and Equilibrium"* (1941).



E. H. Chamberlin (1866-1967): An American economist Edward Hasting Chamberlin is best known for his *Theory of Monopolistic Competition* (1933). Here, he has for the first time discussed the market structure that lies between the concepts of perfect competition and monopoly. He analysed that under the market structure imperfect competition, firms compete with each other, since demand for their goods is not unaffected by existence of other firms. but each firm enjoys some degree of monopoly since it has its own distinct product. In this market structure, competition take the form of product competition, where advertising plays as much an important role as price competition. He also introduced the important concept of 'excess capacity' in the discussion of imperfect competition.



Ernst Engel (1821-1896): German political economist and statistician, and a very brilliant perfromers in his work. Immediately after the revolution of 1848 he was attached to the royal commission in Saxony appointed to determine the relations between trade and labour. In 1850, he was directed by the government to assist in German Industrial Exhibition of Leipzig. As an honour to his brillinat service, he was induced to become the chief of the newly instituted statistical department in 1854, from which he retired in 1858. As an honour of his brillinat performance, he was again offered the post of director of the statistical department. In his new office he made himself a name of worldwide reputation. Among his lasting contributions to economics is 'Engel's Law', that those with lower incomes spend a higher percentage of their means on food.



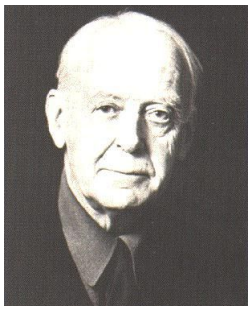
Eugen Slutsky (1880-1948): A Russian economist and econometrician, Slutsky worked as Professor at the Kiev University and at the Mathematics Institute of the USSR Academy of Science. He is best known for his work on demand theory. In 1915, he argued that the demand theory could be based on the concept of ordinal utility. This concept was later developed by Hicks and Allen in mathematical derivation of the breakdown of the price effect into income effect and substitution effect. The mathematical derivation was named 'Slutsky Equation' by them.



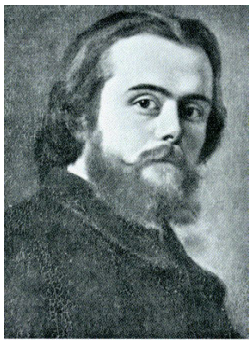
G. J. Stigler (1911-1991): George Joseph Stigeler, a US economist worked in several institutes including: Iowa State College, University of Minnesota, Columbia University, and Brown University. He is best known for developing the "Economic Theory of Regulation", which says that interest groups and other political participants will use the regulatory and coercive powers of government to shape laws and regulations

in their favour. Important books written by him include: *"The Theory of Price"* (1966), *"The Organisation of an Industry"* (1983), *"Chicago Studies in Political Economy"* (1988). He received Nobel Prize in Economics in 1982.

H. H. Gossen (**1810-1858):** Hermann Heinrich Gossen, a German introduced the concept of diminishing marginal utility - what became known as 'Gossen's First Law'. 'Gossen's Second Law' was that the exchange ratio of goods is equal to the ratio of marginal utilities of the traders. His 'Third Law' was that goods have value only when the demand for it exceeds supply (i.e. subjective scarcity is the source of value). His "second law" was his most original contribution and helped in flourishing the Marginalist Revolution of 1871-74. Gossen died bitter and unknown. His work was only uncovered and graciously acknowledged by *Jevons* in 1878. His major work was: *"The Development of the Laws of Exchange among Men and of the Consequent Rules of Human Action* " (1854).



J.R. Hicks (1904-1989): A British economist John R. Hicks is considered to be one of the most influential economists of the twentieth century. He had his education from Oxford, and taught at the London School of Economics and the universities of Cambridge, Manchestar and Oxford. He shared the nobel prize in Economics in 1972 with Kenneth J Arrow. He contributed in wide areas of economic theory - both micro economics and macro economics. He introduced the concept 'Elasticity of Substitution' in 1932 and the 'IS-LM model' in 1937. Among his important books are: *"Theory of Wages"* (1932), *"Value and Capital"* (1939), *"The Social Framework: An Introduction to Economics"* (1942), *"A Revision of Demand Theory"* (1956), *"Essays in World Economics"* (1959), *"The Crisis of Keynesian Economics"* (1974).



Leon Walras (1834-1910): Born in France, this French economist Leon Walras (pronounced as 'Valrasse') has been hailed by Joseph Schumpeter as "the greatest of all economists". He worked in the University of Lausanne in Switzerland. He is credited for two major contributions in Economics: first, his independent contribution of the Marginal Utility approach to the 'Theory of Value'. Secondly, he founded the mathematical application to the analysis of General Equilibrium Analysis. In this approach, simultaneous determination of all prices and quantities of all goods and services in the economic systems is analysed. For this, he is also regarded as 'Father of General Equilibrium Theory'. His major publications include: *"Elements of Pure Economics" (1874), "Studies in Social Economics" (1896)* and *"Studies in Applied Economics" (1898).*

Lionel Robbins (1898-1984): A British economist and an influential figure. Robinns was Professor of Economics at the London School of Economics from 1929 until 1961. Robbins stressed the necessity for a conceptual and separation of normative economics and positive economics. His most influential



publication includes: "*An Essay on the Nature and Significance of Economic Science"* (1935). Robbins stressed the aspect of scarcity in economic behaviour. According to him, the dominant characteristic of human behaviour, which is relevant for the economists is that of decision making subject to constraints. This view of Robbins is in fact the standard definition and scope of Economics: '*The science which studies human behaviour as a relationship between ends and scarce means which have alternative uses.'* Some of his famous works are: *"The Economic Basis of Class Conflict and Other Essays in Political Economy"* (1939), *"The Economic Cause of War"* (1939), *"The Theory of Economic Development in the History of Economic Thought"* (1968), *"The Evolution of Modern Economic Theory"* (1970).



