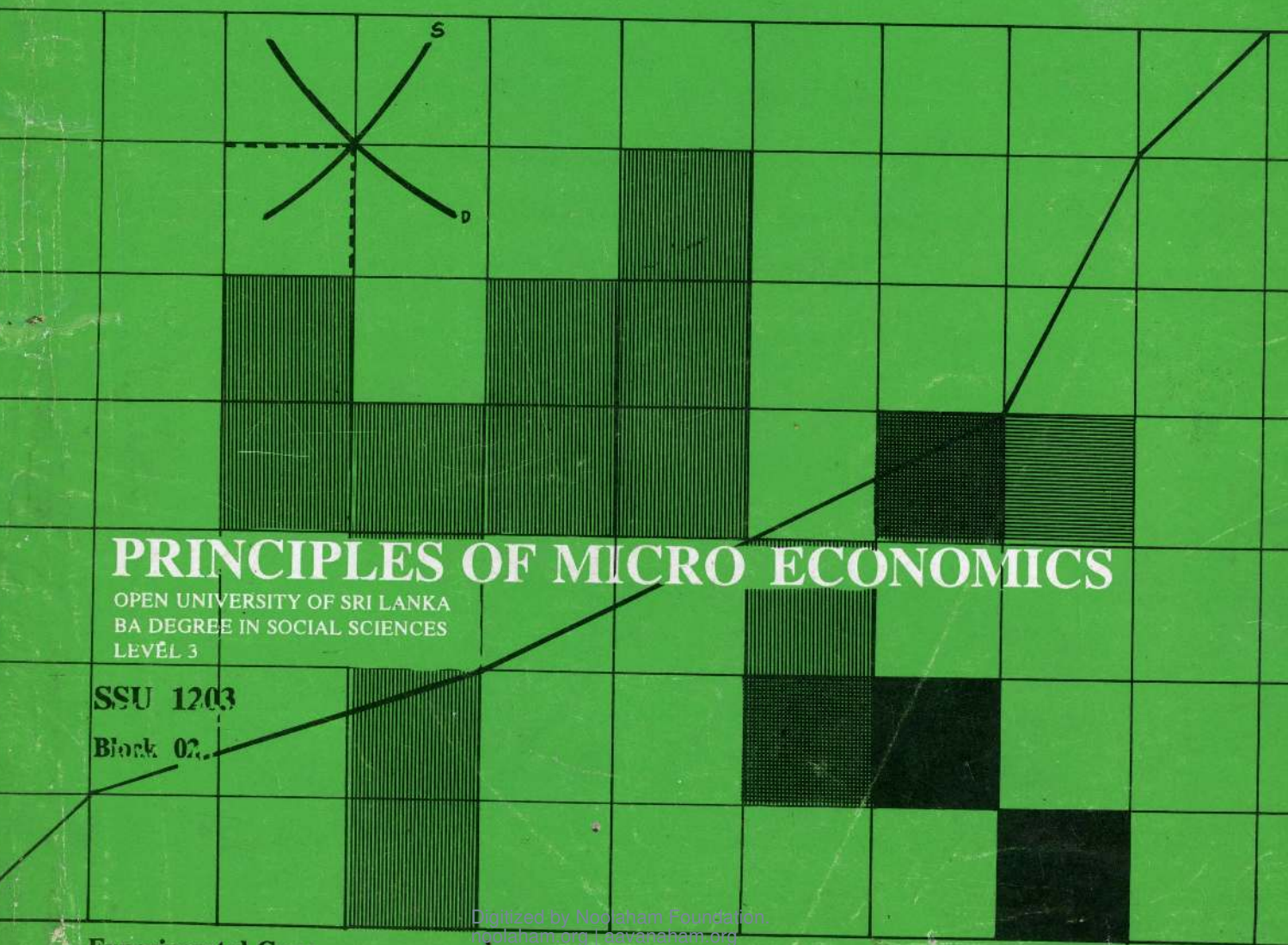
ECONOMICS



PRINCIPLES OF MICRO ECONOMICS

OPEN UNIVERSITY OF SRI LANKA
BA DEGREE IN SOCIAL SCIENCES
LEVEL 3

SSU 1203

Block 02

Experimental Copy

THE OPEN UNIVERSITY OF SRI LANKA

BA DEGREE IN SOCIAL SCIENCES
LEVEL 3

MICRO ECONOMICS

SSU 1203

BLOCK 2

SOCIAL STUDIES DIVISION

FACULTY OF HUMANITIES AND SOCIAL SCIENCES.

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MICRO ECONOMICS

BLOCK 2

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CONTENTS

PREFACE

The first block of study material on Micro Economics examines the Price System, Consumer Choice, and the Theory of the Firm. This second block concludes your syllabus on Micro Economics with an examination of Product Markets and Resource Markets.

As you know, Micro Economics is one of the first pre-requisite courses in Economics offered at level three of the BA Degree in Social Sciences. This course in Micro Economics is compulsory because it provides the basic building blocks of the discipline of Economics, and is a precursor to the study of the other branches of Economics like Development Economics, Health Economics and so on that will be dealt with in subsequent levels. The tools and techniques you study, the theories you come across, and the lessons you learn in this course will make your studies in other branches of Economics like Development Economics, very much easier, fuller and rewarding. This foundation will strengthen your capacity to study Economics in the subsequent levels and years.

The Organisation of the Course

The course on Micro Economics is divided into two blocks of study material. This second block contains a series of discussions on two major topics, namely Product Markets and the Resource Markets. On Product Markets there are seven (7) lessons, followed by another six (6) lessons on the Resource Market.

Of the seven lessons on Product Markets, lessons 1, 2 , 3, 6 and 7 have been written by Upali Vidanapathirana, of the Open University, lessons 4 and 5 by Indrasiri Wijetunga of the Open University.

Of the six lessons on Resources Markets, lessons 8, 11, and 12 have been written by Indrasiri Wijetunga, lessons 9, 10, 13 by Danister Jayawardana of the University of Sri Jayawardanapura.

The design of the Block

This block has been specially compiled using the distance teaching format to help you understand the subject more easily. Using a few basic principles to make the course as user-friendly as possible, we have throughout the block

- stressed fundamental concepts and defined them.
- related these concepts to real world situations through examples and practical applications.
- encouraged students to engage in further observations and critical thinking, questioning the assumptions, and
- asked the students to explain the linkages between the various concepts.

We advise you to adhere to the order of lessons in the block, as we believe in the step-by-step building of your theoretical knowledge. You will find that in distance teaching, each lesson is comprehensively presented and includes a study guide to help you get the fullest benefit from the exercise.

The Division of Social Studies invites you to discuss with us any topics that may be unclear, difficult, or debatable, if ever you feel the need to. However, **the extent to which we could assist you depends on your willingness to help yourself.** We would advise you to complete each lesson before going on to the assignments and to complete the assignments before attending the day-school sessions. Be sure to complete the block of study material before the final examination and that will ensure your success.

We wish you well!

PRODUCT MARKETS

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LESSON ONE

MARKET STRUCTURES

Introduction : This lesson on Market Structures attempts to develop a set of guidelines that can be used to ascertain behaviour of firms. Just as consumers are rational, firms too are rational. Rational consumers maximize utility. Rational firms maximize profits.

This introductory lesson focusses on how and why different firms act differently to maximize profits.

Contents :

1. Market structures and their limitations.
2. Characteristics of market structures.
3. Dimensions of profits
4. Total Revenue minus Total Cost approach: TR - TC.
5. Marginal Cost equals Marginal Revenue approach: MC = MR.

Learning Objectives :

After the completion of this lesson you will be able to,

(a) describe market structures, and their limitations,

(b) define market structures in terms of their characteristics.

(c) define some of the key terms such as differentiated and standardised products, price takers and price makers, profit maximisation, break-even point, Marginal Revenue and Marginal Cost.

(d) describe two approaches to determine profit maximizing output.

Study Guide :

This lesson introduces market structures. Spend about three hours studying the lesson completely. Try to understand the concepts referred to. Work out the activities in the middle of the lesson. Attempt the Review Questions at the end of the lesson.

Discuss points that are not clear to you with your colleagues in the study group. Get ready for a lively discussion with your day school teacher on market structures.

1.1 Firms are different

Standardized products are products that consumers perceive to be identical

Firms differ in numerous ways: size, scale of operation, ownership, and type of business. Not only do firm differ, but they also behave differently in their economic activities. For instance, some firms produce standardized goods while others produce differentiated goods. Some firms retain abnormal profits while others make only normal profits just enough to keep factors of production from leaving the firm. Some firms pursue vigorous promotional drives while others are not at all keen on business promotion. Some firms are price takers while others are capable of determining and influencing the market prices of their products or services.

1.2 Why market structure

Firms behave in different ways and this makes it difficult to generate on the way they function. Does it mean therefore that generalizations are impossible? Does one need to study each firm individually and closely if one wants to know how and why a particular firm behaves in a particular way? Fortunately the answer is in the negative, and some guidelines could be drawn.

Economists have been able to develop a scheme which enables them to classify the behaviour of firms meaningfully. Very broadly, this scheme identifies four types of market structures. i.e. perfect competition, monopolistic competition, oligopoly and monopoly. The above listing of market structures indicate, in a descending order, the extent of competition arising

primarily from the number of firms involved in the business, as well as other related attributes that differentiate one market situation from another.

1.3 Limitations of market structures

The above classification setting out four market structures tends to simplify the complex problems that determine the behaviour of firms. As in any economic model, the actual behaviour of a firm may not fit neatly into any of the above four types of classifications. Yet the classification may help economists to understand why and how a particular firm behaves in a particular manner.

Approaches that takes place among suppliers driving price of goods and services close to opportunity cost.

Secondly, although the degree of competition arising from the number of firms involved may be limited in the case of oligopoly and monopoly, this does not necessarily mean that they do not face any competition at all. In fact even some of the very strong monopolies may face severe competition at different levels.

1.4 Characteristics of market structures

The four market structures listed above are characterised by a set of broad features. It is the combination of these features that determines the behaviour of a firm and its place in the market structure. These features are:

i. The number of firms operating in a field is the most important consideration in arriving at a classification. For instance

some goods like paddy are produced by many agencies while a product like electricity is handled by a monopoly.

ii. The second consideration is the nature of the product itself and relates to the difference between products produced by firms in the same industry. Products can be classed as differentiated or non standardised products, if in the perception of the consumers they have characteristics unique to them. Examples would be television sets and automobiles. On the other hand paddy or vegetables produced by individual farms may not show great differences in quality.

Differentiated products are products that consumers perceive to be different from one another.

iii. The third feature relates to the conditions of entry to and exit from the market. In the case of certain products, entry into the market is relatively easy. Dress making is a case in point. In contrast, public utilities like Railways, Water supply etc. have conditions which are restrictive when it comes to entry and exit.

iv. Another important feature that differentiate firms from one another is the control that a particular firm has over price determination. It is well known that monopolists enjoy absolute control over price determination, and hence they are known as "price makers". On the other hand

A firm that has the ability to set the price of the product it sells is known as "price makers"

suppliers of most of the primary products like paddy, tea, coconut etc are "price takers".

v. The fifth important feature and perhaps the last one is the degree of competition in different industries. For instance, there is hardly any advertising done by paddy farmers as producers and/or sellers. On the contrary, firms in the business of cosmetics, production of shoes, household appliances like TVs etc. do quite a lot of promotion through advertising.

The four types of market structures we are dealing with are classified as competition, monopoly, monopolistic competition, and oligopoly. We could define each one of them separately. Instead we now classify the structures listed above and examine their salient characteristics.

The Table 1 shows how the five characteristics provides the basis for the classification of market structures, thus making generalizations easier.

Table 1 : Summary of Market Structures

Market structures Defining characteristics	Perfect competition	Monopoly	Monopolistic competition	Oligopoly
No. of firms	Very large no. of firms	One prominent firm	large no. of firms	few firms
Entry condition	Easy	Very difficult	Easy	Not easy
Product type	Standardized	One product	Differentiated	Standardized or differentiated
Information available	Access to all information	Some restrictions	Some restrictions	Some restrictions
Price determination	Price taker	Price maker	Price taker	Price maker
Non price competition	Not present	Present	Present	Aggressive
Examples	Paddy	Petroleum	Jewelry	Toothpaste

ACTIVITY 1:

1. How do you classify the markets of the following products.
   (a) toilet soap, (b) torch batteries, (c) bread, (d) private bus operation, (e) railway
2. Give reasons for your classification.

1.5 Behaviour of firms

In block one when examining the behaviour of consumers, we assumed that consumers behave rationally to maximize utility, which explains the behaviour of consumers. It enabled you to understand how and why consumers respond to different market situations in the way they do.

Likewise, in our study of the behaviour of firms we now make an assumption that will provide the basis for our examination and analysis of market structures. We assume that firms behave in such a way as to maximize their profits. However, we should not forget the fact that this simple profit maximization policy does not apply to all firms. There are the public and non governmental sector firms established for non profit making motives. Nonetheless, many firms believe in profit maximisation and have profit maximisation as their explicit objective. In the ensuing sections you will study how firms determine their profits and what conditions ensure maximum profit.

1.6 Dimensions of Profits

The analysis of market structures is done on the assumption that all firms maximize profits. The term "profit" however, means different things to different individuals. Economists believe that profit is the return an entrepreneur gets for taking risk and for innovating: Profit arises from the excess of a firm's total revenue over total cost where the total cost is viewed in terms of the opportunity cost for being in a particular business. It is this aspect of opportunity cost that differentiates economic cost from accounting cost.

Profit arises from the excess of a firm's Total Revenue (TR) over Total Cost (TC)

Quite a number of considerations affects a firm's capacity to determine profit. First and foremost, profits arise from the difference between Total

Revenue (TR) and Total Cost (TC). Total revenue represents the demand side of the profit equation. It is the result of the quantity supplied and the selling price.

Total cost on the other hand represents the supply side of the profit equation. It denotes both fixed and variable costs of production. Therefore the profitability of a firm depends on the extent to which total revenue exceeds the total cost.

(1) TR = Total Revenue (Quantity x Selling price)
(2) TC = Total Cost (Total variable cost + Total fixed cost)
(3) TR - TC = Profit(s).

An economic activity becomes profitable only when its, TR >/ TC

Thus, a firm's ability to maximize profit depends on two factors. First, it should be able to contain or reduce costs. This is generally achieved by enhancing efficiency in the use of resources. Second, it can raise its profit by manipulating the selling price and/or quantities produced. Most of the inefficient state monopolies maximize profits by manipulating the prices of goods sold.

The extent to which a firm could control the supply side and the demand side of the profit equation is not unlimited. On the one hand the time factor imposes certain constraints. In the

short run, firms cannot change their fixed inputs like plant, machinery and the technology used. Consequently, in the short run therefore firms cannot attain the highest level of efficiency by changing the size of plant or the technology.

Price taker is a competitive buyer whose actions do not affect price

On the other hand the market itself imposes constraints such as inability to manipulate price, as in the case of perfect competition. In perfect competition price is set and the firm becomes a price taker.

In the ensuing lessons we will be looking at how different market structures maximize profits under different conditions. In the final section of this lesson we will evolve a method through which we may be able to explain the profit maximising behaviour of the firm.

ACTIVITY 2:

1. What is "profit"?
2. Describe the two sides of the profit equation?
3. What factors govern firm's ability to maximize profits?

1.6.1 Profit maximisation

Two approaches are used to determine the level of production at which profits can be maximized. The first approach is known as the Total Revenue minus Total Cost Approach.

To illustrate this aspect of profit maximization we will construct hypothetical Cost and Revenue data profiles for a manufacturer of pencils (see Table 2).

Table 2 : Profit Maximization

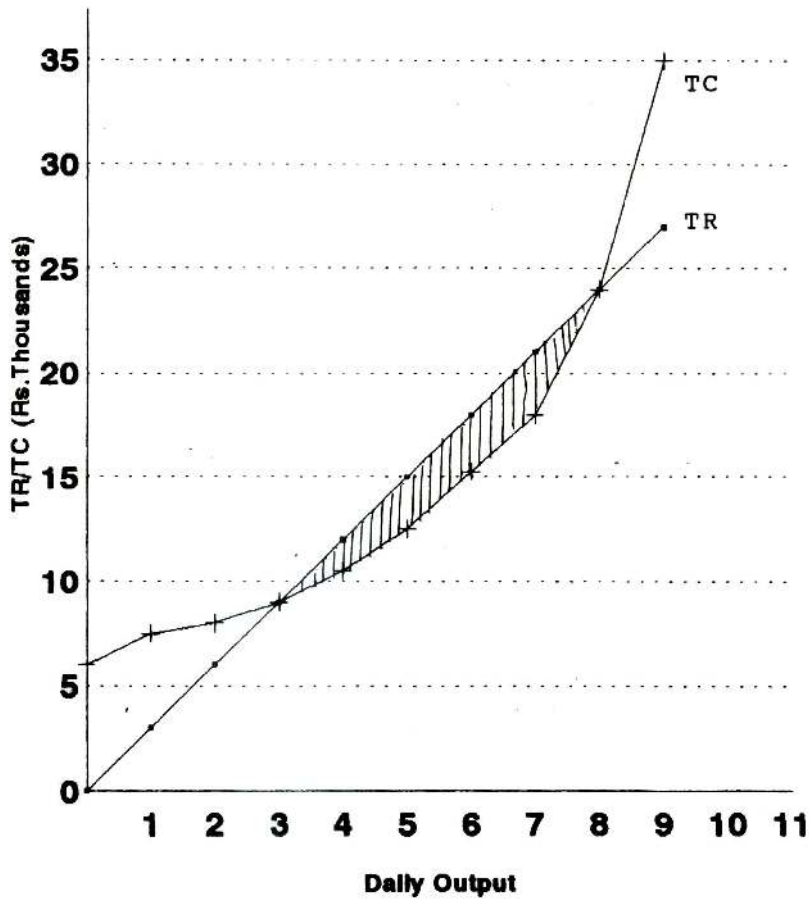
Daily output(000) (q)	Price per pencil (p)	Total Revenue (q x p) (TR)	Total cost (TC)	Daily profit (TR - TC)
0	3	0	6,000	-6,000
1	3	3,000	7,500	-4,500
2	3	6,000	8,000	-2,000
3	3	9,000	9,000	0
4	3	12,000	10,500	1,500
5	3	15,000	12,500	2,500
6	3	18,000	15,250	2,750
7	3	21,000	18,000	3,000
8	3	24,000	24,000	0
9	3	27,000	35,000	-7,000

i. **Total Revenue (TC) minus Total Cost(TC) Approach**
It is seen that this firm is a price taker (the price of Rs. 3.00 is set by the market) and therefore its profit decisions depends merely on quantity adjustments. This, in other words, means that the firm can maximize its profits either by increasing or decreasing the quantities produced. Consequently, the schedule shows alternative scenarios with respect to profitability when the quantity produced changed from 1000 pencils to 9000 pencils.

As given in column three, total revenue (TR) is derived by multiplying the quantity by the unit price, and Daily profits indicated in the final column are derived by deducting Total Cost (TC) from Total Revenue (TR) given in columns four and three. We now plot the behaviour of the Total Revenue and Total Cost in the graph below (see Figure 1).

Figure 1

Total Cost and Revenue Curves



A firm breaks-even when the rate of output at which total revenue equals total cost (TR = TC)

The vertical axis of the graph shows Total Revenue (TR) and/or Cost (C) while the horizontal axis shows quantities produced. Accordingly the firm break-evens (TR = TC) at two points. First it breaks even when it produces 3000 units of pencils, and it again breaks even when it produces 8000 units of pencils. After the 3000th unit of pencils, the firm starts making profits at the each additional pencil it produces. Consequently, its profits starts growing until it reaches the 6000th unit of production. It starts falling thereafter until it reaches the 8000th level.

As a profit maximising producer this firm will produce 6000 units of pencils (At this point the firm generates its highest profit of Rs. 3000 a day). In the graph the difference between total revenue and total cost is the greatest. As indicated in the graph you may wonder, why you have two break-even points in the same graph. Which of the two points should you select in a given situation? Of course you may choose any point. However, when the business in which you are in is risky you tend to choose the first break even at low level of output and sales in order to minimise risk.

ii. **Marginal cost(MC) equals Marginal Revenue (MR) approach**

Apart from the total revenue less total cost approach, there is another approach that helps to determine equilibrium production and price

levels. This approach is known as the Marginal Cost (MC) equals the Marginal Revenue (MR) approach (MC = MR). We may now discuss how profit maximizing firms combine marginal revenue and marginal cost to determine profitable output levels in the short run.

Marginal Revenue is an increase in total revenue associated with the production of one more unit of output

You may remember the time when farmers in the North Central Province (NCP) found paddy cultivation unprofitable as expenses were rising faster than their income. This, in other words, means that the profitability of paddy cultivation falls when marginal revenue is less than the marginal costs. By extending the same common sense argument, the Marginal Revenue equals Marginal Cost approach helps firms, including paddy farmers, to determine production levels that could ensure maximum profitability.

Marginal cost is the change in total cost associated with the production of one more unit of output

Let us begin our discussion on this by defining the two main concepts involved. Marginal Cost (MC) is the additional cost of producing one extra unit of output. Marginal Revenue (MR) is an increase in total revenue associated with sale of one more unit of output. The Marginal Revenue equals Marginal cost approach argues that if the cost of production of one more unit (MC) exceeds the revenue (MR) it generates negative profits (losses). Conversely, if the cost of production of one more unit (MC) is less than the additional revenue (MR) it generates a higher level of profits. All in all, profit increases when Marginal Revenue (MR) is greater than Marginal

Cost (MC). Therefore, profit maximization occurs when Marginal Revenue (MR) equals Marginal Cost (MC).

$$MR = MC.$$

We may now look at the revenue and cost data of our pencil manufacturing company. We have included its marginal cost and marginal revenue figures (by deducting cost or revenue of the immediate previous unit of production from cost or revenue of the current unit of production)

Table 3 : Pencil manufacturing company - profitability data (Rs.)

Q (Output) Unit('000)	P Price	TR (Total Revenue)	TC (Total Cost)	MR (Marginal Revenue)	MC (Marginal Cost)	T_{π} Profit
0	3	-	6000	-	6000	-6000
1	3	3000	7500	3000	1500	-4500
2	3	6000	8000	3000	500	-2000
3	3	9000	9000	3000	1000	0
4	3	12000	10500	3000	1500	1500
5	3	15000	12500	3000	2000	2500
6	3	18000	15250	3000	2750	2750
7	3	21000	18000	3000	3000	3000
8	3	24000	24000	3000	6000	0
9	3	27000	35000	3000	8000	7000

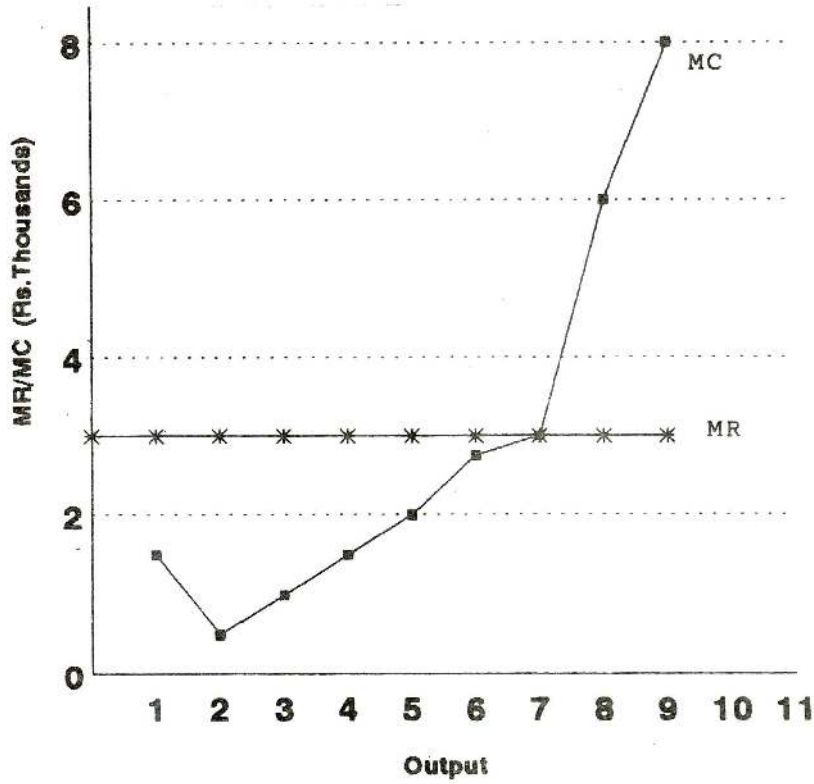
The schedule above shows output, cost, revenue, marginal cost, marginal revenue and profit data. Of them, what is new to you are the Marginal Revenue and Marginal Cost data given in columns five and six respectively. In column five you may notice that Marginal Revenue (MR) is a constant figure, Rs. 3000 through out the Table 3. This is because pencil producers are price takers operating in a perfectly competitive market.

Column six indicates his marginal cost (MC) data which falls until the 2000th unit and then starts increasing. At the level of 7000 units of production his Marginal Cost (MC) is Rs. 3000. This is the profit maximising level of production. Notice that at the level of 7000 units of production the total profit of the firm reaches its highest of Rs. 3000. Thus the marginal revenue equals marginal cost approach also provides the identical answer as in the case of break even analysis done earlier using total revenue minus total cost approach.

The table given above are graphically presented in the Figure 2 below.

Figure 2

Marginal Cost and Marginal Revenue



It depicts the equilibrium point at which profit is maximized (at 7000 units). It shows the shape of the two curves of marginal revenue and marginal costs. It also shows the extra profit arising from the 6th unit of production together with the loss arising from the 8th unit of production.

Summary :

In this lesson on market structures we have laid a foundation for the study of the behaviour of firms. We have classified market structures into four major groups on the basis of a set of salient characteristics. We have also studied the profit maximization conditions and approaches available to determine the equilibrium level of output that generates the maximum level of profits. The two approaches described are

(a) Revenue minus Cost approach, (TR - TC).

(b) Marginal Revenue equals Marginal Cost approach (MR = MC)

In the next lesson we will study the perfect competition model in detail

Glossary of Terms:

1. Break-even Point- The rate of output at which total revenue equals total cost.

2. Competition - A process that takes place among suppliers driving price of goods and services close to opportunity cost.

3. Differentiated products - Products that consumers perceive to be different from one another.

4. Marginal cost - The change in total cost associated with the production of one more unit of output.

5. Marginal Revenue– An increase in total revenue associated with sale of one more unit of output.

6. Market – A place or service that enables buyers and sellers to exchange goods and services.

7. Price maker – A firm that has the ability to set the price of the product it sells.

8. Price taker – A competitive buyer or seller whose actions do not affect prices.

9. Profit – Profit is a return to entrepreneurship for taking risks and innovating. It arises from the excess of a firm's total revenue over total cost where the total cost is viewed in terms of the opportunity cost for being in a particular business.

10. Standardised products – Products that consumers perceive to be identical.

Review Questions:

1. Describe the principal characteristics of market structures.
2. Describe the behaviour of firms in respect of their profit maximisation objective.
3. Give five examples of differentiated products and another five examples of non differentiated products.
4. Describe profit maximisation in terms of Total Revenue - Total Cost approach.
5. Describe profit maximisation in terms of Marginal Revenue (MR) and Marginal Cost approach.

Checklist :

1. Read the lesson carefully in relation to the learning objectives given at the beginning of the lesson.

2. Try the activities suggested in the middle of the lesson. Compare your notes with your colleagues.

3. Read the summary and try to define the glossary of terms in your own words.

4. Attempt Review Questions. Check whether you can draw the Revenue and Cost curves to show profit maximisation levels of output.

5. Ensure that you have achieved the Learning Objectives before you start the next lesson.

LESSON TWO

PERFECT COMPETITION - PART I
(SHORT-RUN DECISION MAKING)

"Firms are born to compete for markets. They grow and win markets. They mature and retain markets. Some firms reach senility and die in the market".

(Anonymous)

Introduction : Our previous lesson on Market Structures identified four major types of market structures. These four types had features unique to them. We made an assumption common to all types of firms. One such assumption was on profit maximisation. We learnt that profits are maximised when production decisions are taken on the basis of either the Total Revenue (TR) minus Total Cost approach or the Marginal Revenue equals Marginal Cost approach.

Contents :

1. Features of perfect competition.
2. Profit maximisation in the short run.
3. Loss minimisation.
4. Plant shut-down

Learning Objectives :

After the completion of this lesson you will be able to

(a) Describe the salient characteristics of perfect competition.

(b) Illustrate how Total Revenue minus Total Cost approach is used to determine short-run breakeven points and profit maximisation.

(c) Describe the short run profit maximisation decision process using the Marginal Revenue equals Marginal Cost approach.

(d) Explain why profit minimisation and shut-down decisions are important in the short run.

Study Guide :

Read the lesson carefully. Try to understand the concepts and their salient characteristics. Note the assumptions upon which the perfect competition model is constructed. Familiarize yourself with the mechanics of profit maximisation decision making in the short run. Attempt the activities given in the middle of the lesson. Discuss difficult areas with your colleagues. You may require about ten hours of study to understand this lesson fully.

In this lesson we study the short run behaviour of firms under perfect competition. As we have already seen, perfect competition is a type of market structure having a set of features unique to it. These features are used to identify and define perfectly competitive market structures. Let us now look closely at the salient features of perfectly competitive firms.

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2.1 Definition of perfect competition

Perfect competition is a market structure involving many buyers (and sellers) exchanging standard products. Under perfect competition no single buyer and/or seller enjoys any noticeable influence over price. This makes individual buyers and sellers under perfect competition "price takers".

We will now attempt to elaborate on the definition of perfect competition given above.

i. Very large numbers

The first feature of perfect competition is the presence of a large number of potential buyers and potential sellers. They operate independently. However, exchanges in the market take place in an orderly fashion. Farm products are most commonly mentioned as examples of perfect competition. In Sri Lanka many farmers produce paddy which is sold to a large number of buyers. Another example is the stock market where company shares are bought and sold by a large number of buyers and sellers.

ii. **Standardised products**

The second feature of Perfect competition is the type of product. Where products are standardised consumers are indifferent to who supplies them. This is because products do not differ qualitatively in respect of content, presentation or promotion. The result is that any firm within the same industry could produce a perfect substitute for products produced by any other firm within the same industry. Therefore, firms cannot and do not compete on the basis of differences in product quality, or promotion. This does not leave any room for non-price competition.

iii. **Price Takers**

Because of the large number of sellers, each individual firm produces only a fraction of the total market demand for a particular product. For instance, each paddy farmer produces an extremely small proportion of the total quantity of paddy supplied to the market. Consequently, even if an individual farmer decides to increase his output by say 75%, it may not be felt by the market. He cannot thereby influence the paddy market in the country. Likewise,

an individual firm cannot adjust the market supply or price. Instead, the firm adjusts its quantity to suit "the price" given by the market. In the perfect competition firms are mere price takers.

If a particular firm increases its price consumers will not buy this product as there are others who sell at a lower price. Therefore, a firm cannot raise its price. Conversely, when a firm can sell its produce at the price set by the market, it has no reason to lower its price.

iv. **Free entry**

There are no legal, technological, financial or managerial barriers to prevent either the entry of a firm into the market or the exit from it. Firms are equally free to enter and to leave. A paddy farmer, for instance, can sell his farm plot, given up paddy farming and move to the city allowing a new entrepreneur to enter into the paddy business. The assumption that sunk cost is not in operation under perfect competition facilitates this movement of the factors of production. However, the assumption of free entry and exit is operational only in the long run.

Cost that occurred in the past is a sunk cost

2.2 Demand curve of the firm and the industry

Firms in a perfectly competitive market are price takers. An individual firm in this market accepts the price determined by demand and supply forces. Market demand and market supply pertains to the industry and indicate aggregate positions. For instance market demand shows the total of the individual demand schedules of all the firms. Likewise market supply shows the total of individual supplies of all the firm within that industry. For instance, during the Maha harvest the price of paddy in the North Central Province (NCP) stabilises at Rs. 6.00 per kilogram (in 1995). This is the market price for this particular industry (business) and it is determined by the forces of supply and demand.