P.A. Samuelson (1915 -): Paul Anthony Samuelson is a U.S. economist. He received hisMasters and Ph.D. from Harvard University and taught at MIT (Massachusetts Institute of Technology) from 1940. His *"Foundations of Economic Analysis"* (1947) outlines a basic theme of his work, the universal nature of consumer behaviour as the key to economic theory. His areas of contribution include: the dynamics of economic systems, analysis of public goods, welfare economics, and public expenditure. His most influential work was mathematical formulation of multiplier and accelerator effects; and, in consumption analysis, development of the theory of revealed preference. His well-written *"Economics"* (1948) is among the best-selling Economics textbooks all over the world. For his fundamental contributions to nearly all branches of Economics, he became the third recipient of the Nobel Prize in Economics in 1970. Among his other major publications are: *"Economics from the Heart: the Samuelson Sampler"* (1983). He has also authored with William D. Nordhaus, *"Microeconomics"* (1989) and *"Macroeconomics"* (1989).



Ragnar Frisch (1895-1973): Born in Norway, Ragnar Anton Kittil Frisch shared the very first Nobel prize in Economics with Jan Tinbergen in 1969. He did many ground breaking works in the field of econometrics, for which he was awarded the prize. During the Great Depression of the 1930s, Frisch was one of the pioneer economists to endorse a proactive economic policy: increase demand by raising the level of government activity and hence public spending. In his later age, he also developed 'decision models' for economic planning, introducing mathematical programming methods for use with modern computer. His major books include: *"Statistical Confluence Analysis by Means of Complete Regression System"* (1943), *"Maxima and Minima"* (1966), *"The Theory of Production"* (1965)**.**

Robert Giffen (1837–1910): A British statistician and economist. His high reputation as a financial journalist and statistician led to his appointment in 1876 as head of the statistical department in the Board of Trade, and subsequently he became assistant secretary (1882) and finally controller general (1892), retiring in 1897. His principal publications were *"American Railways as Investments"* (1873), *"Essays on Finance"* (1879 and 1884), *"The Progress of the Working Classes"* (1884), *"The Growth of Capital*" (1890), *"The Case against Bimetallism"* (1892), and *"Economic Inquiries and Studies"* (1904).The concept of 'Giffen goods' is named after him.



R. G. D. Allen (1906-1983): Sir Roy George Douglas Allen worked in the London School of Economics and the University of London. In 1934, he made an important contribution in the consumer theory, when he published an article with J.R.Hicks in the journal *Economica.* The paper demonstrated with the help of Indifference Curve that to explain the downward slope of a Demand curve it is sufficient to assume ordinal utility. Again, the paper mathematically explained the breakdown of the price effect into income and substitution effects. His major works include:*"Mathematical Analysis for Economists"* (1938), *"Macroeconomic Theory"* (1967), *"Index Numbers in Theory and Practice"* (1975), *"Introduction to National Accounts Statistics*" (1980).

Thorstein B. Veblen (1857-1929) : An American economist and a social scientist, worked as a Prefossor in Economics at the University of Chicago. He was the founder of *Institutional Economics*. According to him, economic institutions are nothing but the reflections of the views of the economists. Most important writings of Veblen include : *"The theory of Leisure Class"* (1899), *"The Place of Science in Modern Civilization"* (1919), *"Absentee Ownership"* (1923), *"Essays in our Changing Order"* (1934).



W. D. Nordhaus, (1941-): One of the America's eminent economists William D. Nordhaus is a graduate from Yale University and Ph.D from MIT. Nordhaus is a professor at the Yale University in the department of Economics. He is a member of the National Academy of Sciences and a Fellow of the American Academy of Arts and Sciences. He was the first Chairman of the newly formed American Economic Association Committee on Federal Statistics. In 2004, he received the award "Distinguished Fellow" of the American Economic Association. Among his important books are: *"Invention, Growth and Welfare"*, *"Is Growth Obsolete?", "The Efficient Use of Energy Resources"*, *"Reforming Federal Regulation"*, *"Managing the Global Commons"*, *"Warming the World"* and joint with Paul Samuelson) the classic textbook, *"Economics".*

W. S. Jevons (1835-1882): William Stanley Jevons, a British, studied in the University of London. In 1866, he joined as professor of Logic and Mental and Philosophy in Owens college. In 1876, he joined



as professor in Pollitical Economy in University College, London; but resigned from his duty in 1880. Jevons is one the three (the other two being Walras and Menger) who founded the marginal utility approach to value. He also introduced the concept of time into the theories of production process and capital. He also contributed significantly to the field of index numbers and theory of trade cycles. He developed the 'sunspot' theory. Major works of Jevons include: *"General Mathematical Theory of Political Economy"* (1862), and *"A Serious Fall in the Value of Gold"* (1863).

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