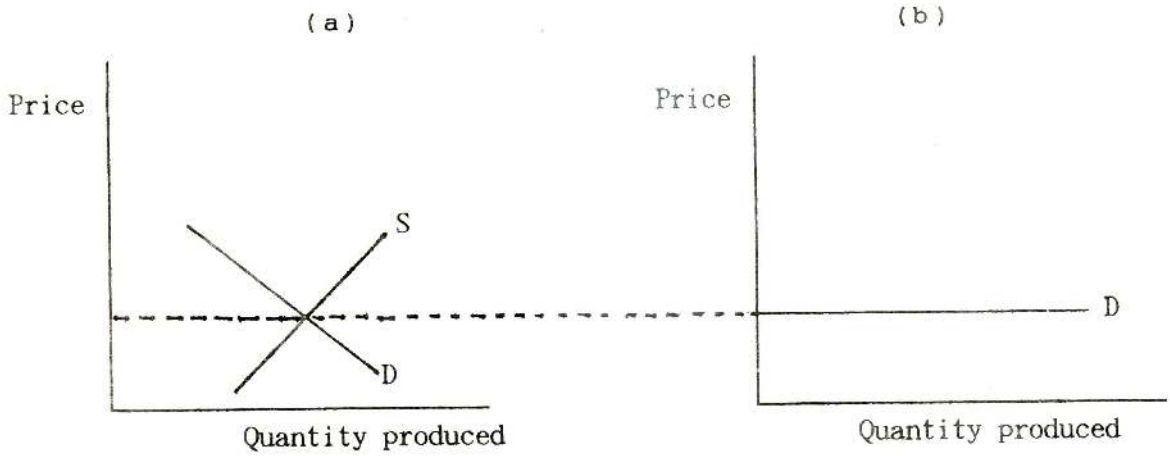
Market demand is the total individual demand schedules of all the firms

The market or industry demand for paddy takes the shape of a normal downward sloping demand curve as given in Figure 2.1. Likewise the market supply curve which is the aggregate of all supply schedules take the shape of a normal supply curve with an upward slope to the right.

The market price is decided when supply equals demand at Rs. 6.00 per kg. Once the market price of an industry is decided, individual firm has no option but to accept it. As a result the demand curve of an individual firm is perfectly elastic and the horizontal curve parallel to its X axis show the quantity produced. (See Figure 2.1).

Figure 2.1

Demand curve of the firm and the market equilibrium showing equilibrium price (for the industry)



Demand curve and the equilibrium price for the market.

Demand curve of the firm

Firms in perfect competition can adjust quantity produced but not price

The elastic nature of the demand curve leaves the firms in perfect competition with only one option with respect to profit maximisation. They cannot change the price. They can only adjust the quantity produced in order to maximise profits or minimise losses.

2.3 Profit maximisation in the Short Run

We may commence this discussion by making a set of assumptions with respect to the short run behaviour of a firm in perfect competition. The assumptions are:

i. All firms produce standardised products and enjoy equal access to information with respect to technology, knowhow, input availability and prices.

ii. All consumers have access to information on the price of products offered by competitive firm.

iii. Firms do not enjoy economies of scale arising from large scale output. Economies of scale are exhausted at a lower level of output relative to the market demand.

iv. All firms are equally small and each firm within the industry is a price-taker. Therefore, the demand curve of the individual firm is a perfectly elastic horizontal curve.

v. Firms make quantity adjustments in order to maximise profits. Price adjustments are not possible as price levels are determined by market forces. The firm cannot charge a higher price as no consumer would buy its

Firms can sell their entire stock at the market price

goods. The firm has no reason to charge a lower price as it can sell its entire stock at the current price.

Recall the two approaches to determine the profit maximising output level of the firm. The approaches are:

i. Total Revenue minus Total Cost approach (TR - TC).

ii. Marginal Revenue equals Marginal Cost approach.

We will now discuss these approaches in relation to perfectly competitive market structures.

2.3.1 Total Revenue minus Total Cost approach

Given below is a hypothetical total cost (TC) and Total Revenue (TR) profile of an entrepreneur producing lunch packets for office workers in Colombo.

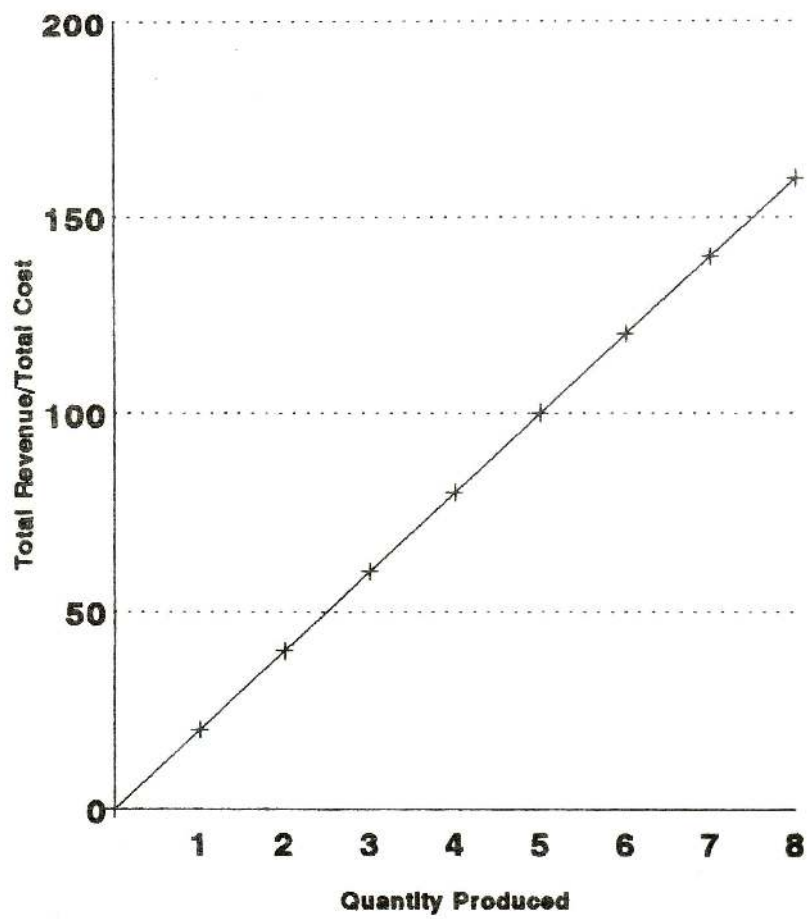
Table 2.1: Total Revenue & Total Cost of a Firm Producing Lunch Packets

Quantity (O)	Price	Total Revenue (TR)	Total Cost (TC)
0	20	–	50
1	20	20	60
2	20	40	65
3	20	60	71
4	*20*	*80*	*80*
5	20	100	85
6	20	120	104
7	*20*	*140*	*140*
8	20	160	250

It shows how and where the firm breaks-even and identifies the profit maximising output levels as well. The firm's Total Revenue (TR) curve is reproduced below to facilitate further discussion. The vertical axis of the Figure 2.2 shows total revenue. The horizontal axis shows the quantity produced by the firm.

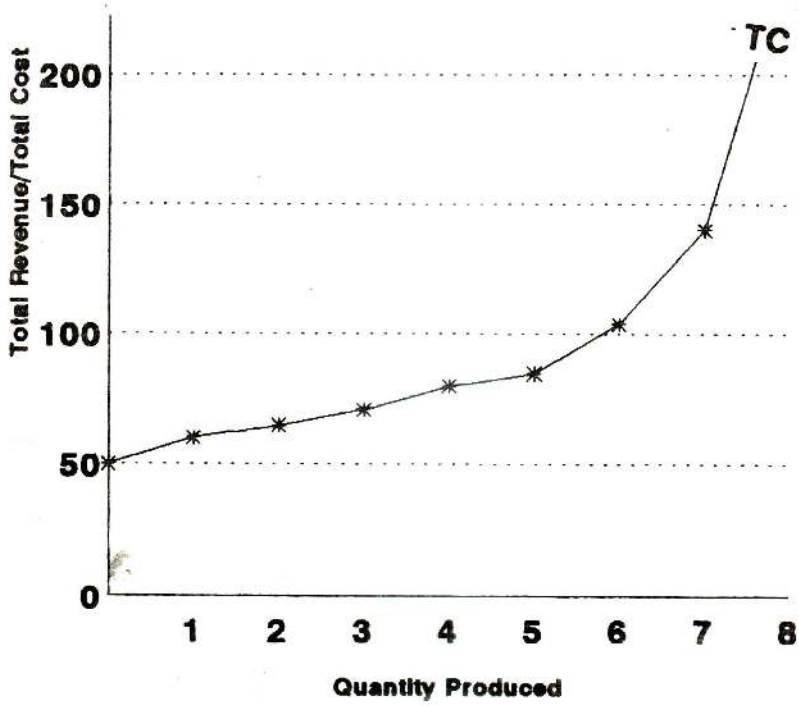
Figure 2.2

TR Curves under Perfect Competition



Note that the Total Revenue curve originates at point zero (0) meaning that the firm does not generate any revenues when the output is zero. The TR curve is a straight line showing proportionate increase of revenue with the increase of the quantity produced.

Figure 2.3
Total cost curve of the firm



Firm incurs a fixed cost which has to be borne even when the output is zero.

The total cost curve given in Figure 2.3 begins at a point above the Total Revenue curve. This is because the firm incurs an initial fixed cost of plant and equipment which has to be borne even when it does not produce a single unit of output. This fixed cost is added to the total cost, and

consequently the total cost is Rs. 50 even when the quantity produced is zero. The cost curve therefore begins at Rs. 50 which is above the beginning of the total revenue curve.

As the output rises the total cost also rises. However, the rate of increase is disproportionate to the increase of output. This is due to the influence of increasing marginal returns. It slows down the rate of the increase of cost at the initial stages. However after sometime, diminishing marginal return sets in making the cost to increase at a faster pace.

For these reasons the total cost curve begins at a point above the total revenue curve. It increases slowly, cuts across the total revenue curve that goes below it, increases at a faster pace and then rises above the total revenue curve once again (See Figure 2.4).

A number of situations arise as a result of this behaviour.

i. Initially when costs exceed Revenue the firm makes loses (shaded with strips in E).

ii. When cost equals revenue at point (A) the firm breaks-even.

iii. As revenue exceeds cost, the firm makes profits. The area shaded with squares show the extent of profitability.

iv. The firm maximises profit when the distance between costs and revenue shown vertically is the longest (point B).

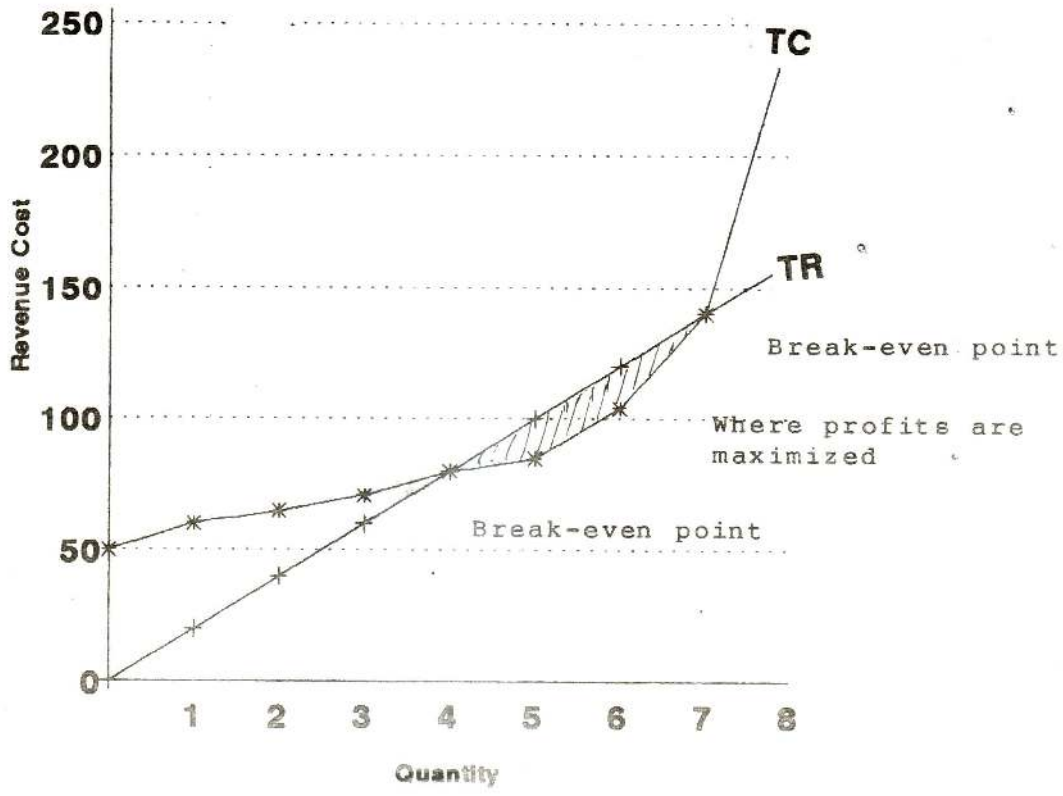
Firm breaks-even when revenue equals costs.

v. At point (C) the firm breaks-even again when revenue equals costs.

vi. Finally the firm starts making losses again when the total cost exceeds total revenue (shaded with strips in D).

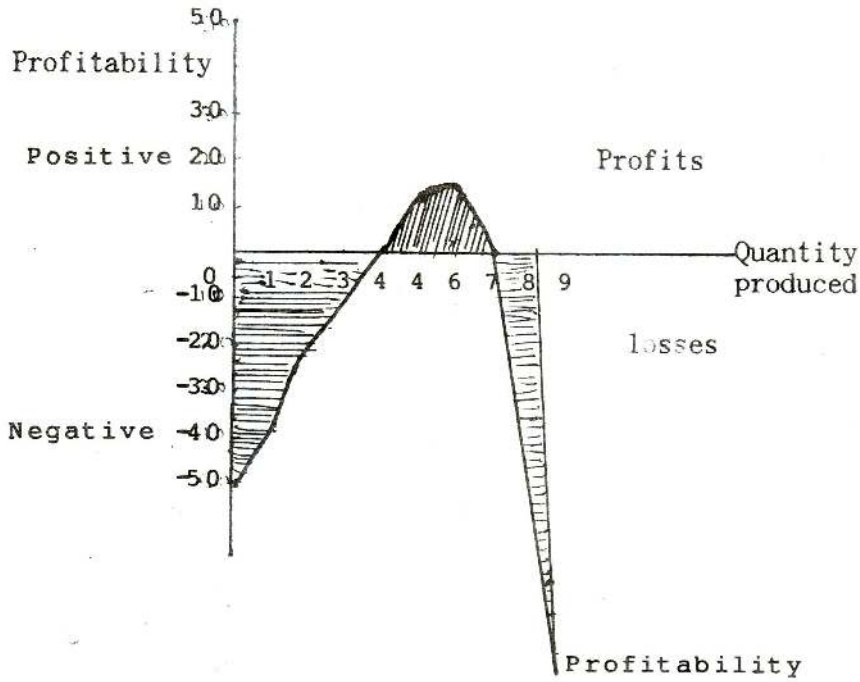
Figure 2.4

Profit maximisation and break-even point



This behaviour can be shown differently using a profitability diagram given in Figure 2.5.

Figure 2.5
Profitability diagram



In Figure 2.5, profitability is marked along the Y axis. When the firm makes profits it is marked positive. When the firm makes losses it is marked negative. The output produced is marked along the X axis. You may notice that profit is negative until three packets of lunch are produced, and the firm breaks-even when production exceeds four units. At six units of production the firm maximises profit. This is followed by another break-even again at seven units of output.

2.3.2 Marginal Revenue equals Marginal Cost approach

This is an alternative approach to determining the profit maximising output level of a firm in perfect competition. The fact that Marginal Revenue equals Marginal Cost is known as "the golden rule" of profit maximisation. This rule says that a firm should produce at a level of output where the marginal cost equals marginal revenue. Can you remember our analysis of profit determination of the lunch packet business in the preceding chapter? To refresh your memory we will have the basic concepts restated as follows.

MR = Total Revenue (TR) that occurs when output changes by one unit.

MC = Additional cost of producing one more unit of output.

Firm maximises profit when MR equals MC.

According to this approach firms expand their output when MR is greater than MC.

Expand output when MR > MC

Firms contract output when MR is less than MC.

Contract output when MR < MC

Firms maximise profit when MR equals MC.

Profit maximising output occurs when MR = MC

Expressed in another way, profit rises when revenue from the sale of one more unit of production is greater than the cost of producing that unit. Conversely, if the cost of producing one more unit is more than the amount of revenue brought in by selling that unit, profit levels decline with the production of that unit.

2.3.3 Profit maximisation

To illustrate this process, let us re-construct the Marginal Cost (MC), Marginal Revenue (MR) and other variables pertaining to cost of production and profit determination of the lunch packet business. We will first look at the revenue side followed by the cost side of the business.

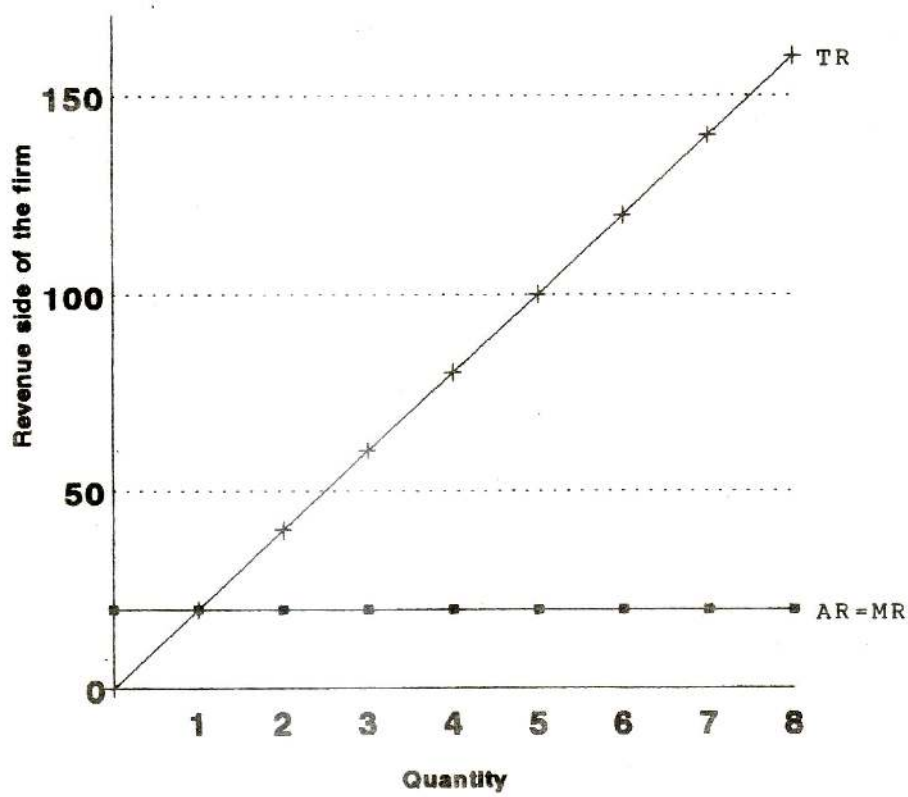
Table 2.2 : Revenue side of lunch packet business, (1995)

No. of packets (O)	Price (P) (Rs)	Total Revenue (TR) (Rs)	Average Revenue (AR) (Rs) TR%	Marginal Revenue (MR) (Rs) ..TR/..O
0	20	0	20	20
1	20	20	20	20
2	20	40	20	20
3	20	60	20	20
4	20	80	20	20
5	20	100	20	20
6	20	120	20	20
7	20	140	20	20
8	20	160	20	20

Figure 2.6 presents the above data graphically.

Figure 2.6

Revenue Side of the Lunch Packet Firm



Notice that total revenue increases with the increase of output/sale. However, marginal revenue is fixed at Rs. 20. It is interesting to note that Rs. 20/= is the price determined by the market forces, and at this price both marginal revenue and average revenue are equal. Thus the MR curve of a perfectly competitive firm represents its price, average revenue, and marginal revenue. It also shows the demand for the product in question.

We can now look at the cost side of production and market equilibrium with respect to the lunch packet business.

Table 2.3: Cost Side of the Firm, 1995

Output (O)	Total fixed Cost (TFC)	Total Variable Cost (TVC)	Total Cost (TC)	Average Fixed Cost (AFC)	Average Variable Cost (AVC)	Average Total Cost (ATC)	Marginal Cost (MC)
0	50	0	50	0	0	0	50
1	50	10	60	50.00	10.00	60.00	10
2	50	15	65	25.00	7.50	32.50	5
3	50	21	71	16.66	7.00	23.70	6
4	50	30	80	12.50	7.50	20.00	9
5	50	40	90	10.00	8.00	18.00	10
6	50	60	110	8.30	10.00	18.30	20
7	50	91	141	7.15	13.00	20.15	50
8	50	136	186	6.25	17.00	23.17	50

Notes: (1) To determine profit maximising, production level and the extent of profit, we require columns seven (ATC) and eight (MC).

(2) However, to evolve ATC we need to calculate AFC and AVC i.e. AFC + AVC = ATC.

(3) Remember that the output, (O) and TFC, are hypothetical figures.

The above data can be presented graphically as follows. (See Figure 2.7)

Figure 2.7

Cost data pertaining to lunch packet enterprise

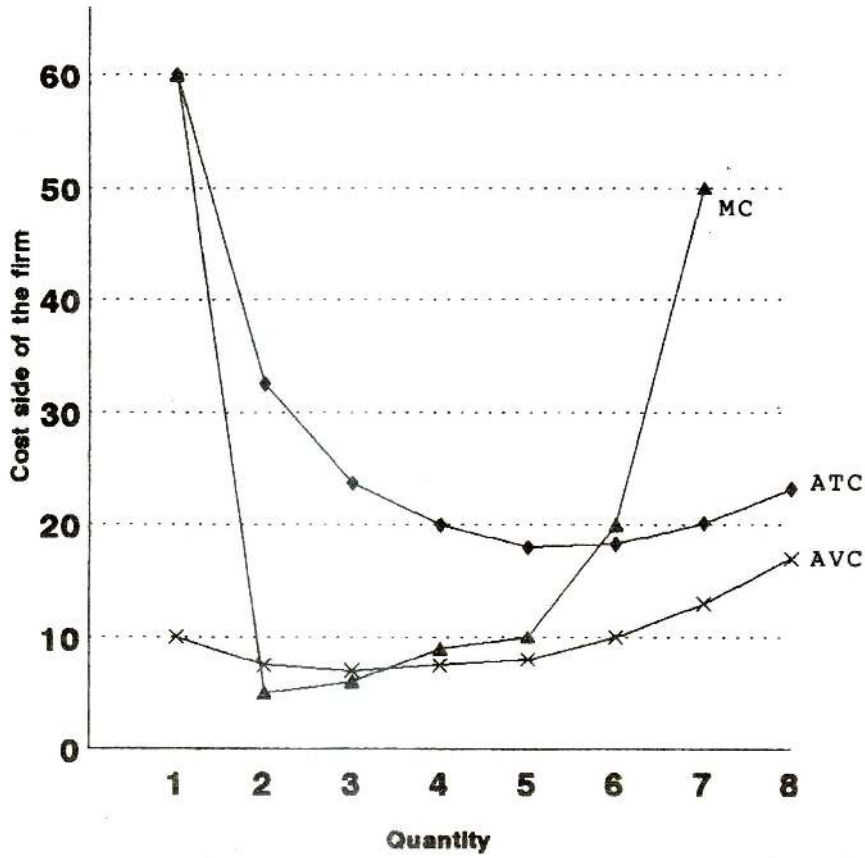


Figure 2.7 above presents the average total cost (ATC), Marginal Cost (MC) and Average Variable Cost curves of the firm.

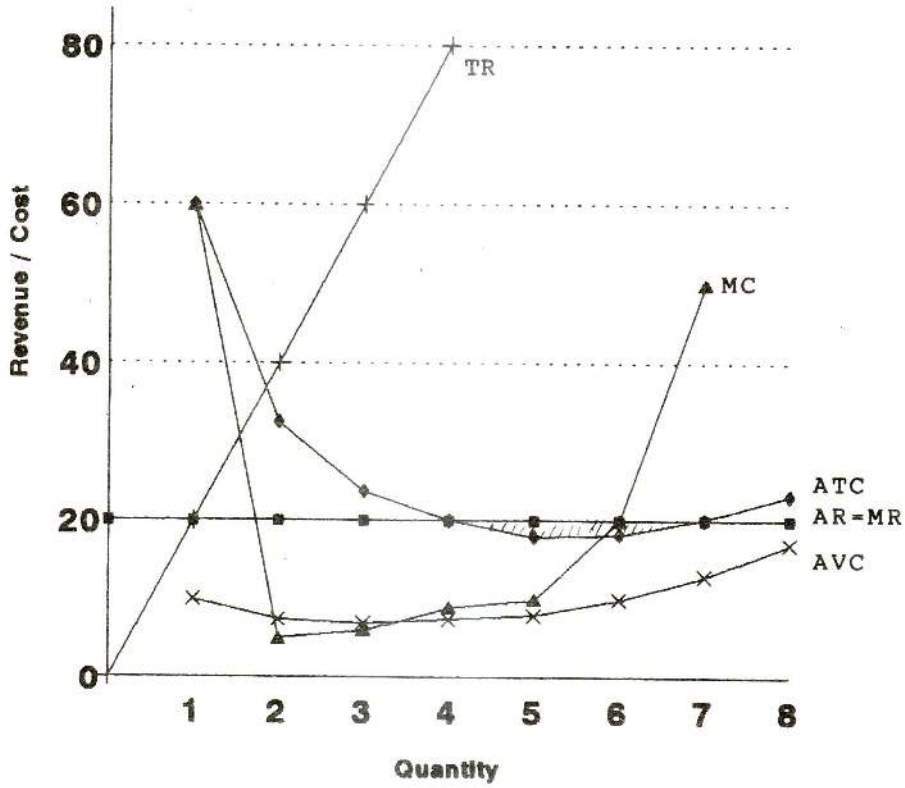
An important point to note is that the marginal cost curve (MC) above the point of intersection of the average variable cost (AVC) is the firm's short run supply curve. It shows the extent of production the firm is willing to supply at different price levels. This upward sloping part of the marginal cost curve begins at point A. It indicates the quantity the firm is willing and able to supply in the short run at each alternative price.

In order to determine the profit maximizing level of output we may now combine the revenue and cost profiles presented separately in the previous sections.

Figure 2.8 below superimposes the cost and revenue curves presented separately in figures 2.6 and 2.7.

Figure 2.8

Equilibrium Price and Production levels of the Firm



Note that MR intersects MC at point Z, where the price is Rs. 20, and the quantity produced is six (6). In other words, the profit maximizing production level with respect to lunch packets is six. At this level of production the firm incurs an average cost of Rs.18.30 per packet. The average profit per packet is Rs. 1.70 [Rs.(20 - 18.30)]. Accordingly, the current level of equilibrium gives a net profit of Rs. 10.20 per day (at the equilibrium production level of six lunch packets x Rs. 1.70 profit per packet).

This is graphically presented in figure 2.8 Notice that the firm makes a net profit of YZ per packet and the total profit is depicted by the rectangular area of XYZP, shaded in the figure.

ACTIVITY 1:

Sita, an OUSL student following a business management programme wishes to start a self-employing project in fast-foods. She lives in Nugegoda, where she finds a large number of pastry shops producing large pastries sold at Rs. 25 each. This particular food is tasty, popular and two persons can easily share a pastry for lunch. Sita wishes to know whether she could make her fast foods project a profitable venture. Help her to determine the equilibrium product and the amount of profit she can make a day. You may use the following information to make your computations. Her fixed cost is Rs. 50.

Output	Price	AR	MR	TR	TFC	TVC	TC	AFC	AVC	ATC	MC
0	25				50	0					
1	25					25					
2	25					35					
3	25					42					
4	25					50					
5	25					60					
6	25					75					
7	25					100					
8	25					150					
9	25					190					
10	25					250					

1. Construct the Revenue and Cost profits.
2. Determine the break-even levels, and profit maximisation production levels using TR - TC approach.
3. Use MR = MC approach and determine the equilibrium quantity and level of profitability.

2.3.4 Loss minimisation

It is always a pleasant task to determine the output level that maximises short run profits. However, firms are not always fortunate. As price takers, perfectly competitive firms may sometimes face price levels that do not generate any profit. What can a firm do when it cannot generate profits? Can they continue to accumulate losses? Should they be shut down? Let us now examine a short run loss-minimizing option for a firm in perfect competition.

Short run is too short for new firms to enter or for existing firms to leave

At the outset we make another useful assumption with respect to perfectly competitive firms in the short run. The short run is a period which is too short for new firms to enter, or for existing firms to leave the industry. Thus in the short-run firms cannot leave. They need to continue or shut down the enterprise temporarily.

Loss-minimisation = Total Revenue > Total Variable Cost

Remember, that total cost consists of two parts: Fixed cost and variable cost. Fixed costs are costs that have already been incurred. Even if the firm does not produce any output the fixed cost does not change. Firms have to account for it.

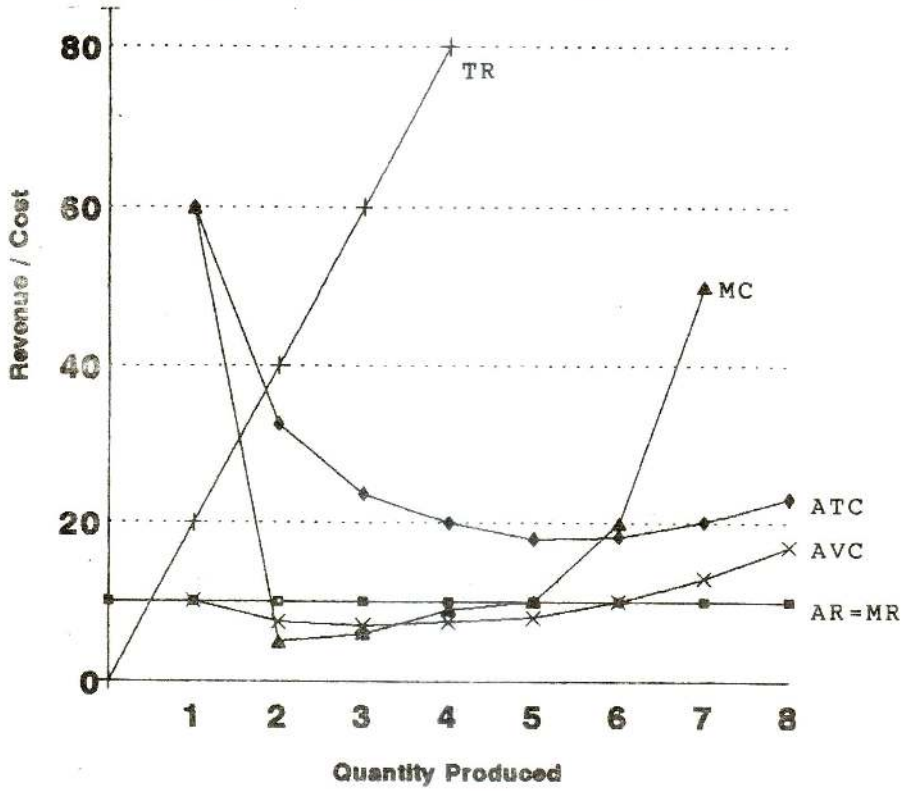
On the contrary, variable costs change with the level of output. Therefore, before taking a shut down decision short run firms may be willing to cover at least part of the cost they have already incurred. This can be done if there total revenue exceeds the total variable cost, only then the firm can recover part of its fixed cost. This decision is known as loss-minimisation. To illustrate this point we construct a new price scenario for our lunch packet business.

Assume that the market price of lunch packets drops from Rs. 20 to Rs. 10 per packet.

Since MR is equivalent to price, Rs. 10, becomes the MR curve, which is also the AR curve of the firm. The new price and marginal revenue (MR) curve leads to a completely different decision making scenario for the firm. Figure 2.9 presents this scenario.

Figure 2.9

Loss Minimisation for a Firm



At Rs. 10 per packet the MR curve meets MR curve at point 'C' reducing the equilibrium level of output to five (5) packets of lunch. You may notice that at this point the average revenue (AR) of Rs. 10 per packet of lunch is well below the average total cost of production which is Rs. 18.00. This leads to the computation of total cost Rs. 90 (i.e. ATC of 18.00 x 5 packets) and total revenue of Rs. 50 (i.e. AR of Rs. 10 x 5 packets). Therefore, at this level of output the total loss incurred by the enterprise is as follows.

TR = Rs. 50.00

TC = Rs. 90.00

Profit/losses = TR - TC

= 90 - 50

loss = 40.00

It is evident that the price drop from Rs. 20 to Rs. 10 has turned the enterprise into a loss-making proposition. We should now consider whether the firm is generating a total loss or a partial loss (minimising losses). If the total revenue of the enterprise exceeds its variable cost, it means that the firm is recovering part of the fixed cost it has incurred. This, in other words, means that the firm is minimising losses.

When the total revenue exceeds the firms total variable cost, it is minimising losses.

At the equilibrium quantity of five units, the average variable cost of the enterprise is Rs. 8 per unit of output.

Therefore, the business is in a position to cover its total variable cost (TVC) of Rs. 40 (i.e. AVC of Rs. 8 x 5 packets of lunch), as its total revenue (TR) of Rs. 50 exceeds the TVC. As given in figure 10 the loss minimisation decision is taken when MC = MR at point C. The total revenue at this point is denoted by the rectangular OQ_0CP, while the total variable cost is denoted by the rectangular OQba. The area shaded which is the rectangular abcP denotes the amount of loss

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recovered by the decision to produce five lunch packets at the price of Rs. 10 per packet. This in other words is a loss minimisation level of production of a short run firm in a perfectly competitive situation.

2.4 Plant shut down decision

It is now clear that firms may not be shut down if they can recover at least the total variable cost along side with part of the fixed cost. Conversely, if the firm cannot recover its full variable cost during the short run, it is advisable to suspend production. This is because by continuing to produce the firm will lose more than if it suspends operation. The minimum point of the average variable cost curve is regarded as the shut down price. For instance if the average revenue drops below the average variable cost of Rs. 7.00 per unit of production, the lunch packet project will have to suspend its operations.

Shut down = when TR < TVC

ACTIVITY 2:

The price of a lunch packet drops to Rs. 5.00. Construct the cost and revenue profiles for the firm. Plot the MR, MC, AVC curves and indicate the total loss/profits the firm can generate. Advise the firm on its next course of action.

Summary :

i. This lesson identifies the distinguishing characteristics of perfectly competitive firms. It discusses the demand and supply curves of perfectly competitive firms and how they differ from the demand curve of the industry.

ii. The lesson lists some of the vital assumptions with respect to profit maximisation decisions.

iii. It delineates the two approaches i.e. TR – TC and MR = MC approaches to determine profit maximizing output levels.

iv. Using hypothetical case data the lesson constructs profit maximizing production levels for a perfectly competitive enterprise.

v. The lesson presents an alternative loss minimising scenario and its implications.

vi. Finally it indicates the possibility of a suspension of operations when conditions are extremely unfavourable.

Glossary of terms :

1. Economies of scale – The decrease of unit cost as the quantity of production increases.

2. Loss minimisation – Where firms decide, in the short run, to recover their full variable cost and part of the fixed cost.

3. Perfectly elastic demand curve – A horizontal demand curve indicating that consumers can and will purchase all they want at the price.

4. Shut down price – The minimum point of the average variable cost curve.

5. Sunk cost – Cost that occurred in the past

Review Questions:

1. Describe the features of a perfectly competitive market structure.

2. List the major assumptions on which the perfect competition model is constructed.

3. Describe profit maximisation using total revenue minus the total cost approach.

LESSON THREE

PERFECT COMPETITION - PART II
(LONG-RUN DECISION MAKING)

Introduction : In Lesson 2 we saw how perfectly competitive firms maximised profits in the short run. When profit maximisation is difficult firms decide between loss minimisation and plant shut-down options. We noticed that in the short run certain resources such as plant size and technology are fixed. This is because free entry and free exit of firms do not occur in the short run. In this lesson we modify some of the assumptions with respect to size of firm, change of technology and freedom to enter and exit.

Contents :

1. Competitive firms in the long run
2. Zero economic profit
3. Change in demand
4. Change in cost
5. Perfect competition and efficiency

Learning Objectives :

After reading this lesson you may be able to:

(a) define the concepts listed in the glossary of terms

(b) describe how firms determine equilibrium quantity in the long run.

(c) describe how long-run decisions differ from short run decisions.

(d) explain factors affecting the long run profit decisions

(e) explain why perfect competition is a useful concept in dealing with market structures

(f) illustrate the determination of equilibrium levels using graphs, and arithmetical examples.

Study Guide :

Make sure that you have achieved the learning objectives of the previous two lessons on market structures, before reading this lesson. You may scan through the lesson and try to grasp some of the broad concepts, initially. In your second reading you may look at the nitty-gritty aspects closely. Familiarise yourself with the assumptions and processes involved in the determination of quantity and price. Attempt the activities. Discuss the concepts with your colleague and see whether you could explain them in non-technical language. You may spend about six (6) hours to complete this lesson.

3.1 Is the long run different?

In the long run firms are free to enter or leave. They can adjust their plant size and technology. They can adjust their scale of operations. As there are no fixed resources, all costs are variable. These changes influence the behaviour of perfectly competitive firms in the long run with respect to their profit maximisation.

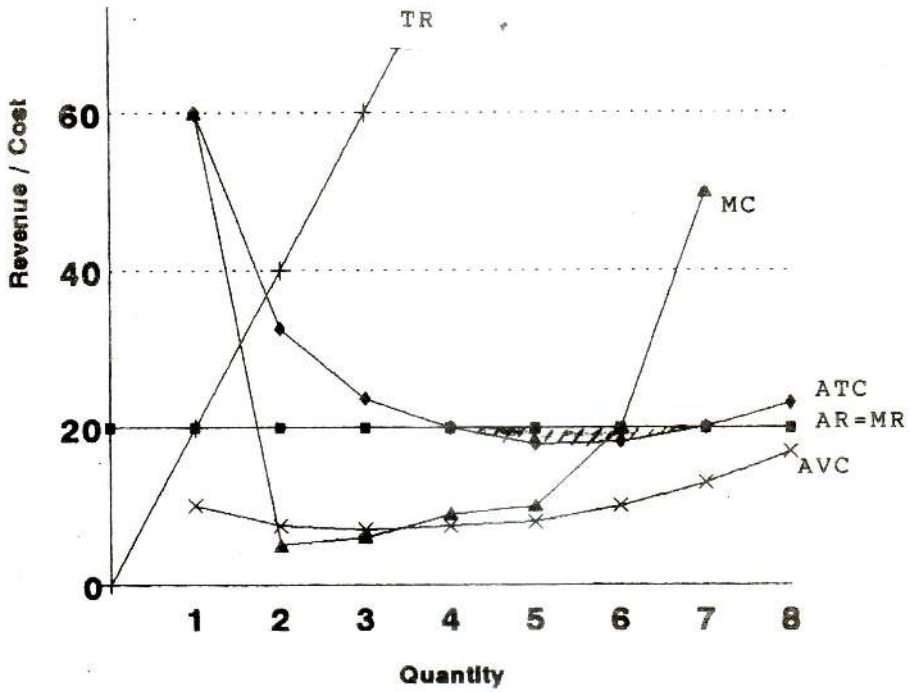
All firms shun continuous losses

The long run operations of a firm are governed by two basic facts. First, all firms seek profits (They shun losses). Second, any firm is free to leave or enter the market. As a result the long run behaviour of perfectly competitive firms is different from the short run analysis we discussed in lesson two.

Recall the lunch packet market in which a firm decides to produce 6 packets at Rs. 20, and generate an economic profit of Rs. 10.20 per day. An economic profit as you could remember refers to the total revenue of a firm less all its economic costs (both implicit and explicit). Economic profit is sometimes referred to as pure profit or above-normal profits. One important characteristic of a perfectly competitive firm in the short run is that it can enjoy economic profits. We reproduce below the profit levels of the lunch-packet venture to make the analysis easy.

Figure 3.1

Profitability of the Firm producing Lunch Packets



Entry of firms eliminates economic profits

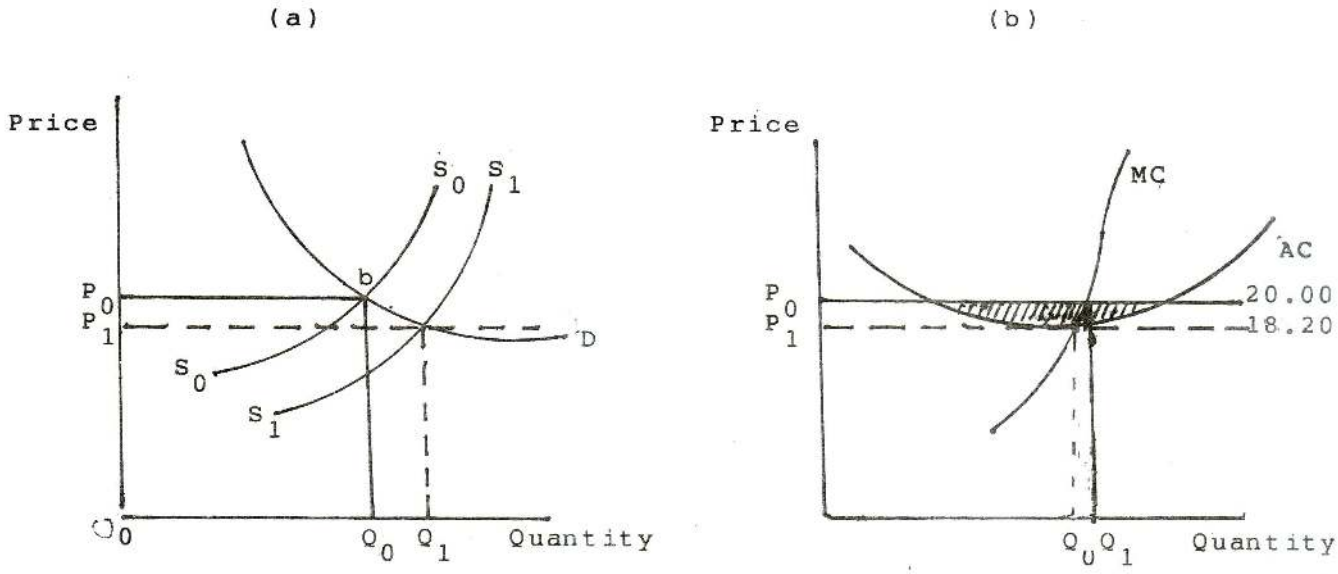
In the long-run, however, firms cannot enjoy economic profits owing to two main reasons. Firstly, since firm can change their scale of operations, some firms will expand their capacity to reap economic profits in this particular industry. Secondly, new entrants may be attracted by the profit opportunities in this industry.

The expansion of the scale of operations by the existing firms and the entry of new firms into the market will increase the market supply. As long as economic profits are positive this expansion will occur. This will result in a shift

in the supply curve (S_0S_0) to the right hand side (S_1S_1) as given in figure 3.2. As we already know the industry's supply curve which is the industry's MC curve cuts across the MR curve at point (b).

Figure 3.2

Entry of New Firms change the Supply Curve



This increases of quantity is supplied from Q_0 to Q_1 and as a result price falls from P_0 to P_1. The new market price of P_1 becomes the long run AR curve for firms producing lunch packets. You may notice that this process eliminates economic profits of short run firms. The new price of lunch packet stabilises at Rs. 18.30.

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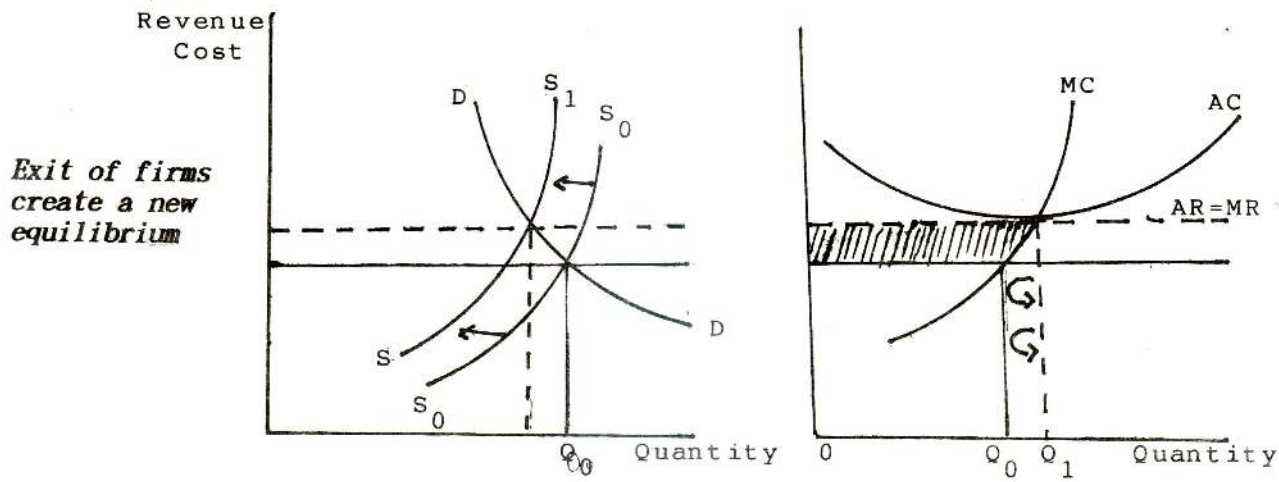
Assume that the price of lunch packets drops to Rs. 15 per packet. This creates short run losses and firms in the short run will try to minimise economic losses. However in the long run, firms will either leave the industry that generate losses, or reduce their scale of operations individually. As a result the industry's supply curve of S_0S_0 will shift to the left hand side S_1S_1 as given in figure 3 below.

Figure 3.3

Exist of Firms and the New Equilibrium



Accordingly, the reduction in supply leads to a new equilibrium price at point *b* where a lesser quantity (Q_1) is supplied at the original price of Rs. 18.30 (or P_0).

The desire to maximise profit through self-adjustment of quantity produced together with free entry and free exit induce perfectly competitive firms to minimise their average production cost. The process cuts economic profits of perfectly competitive firms to zero. Firms unable to lower their costs in the long run cannot survive under perfect competition.

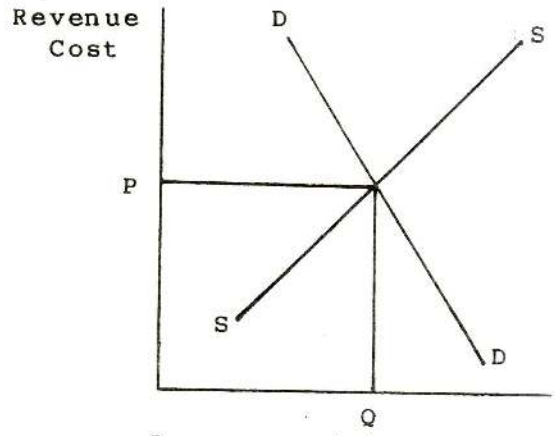
How long is the long run?
In the short run some resources can be varied, but others such as technology and plant size are fixed. Firms cannot change their scale of operation.
In the long run however, all resources are variable; firms are free to enter; free to exit; and free to change their scale of operation. The time required to make all resources variable is known as the long run.

In the long run, market prices will be dependent on market supply which adjusts itself through the process of free entry, free exit and change of the scale of operations. The effect of this process leads to an equilibrium level where the market supply curve intersects the market demand curve. This occurs when the market price equals the lowest point on each firm's long-run average cost curve. Firms that cannot fulfil this requirement can no longer survive in the long run. This situation is depicted in Figure 3.4 below.

Figure 3.4

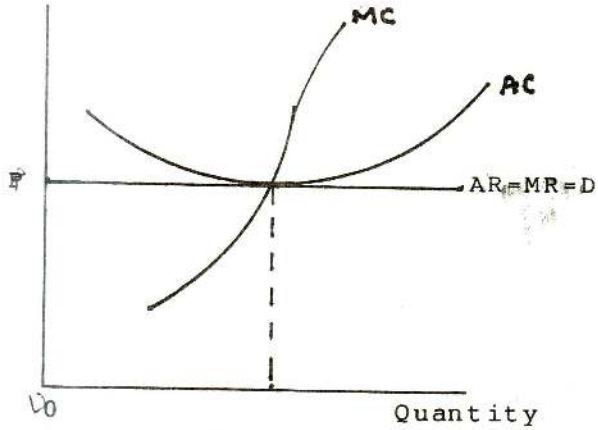
How Market Equilibrium affects Long Run Decisions of Firms

(a) Market



Long run market equilibrium, with price and quantity.

(b) Firm



Long run average cost, marginal cost and marginal Revenue (MR) of the firm.

Panel (a) of Figure 3.4 presents the market equilibrium where Q_0 is the equilibrium quantity at P_0 price. This equilibrium is possible because firms have the capacity to adjust their scale of operation at a point where market price equals the long run average cost curve of each firm.

Panel (b) of Figure 3.4 presents the firm's equilibrium operation level. It occurs at point c where the Marginal Cost curve intersects both Marginal Revenue (MR) and long run average cost curve of the firm (ATC). Therefore, the long run equilibrium of perfectly competitive firms occurs at

$$MC = MR = AC$$

where $AC = ATC$

In the long run the distinction between fixed and variable costs disappear. Consequently, the Average Cost (AC) is calculated by dividing the Total Cost (TC) by number of units produced.

At this price the firm earns normal profits. This profit is included in the average cost. Normal profit therefore refers to the accounting profit required to induce owners of the firm to employ their resources in business. Economic profit is an abnormal profit which attracts new investors, while economic losses deter new investors. Normal profits retain the owners of resources within the industry.

ACTIVITY 1:

Differentiate normal profits from economic profits.

3.2 The long run adjustment mechanism

The long run equilibrium level of perfectly competitive firms occurs at the lowest point of the Long Run Average Cost (AC). Two processes adjust this position temporarily.

They are:
i. change in demand
ii. change in cost

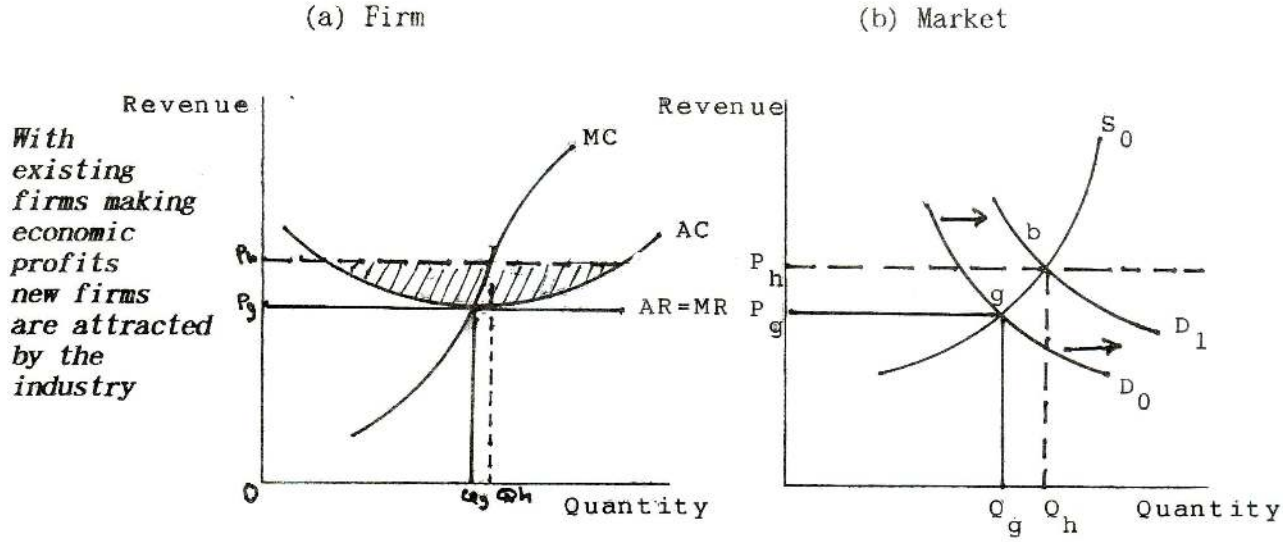
3.2.1 Effects of change in demand

A number of factors cause a change in demand for a given commodity. The changes in income levels of buyers, and changes in price of other goods are two important factors amongst them. These changes cause either increase in demand or decrease in demand for a given commodity. For instance, a sudden increase in income levels of consumers may lead to an increase in demand for a particular commodity which can be depicted by a shift in the demand curve from left to right as shown in Figure 3.5. The effects of change in demand on the long run equilibrium position are illustrated in Figure 3.5 and 3.6.

It is seen that the market demand and supply of commodity X reaches its equilibrium level at point *g* with equilibrium price P_g and equilibrium quantity Q_g.

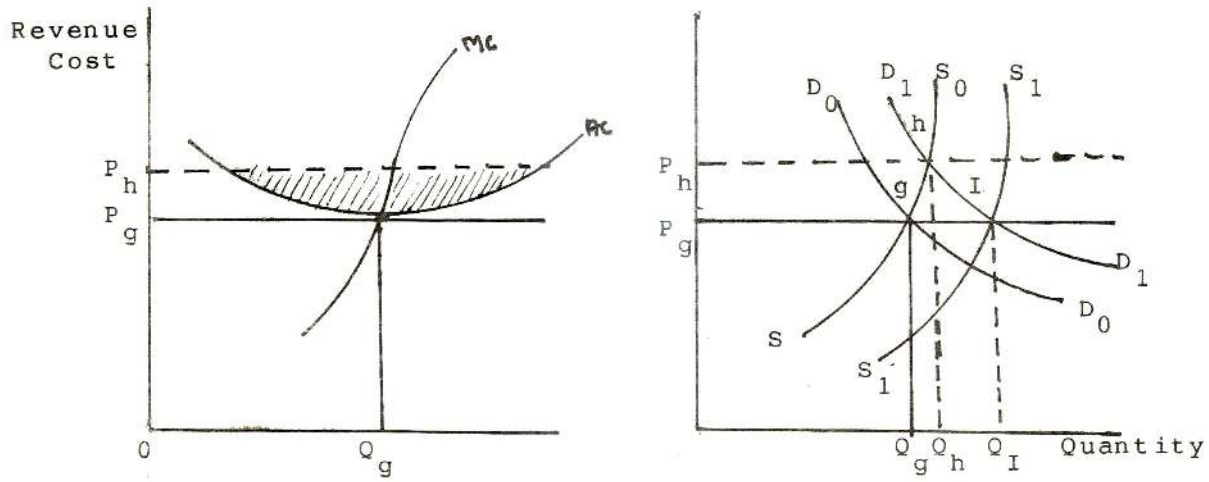
Figure 3.5

Effects of Increase in Demand



When the market demand increases from D_0 to D_1 the equilibrium point moves upward from point *g* to *h* initially. This results in a new equilibrium price of P_h and quantity of Q_h given in dotted lines. The increased demand and price levels induce firms to produce more which in turn increases the output together with economic profit levels. Panel a of Figure 3.5 shows the increased economic profit levels of firms (which is coloured). The capacity to earn economic profits in this industry attracts new firms (old firms increase the output levels too). This causes a shift in the supply curve from left to right as given in Figure 3.5.

Figure 3.6



As indicated industry supply increases until it reaches the equilibrium point *I*. This means that both old firms and new firms are attracted to increase output until the market supply reaches Q_1 and at this level the market price stabilizes at P_g where no firm can earn economic profits. Therefore, the new equilibrium point is shifted from point *g* to point *I* as a result of the long run adjustment process. This process is activated as a result of increase in demand.

3.2.2 Effects of a decrease in demand

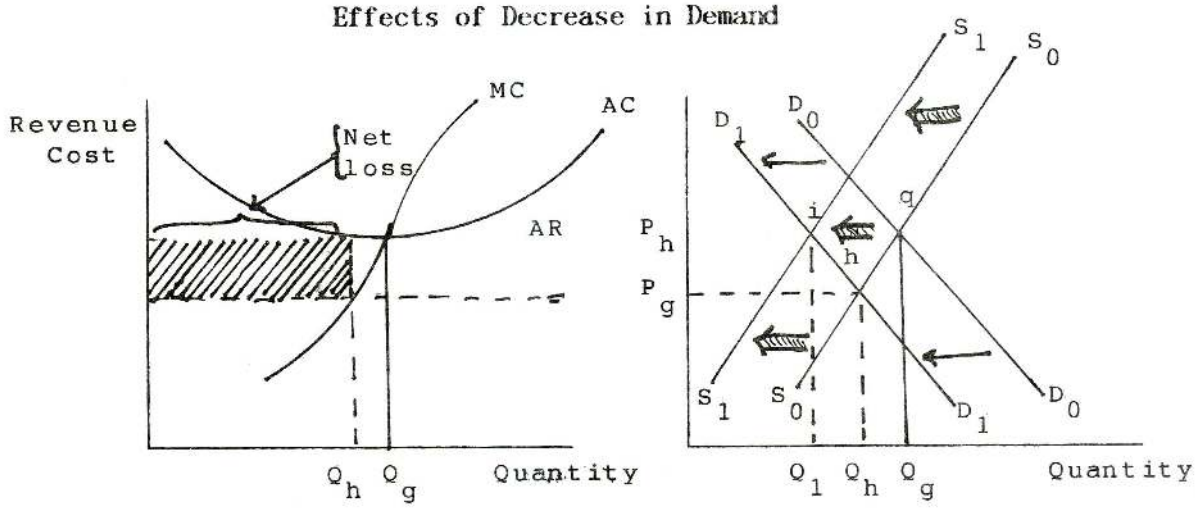
In contrast, a decrease in demand may shift the demand curve from right to left causing an equilibrium level which is below the lowest point of the Long Run Average Cost curves (AC). No firm

When firms suffer losses many leave the industry while others contract their scale of operations

will entertain business when equilibrium production occurs below the AC curve, because such a production causes negative profits. As such firms start moving out from this industry, this causes a shift in the supply curve from left to right until the long run adjustment price reaches P_g level where only zero economic profits are possible. This mechanism is illustrated below in Figure 3.7.

Figure 3.7

Effects of Decrease in Demand



(Shifts of Demand Curve from D_0D_0 to D_1D_1 is followed by an equivelent shift of Supply Curve from S_0S_0 to S_1S_1)

Our discussion thus far deals with the effects of change in demand on the long run equilibrium of a perfectly competitive industry. It examines how firms adjust their output levels to suit such changes in demand. It discloses why the long run

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equilibrium of perfectly competitive firms finally stabilises at the lowest part of the AC curve.

3.3 Effect of change in cost

A Constant Cost Industry can expand or contract without affecting the prices of resources it employs

In our previous discussion we assumed that cost of production of the industry concerned remain constant. Therefore the analysis we performed was confined to a particular type of industry known as a Constant Cost Industry. Under this types of of industry the cost of production does not change in spite of the changes in an industry's output in the long run. It is this assumption that leads to a particular type of adjustment process in which the long run price always comes back to the original position of P_E after the long run self-adjustment. As a result the Long Run Supply Curve of constant cost industry is a horizontal line reflecting unchanged industry cost in the long run. This position is shown in the supply curve market S^C in figures 3.5, 3.6,and 3.7.

However, quite contrary to this proposition many industries face changes in production costs as an industry's output changes. For instance, as an industry's output expands the prices of the resources of many industries shift upward. This is inevitable when more firms start bidding for the same resources with the expansion of the scale of production. The outcome of this shift in the production cost leads to a new category of

Increasing cost industries face higher resources prices as they expand production levels.

industries generally known as Increasing Cost Industries. The inverse of this process creates decreasing cost industries which leads to a fall in the cost of resources as industry expands. In gem mining areas the proliferation of gem pits reduces the water table of the area, reducing the cost of pumping water out from gem pits. This leads to 'Decreasing Cost Industry' situation. In contrast a construction boom can cause prices of sand and timber to soar creating an 'Increasing Cost Industry' situation.

3.4 Perfect competition and efficiency

Economists view perfect competition as the most efficient market structure. This always means perfect competition is superior both in terms of productive efficiency and allocative efficiency.

Efficiency = (Productive efficiency + Allocative efficiency)

Production efficiency refers to an equilibrium that can be achieved at the least cost combination of inputs

The concept of productive efficiency deals with an equilibrium that can be achieved when output is produced with the least cost combination of inputs. It implies that you employ the best alternative technology to attain the least cost combination of inputs. Conversely, a firm cannot claim to attain productive efficiency when the same level of output can be achieved using fewer resources and therefore at a lower cost.

In the long run perfectly competitive firms determine their equilibrium output levels at the lowest point of the long run average cost curve. Firms that are above or below this point make suitable adjustments by controlling the scale of production and using the freedom to enter or exit. As a result in the long run no perfectly competitive firm can make economic profit. They earn normal profit only.

The second aspect of efficiency is called allocative efficiency. Allocative efficiency occurs when firms produce the output that is most preferred by consumers. Resource allocation decisions of perfectly competitive firms are dependent on the output decisions. Firms determine their equilibrium output when the Marginal Cost (MC) of each good produced equals the marginal valuation of each consumer reflected in the Marginal Revenue (MR).

As long as marginal cost equals marginal benefit, the last unit produced is valued as much or more than any other good that could have been produced using the same resources. Hence, reallocation of resources to produce any other good or service cannot generate better allocative efficiency. Therefore, perfect competition ensure the highest possible levels of productive and allocative efficiency.

Summary :

i. In the long run firms enter and leave the market until economic profits are eliminated.

ii. Firms produce at the lowest point of its long run average cost curve. At this level of output, the price, marginal cost, average cost and marginal revenue are equal. Firms failing to produce at this least cost combination will be driven out in the long run.

iii. Two forces i.e. the change in demand and change in cost activate the long run adjustment process of perfectly competitive firms. The change in demand involves both a decrease in demand or an increase in demand.

iv. The change in cost (deals with variations in cost) may take the form of an increase in cost or a decrease in cost. These two variations are exceptional to constant cost industry assumptions upon which the bulk of the perfectly competitive equilibrium discussions are based.

v. Perfectly competitive markets are expected to be the most efficient in terms of both allocative and productive efficiencies.

Glossary of terms :

1. A constant cost industry can expand or contract without effecting the prices of the resources it employs.
2. An increasing cost industry faces higher resources price as it expands.
3. Productive efficiency is achieved when output is produced with the least cost combination of inputs.
4. Allocative efficiency is achieved when firms produce output that is most preferred by consumers.

Review Questions:

1. Describe how profit maximisation in the long run is different from short run positions of perfectly competitive markets.

2. Why is free entry and exit important in the long run decision making?

3. What considerations make the long run constant cost industry supply curve perfectly elastic?

4. Why do you consider perfect competitive structure efficient?

LESSON FOUR

MONOPOLY - PART I

Introduction :

Let us now move to the opposite market model of perfect competition: Monopoly. Think of a situation where there is only one drug for the treatment of AIDS (Acquired Immune Deficiency Syndrome), and no other. The drug could be sold at almost any price and those needing it will still buy the drug. The owner of the drug is said to have market power. The essence of market power is the ability to determine the price of a product. However, such a situation does not operate where there are other firms selling the same product in competition.

In this lesson we examine the characteristics, the bases, and the price-out put behaviour of monopolies.

The lesson is in two parts: Part 1 examines the characteristics of a monopoly. Part II deals with profit maximisation and price discrimination of the monopoly.

Contents :

1. Market power
2. Price Maker
3. Downward sloping demand curve

Learning Objectives :

After the completion of this lesson you will be able to:

(a) explain the main features of a monopoly.

(b) define some of the key terms such as Monopoly, "price maker", and Monopoly power.

(c) explain the nature of the demand curve for a Monopoly firm.

Study Guide :

What is a Monopoly? What are its main features? The purpose of this lesson is to help you answer these questions.

Before reading this lesson make sure you know the meaning of:
Market Structures (Lesson 1)

4.1 The market structure of a monopoly

The market structure of a monopoly is the exact opposite of that in perfect competition. A monopoly exists when a single firm is the sole producer of a product. On the other hand, in the case of perfect competition, there would be many individuals manufacturing the same product. Under perfect competition no one can determine the market price. A monopoly in contrast, has the power to influence the market price. The nature of a monopoly will help us to understand why this is so.

4.2 Characteristics of a monopoly

The characteristics referred to in the previous lesson are used here in order to distinguish the monopoly market structure from other market models: Perfect competition, Monopolistic competition and oligopoly.

4.2.1 Number of firms

A monopolist is a single supplier of a product. The firm may be large or small, but whatever its size, it must be the only supplier of the product. In most countries, public utilities like gas, electricity, water and TV channels are all monopolies. The government(s) regulates these goods and services and 80-85 percent of them are supplied by the government(s).

When a single firm is the sole producer of a given product, the firm and the industry are identical.

ACTIVITY 1:
Give as many examples of Monopolies as you can.

4.2.2 **Product type**

The monopolist's product is unique: there are no satisfactory or even close substitutes. If you are a customer/buyer, you will have no suitable alternative. You will have to buy the product or do without it. Does government advertise public utilities on mass media? The answer is no. Because the citizens who want to obtain water, gas, electric power, and telephone service know that there is only one supplier, the government.

These services are sometimes advertised in the public interest but this is different from the advertising of, say, cigarettes, soap or beer. The monopolist has no immediate rivals, because there are no suitable substitutes. The people accordingly have no option but to buy these products.

ACTIVITY 2:
"Do consumers have any market power under a Monopoly"? Explain.

4.2.3 Entry conditions

Entry to the market under the conditions of the monopoly is nearly impossible. The monopolist keeps away competitors. Newcomers seeking to enter the industry face three major difficulties:

(a) Economies of scale enjoyed by the monopolist.

(b) The monopolist's ownership of essential resource

(c) Bureaucratic regulations, delays and red-tape.

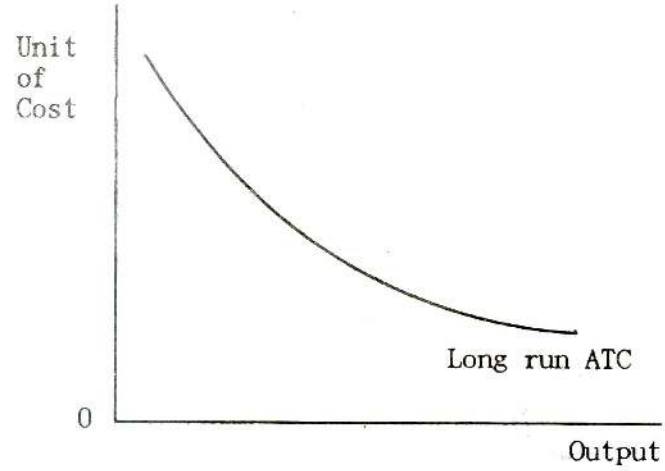
(a) **Economies of scale**

If you are able with the same inputs to reduce your unit cost of production of a particular product over a given period of time, you will be able to increase your product efficiency or productivity. However, this can be achieved only if your plant capacity is able to cater to the entire market.

Where economies of scale operate significantly a firm's average-cost of production will decline sharply as its output increases (Figure 4.1).

Figure 4.1

Long run ATC



With low unit costs, a firm will be in a better position to block other competitors from entering the industry. The automobile, aluminum and basic steel industries are a few of the heavy industries that are able to do this. If two companies between them account for the supply of two third of automobile products, small companies will not be able to survive. On the other hand, new firms will have little or no chance of entering the market.

ACTIVITY 3:

"The larger the generating plant, the lower the cost of electricity produced per kilowatt hour". Explain.

(b) **Ownership of essential resources**

Entry is restricted where a single firm owns the essential resources or skills. For example, most of the world's known diamond mines are owned or effectively controlled by the De Beers company of South Africa. Professional sports leagues also enjoy monopoly power. It is very difficult for new professional sports leagues to emerge when the existing leagues already hold contracts with the best players and have a lease on the major stadiums and arenas. Inventions and discoveries also constitute essential resources until others come up with suitable substitutes.

ACTIVITY 4:

Do you think that the IBM still has a monopoly power in the digital computer system market?

(c) **Government**

To an increasing degree, governments are now beginning to favour open economies and market oriented policies while encouraging foreign investments by eliminating restrictive trade practices. The role of the private sector as the engine of youth, is now universally accepted in liberalised economies.

However, government has a regulatory role to ensure that the laws of the country are observed. In instance, an invention or a new discovery is patented to ensure that its owner has the exclusive right to that intellectual property. At another level, drivers of vehicles and the vehicles themselves have to be licensed to ensure the competence of the driver and the roadworthiness of the vehicle.

Newcomers trying to break into an industry or a business where a monopoly situation exists face a number of bureaucratic and procedural hurdles like getting permits, government clearances etc, which are sometimes costly and invariably time-consuming. All this acts as a kind of dis-incentive to those seeking to enter a market where a monopoly exists.

ACTIVITY 5:
"Some states have statutory authority to run lotteries". Do they have monopoly powers?

4.3 **Behaviour of a monopoly** In a monopoly, the market structure is such that only one firm could operate and the entry of others is almost impossible. These conditions decide the behavioural pattern of the monopoly.

4.3.1 Price strategy

In contrast to firms in perfect competition, the monopolist exercises a considerable controlling power over price. This is because it provides the entire supply of the product to the market.

By virtue of the fact that such a firm fixes the setting price, it is called a price maker. Unlike price increases in a perfectly competitive market, a price increase in a monopoly situation will not drive a customer to another product simply because there is no alternative available.

4.3.2 Promotion strategy

The firm in a monopoly market structure may advertise to make its product better known but advertising and sales promotion are given a low-priority. Why? Because they do not have any rivals.

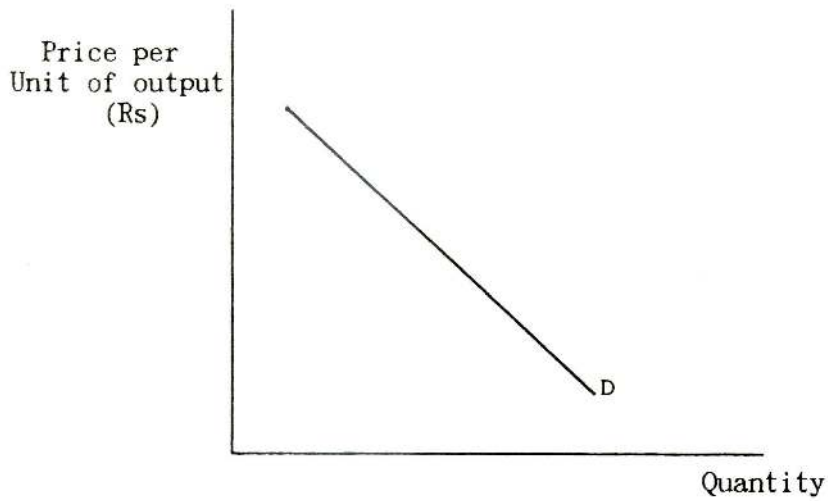
4.3.3 The demand curve facing a monopoly firm

To the buyer the main difference between a monopolist and a competitive seller lies in the question of choice. The competitive firm is a "price taker" determined by the market. A firm competing with others has to settle for "the price" determined by the market and has no power over the price. However, the monopolist enjoys the same demand curve for its products.

In any market, as we know, the demand curve is a downward sloping one because of the law of demand. Since a monopoly firm is the sole producer of a good or service, its demand curve is the same for the product or service.

Figure 4.2 shows the market demand, which is the demand curve of the monopoly firm. The firm is the sole supplier and thus has the entire market demand. This demand curve is down sloping.

Figure 4.2
Firm in Monopoly



ACTIVITY 6:

Answer the questions given below.

Figure A
Firm in perfect competition

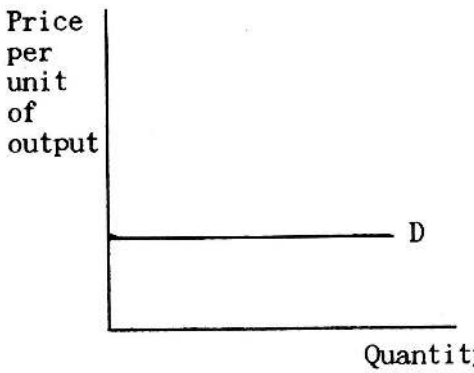
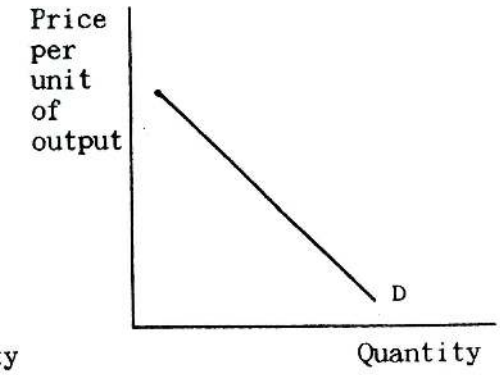


Figure B
Firm in Monopoly



(a) The demand curve of an individual firm in a perfect competitive market is a horizontal line at the market price. True/False

(b) Who is the price maker in the above figure.
(i) Figure A or (ii) Figure B

There are two implications of down-sloping demand curve which must be understood - price exceeds marginal revenue and price elasticity.

4.3.4 Price and marginal revenue

In the previous lesson we learnt that Marginal Revenue (MR) is identical to price for the perfectly competitive (powerless) firm. The distinction between a perfectly competitive

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(powerless) and monopoly (powerful) situation is that in a monopoly revenue is always less than price for a monopolist. Because the demand curve slopes down, price and marginal revenue are not identical. Here price exceeds marginal revenue. This is illustrated in table 1 and geometrically in Figure 4.3.

Table 1: Price, Total Revenue and Marginal Revenue

	Quantity per day	X Price =	TR	MR
A	1	6.00	6.00	6.00
B	2	5.50	11.00	5.00
C	3	5.00	15.00	4.00
D	4	4.50	18.00	3.00
E	5	4.00	20.00	2.00
F	6	3.50	21.00	1.00
G	7	3.00	21.00	0.00
H	8	2.50	20.00	-1.00
I	9	2.00	18.00	-2.00
J	10	1.50	15.00	-3.00

TR = Total Revenue MR = Marginal Revenue

Figure 4.3

Demand and Revenue Curves

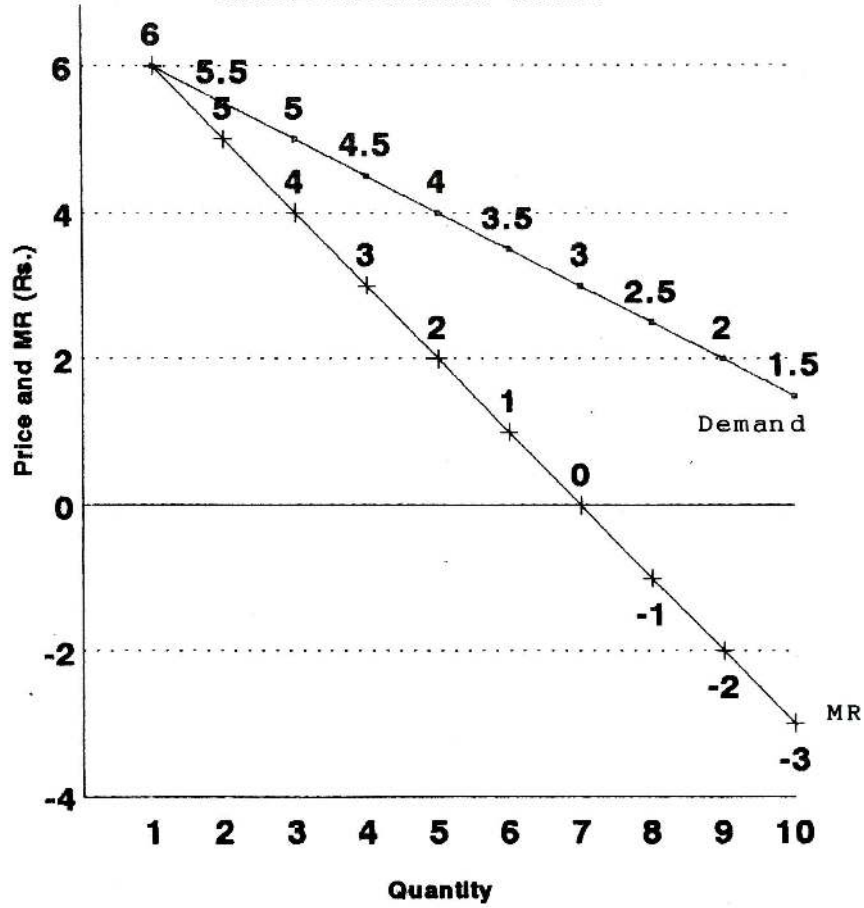


Figure 4.3 provides a simple illustration of the relationship between price and MR. A monopolist can sell one product at a price Rs. 6.00. If however, he wants to sell a larger output he has to reduce his price. According to the demand curve shown here, the price must be lowered to Rs. 5.50 to sell two units of output per day. This reduction in price is shown by a movement along the demand curve from point A to point B.

You have to keep in mind that our primary interest here is marginal revenue: Marginal revenue represents the change in total revenue that results from a one unit increase in output. We want to show what happens when sales increase by 1 unit per day. Total revenue is computed in terms of increased output per unit.

More generally, we have to use the following formula:

$$\text{Marginal Revenue} = \frac{\text{Change in Total Revenue}}{\text{Change in quantity sold}}$$

Our objective is to find out what additional, or marginal, revenue the firm will earn by selling one additional unit per day. Should the firm continue to increase or lower the price.

Let us go back to the Table 1. Row A of the table indicates that the total revenue resulting from one sale per day is Rs. 6.00. To increase the sales, price must be reduced. Row B indicates that total revenue rise to only Rs. 11.00 per day when sales double. The increase in Total Revenue resulting from added sales is thus Rs. 5.00. The MR of the second unit is therefore Rs. 5.00. The last column of the table, MR represents this amount, the point b on the marginal revenue curve. Notice that the price is 5.50 per unit,

but MR is 5.00. If you go further you will realize that price and MR are not the same for a monopoly firm. This is because the firm has to reduce its price in order to increase total revenue. In our example, both are being sold for Rs. 5.50. In effect, the firm instead of selling one unit per day at Rs. 6.00, reduces its price in order to sell a larger quantity at the lower price. In this sense, the firm gives away 50 cents on the first unit in order to increase total revenue. MR is less than price and declines as output rises because the monopolist must lower the price in order to sell more units.

Look at the demand curve which is downward sloping and then compare MR and demand curve. At each rate of output in excess of one unit, MR is less than the price: the MR curve lies below the demand (price) curve at every point except the first unit.

ACTIVITY 7:

Answer the following questions by using figure 4.3 given in the text.

1. Compare simple "d" and capital "D" in the MR curve and the demand curve respectively.
2. Why is the monopolist's demand curve not perfectly inelastic?

4.4.4 Total and Marginal revenue

So far we have examined the relationship between MR and the demand curves of a monopoly. This discussion was further extended by incorporating the TR curve to the map. Figure 4.4a and 4.4b portrayed the relationship between the demand, MR, and TR curves.

Figure 4.4a

Demand and Marginal Revenue Curve

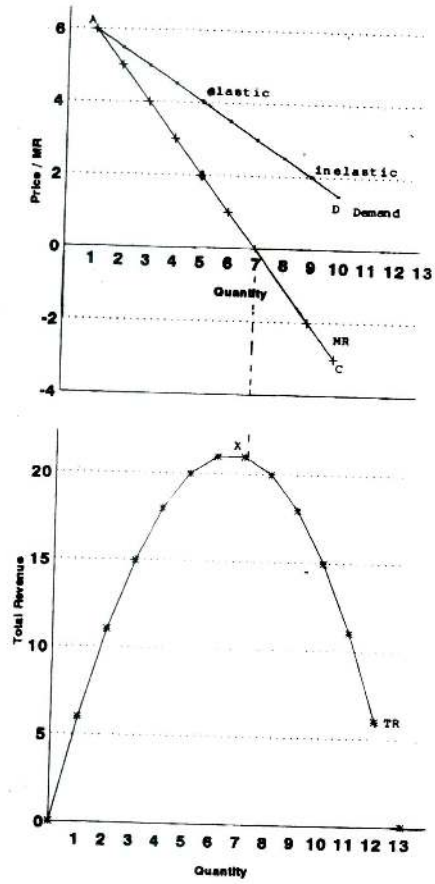


Figure 4.4b

Total Revenue Curve

In a previous section we showed that the MR curve lies below the demand curve. What then is the special relationship between TR and MR. There are three results that follow when the TR changes.

First, we observe that so long as total revenue increases, MR is positive. Why? Look at AB in Figure 4.4a and OX in Figure 4.4b when TR is increasing (0 —> X) AB in Figure 4.4a is still in the positive.

Second, when TR reaches its maximum, in our example X, MR is zero, or B in Figure 4.4a. Third, when TR diminishes (X —>Y in Figure 4.4b), MR is negative (BC in Figure 4.4a).

ACTIVITY 8:
What is the positive area of MR in Table 1.

4.3.5 Elasticity and total revenue

As we know, when a firm's demand curve slopes downward, the firm cannot raise prices without losing customers. Why is this so? A firm's Total Revenue depends on the price of elasticity of the demand curve. Look at the demand curve and the TR curve illustrated in Figure 4.4a and Figure 4.4b respectively. Beginning at the top of the demand curve in Figure 4.4a and 4.4b, you will observe that for all price reduction from Rs. 6.00 down to apparently Rs. 3.50, total revenue increases. This means that demand is elastic in this price range. Conversely, for price reduction below Rs.3.00, TR decreases (MR is negative), which indicates that demand is inelastic. The above observations showed that a monopolist would never choose a price–quantity combination where total revenue is decreasing or marginal revenue is negative. This implies that the profit maximising monopolist will always want to avoid the inelastic segment of its demand curve in favour of some price–quantity combination in the elastic region. However, the monopolist is keen on maximising profits. After selecting the elastic region, the monopolist looks for specific price–quantity combinations on the elastic segment of the demand curve. The question which arises is: where does the monopolist choose to produce and what price does he set? This depends not only upon demand and MR data but also upon costs. Part

II of this lesson will examine how the monopolist maximises his profit.

ACTIVITY 9:

Fill with correct answer.

(1) In monopoly, price is ..... (less than, more than, equal to) marginal revenue, whereas in perfect competition, price is ..... (less than, more than, equal to) marginal revenue.

(2) A monopoly maximizes profit by producing the output level where

(a) P = MC (c) P = MR (e) MC = ATC

(b) MR = MC (d) P = ATC

Summary :

A monopoly is a market structure where there is only a single supplier of a product, and where there are no comparable substitutes for that product.

A monopoly market structure differs in many respects from other market structures. It is the sole supplier of a product; there are no substitutes for the product; and entry of newcomers to the market is almost impossible. The monopolist is a price maker and little sales promotion is necessary.

The main difference between a monopolist and a competitive seller lies inn the demand side of the market, and in that the buyer has a choice.

The demand curve facing a monopoly firm is the industry demand curve; the downward-sloping demand curve.

Review Questions:

1. Which of the following is NOT characteristic of a monopoly?
   a. It is a market structure
   b. A monopolist is the sole supplier of a product
   c. The monopolist's product has no close substitutes
   d. To remain a monopoly, there must be barriers to entry
   e. Monopolists are price takers

2. Why is MR always less than the monopoly price?

3. Under what elasticity conditions will MR be positive, negative and Zero?

4. How does an industry become a monopoly?

LESSON FIVE

MONOPOLY - PART 2

Introduction :

Part 1 of the lesson introduced the main features of a monopoly. We defined some of the key terms relating to a monopoly such as 'price maker', 'monopoly power', and so on. In addition we explained the nature of the demand curve for a monopoly firm. Now we will proceed to examine how a monopoly firm achieves its profit, and discriminates between customers in order to increase the profit. Finally, this lesson compares two market systems so far discussed:- perfect competition and monopoly.

Contents :

1. Profit maximisation
2. Price discrimination
3. Resource allocation
   - Perfect competition
   - Monopoly

Learning Objectives :

After completing this lesson you will be able to:

1. explain why a firm produces at the point where MR = MC.

2. describe the conditions necessary for price discrimination.

3. differentiate between perfect competition and the monopoly.

Study Guide :

This lesson continues our examination of a monopoly, and looks particularly at two concepts namely, profit maximisation and price discrimination. Read this lesson carefully with the objectives in mind. Look at the assumptions previously developed. Compare the two economic models discussed in the lesson.

Before you read this lesson make sure you know the meanings of: Market power, price maker and down-ward sloping demand curve.

5.1 Price and output determination

Every firm is motivated by profit. The monopolist is no exception. The monopolist will determine his profit maximising output on the basis of the cost and demand factors.

5.2 Profit maximisation

MR = Marginal Revenue
MC = Marginal Cost
TR = Total Revenue
TC = Total Cost
ATC= Average Total Cost

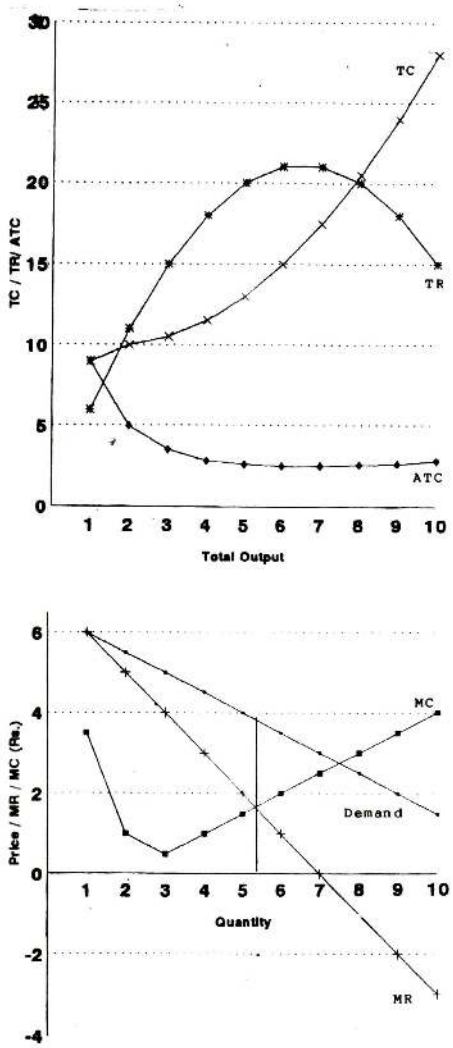
You will remember that in lessons 2 and 3 it was shown that all firms make a profit at the point where MR equals MC. A monopolist firm is no exception: it will produce each successive unit of output so long as it adds more to TR than it does to TC.

In this section we initially look at the demand data or demand curve and cost data of a monopoly firm. Finally, we will focus on profit maximisation conditions. Now let us explain profit maximisation for a monopoly firm by using Table 1. Table 1 shows the Revenue and Cost data for the monopoly product.

Table 1 : The Revenue and Cost Data for the Monopoly Product

Total output	TC	Price	TR	MR	MC	ATC
1	9.00	6.00	6.00	6.00	3.50	9.00
2	10.00	5.50	11.00	5.00	1.00	5.00
3	10.50	5.00	15.00	4.00	0.50	3.50
4	11.50	4.50	18.00	3.00	1.00	2.80
5	13.00	4.00	20.00	2.00	1.50	2.60
6	15.00	3.50	21.00	1.00	2.00	2.50
7	17.50	3.00	21.00	0.00	2.50	2.50
8	20.50	2.50	20.00	-1.00	3.00	2.56
9	24.00	2.00	18.00	-2.00	3.50	2.62
10	28.00	1.50	15.00	-3.00	4.00	2.80

Figure 5.0
The Revenue & the Cost Data



According to Table 1, TR continually rises, exceeding total cost by increasing amounts until the seventh item is produced and sold. As long as MR exceeds MC, the firm should expand production. As you see after the fifth item, MC exceeds MR and profit begins to decline. When MR is less than MC the firm should decrease production. The firm will maximise its profit when MR equals to MC, which decides the level of output. (Figure 5.0)

Now the question is, how high a price will the market be able to bear at that quantity? The answer is the market will be willing and able to purchase the quantity given by MR = MC at the corresponding price on the demand curve.

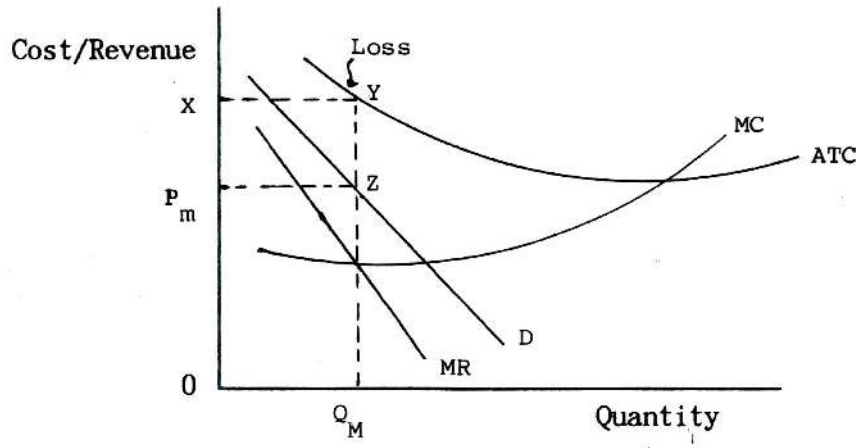
How do you find the price giving the highest profit at a particular level of output. In order to find that price, first we have to draw a vertical line from the point MR = MC upto the demand curve. Then extend a horizontal line over to the vertical axis. That price is Rs. 4.00 when output is 5.4 (Figure 5.0).

5.2.1 Monopoly profit and loss

The profit is taken by multiplying 5 item by Rs. 4.00 which is shown in Figure 5.1 as the dark rectangle. The vertical distance between the ATC curve and the demand curve, multiplied by the quantity sold, gives total profit.

Then what is the difference between monopoly and perfect competition regarding losses. A monopoly also will fail to make a profit in some instances unless price exceeds average costs, and the firm will lose money. Look at Figure 5.1. It shows that a monopolist produces at the price which is less than the average total cost.

Figure 5.1
Operating at a Loss



The above Figure 5.1 teaches us a number of lessons if demand D is weak and costs are high, the monopolist may be unable to make a profit. Because the price P_m is less than the average total cost (Y). Loss per unit is XP_m and total losses are indicated by the $XYZP_m$. Perhaps this

firm is the sole surviving enterprise producing say, TV or telephone, which are no longer in great demand. The lesson from the above can be summarised as follows:

(a) A monopolist will suspend operations if the selling price does not exceed the average variable cost.

(b) A monopolist will shut down permanently if revenue is not likely to equal or exceed all costs in the long run.

Then, how does a monopoly differ from a perfectly competitive firm? A monopolist can earn positive economic profit in the long-run because barriers to entry will keep other firms out of the industry.

Summary. A monopoly firm can make positive, zero, or negative economic profits. If it makes a positive economic profit, entry by other firms will not occur and the monopoly firm can earn positive economic profits in the long run. The monopoly firm will cease to exist if it cannot cover costs in the long run.

5.2.2 Price discrimination

Up to this point we have assumed that the monopolist charges a uniform price from all buyers, no matter to whom or where the product is sold. However, a monopolist has the power not

only to raise the market price of a good (by reducing the quantity supplied) but also to change prices for the same good. For example, doctors in private practice sometimes vary their fees according to the incomes of their patients. Firms often sell their products more cheaply abroad than at home. The car dealer may "adjust" the price to the income and taste of each individual customer. Airlines sometimes charge lower fares for children and those over 65.

In all of the above cases, the seller may adjust the price to the income (purchasing power) and taste (preference) of each individual consumer. You will remember that the demand curves reflects the combined willingness of many individual to buy. Some of these individuals were willing to buy the good at prices even higher than the market price, just as others would buy only at lower prices. In so doing the seller is engaging in price discrimination: A monopolist may be able to increase total profit by selling each unit of the good separately, at a price each individual consumer is willing to pay. This practice is called price discrimination.

How does price discrimination occur? Before we move into this area, let us look at the conditions necessary for price discrimination.

5.2.3 Conditions for price discrimination

Here we deal with the conditions with which a monopolist charge different customers different prices for the same product. Actually, price discrimination occurs when price changes result not from cost changes but from the firm's attempt to attract more clients. What are the conditions that will induce a monopolist to effect price discrimination? In general price discrimination is resorted to under three conditions:

i. the seller must be able to control output and price. He/she is a price maker - the ability to set prices.

ii. The seller must be able to separate customers into separate groups/classes according to their willing to pay for the products. This separation is based upon different elasticities of demand.

iii. The seller must be able to prevent resale of the product. If the customer who buys at the lower price can easily resell in the higher price segment of the market, what would be the result of this on the two markets? The price discrimination policy would thereby be undermined. For example, in the legal and medical services such an eventuality would not be possible.

5.2.4 Potential areas for price discrimination

Price discrimination is widely practiced in most of the economies. Examples of price discrimination are not hard to find:

Eg.1 - In the case of utilities where the demand is elastic, a form of price discrimination is practiced by charging different rates for the different quantities used. The rate declines as the quantity produced increases. For instance, a domestic electricity user might pay Rs. 2.70 per kilowatt-hour for the first 30 kilowatt-hours, Rs. 3.10 for the next 30, and so on.

Eg. 2 - Airlines discriminate between business passengers and non-business passengers. It is relatively easy for the airlines to separate business from non-business passengers to ensure that the latter do not sell their tickets to the former.

Eg. 3 - Physicians and lawyers frequently set their fees for a given service on the basis of ability to pay: a rich person may pay a higher fee for a divorce action or an appendicectomy than a poor person.

Eg. 4 - A manufacturer sells the same whisky at a high price under a prestige label, but at a lower price under a different label.

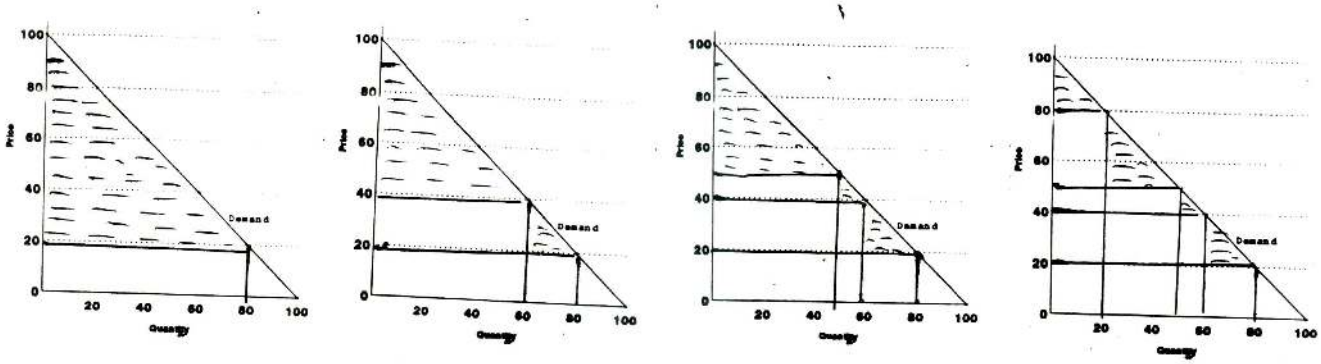
Eg. 5 - Airlines charge high fares from travelling executives and offer a variety of lower fares to vacationers. Because demand for the executive is inelastic and elastic for vacationers.

5.2.5 Discrimination among buyers

Let us consider a situation where four customers each wishes to buy one unit per period but are prepared to pay different prices. This can be explained by using hypothetical data and a figure (See Figure 5.2). According to the Figure 5.2 in each of the four parts a monopolist faces the same demand curve, D and the total quantity sold is assumed to be 80 units. Each firm does a different amount of price discrimination and in each case the firm's revenue is shown by the light-shaded area, while consumers' surplus is shown by the dark shaded area.

Figure 5.2

Price Discrimination



Part 1
(1) one price= Rs. 20.00

Part 2
(2) two prices= Rs. 20,40

Part 3
(3) three prices= Rs.20,40,50

Part 4
(4) four prices= Rs.20,40,50, 80

In part 1, a single price - Rs. 20.00 is charged. In part 2 the first 60 units are sold at Rs. 40.00, and the next 20 units (80-60) at Rs. 20.00. In part 3, the first 50 units are sold at Rs. 60.00, the next 10 (60-50) at Rs. 40.00 and the last 20 units (80-60) at Rs. 20.00. Part 4, the first 20 units are sold at Rs. 80, the next 30 (50-20) at Rs. 60.00, the next 60 (60-50) at Rs. 40.00 and the last 20 (80-60) at Rs. 20.00.

Here you have to realise that as the amount of price discrimination increases, consumers surplus diminishes and produces' revenue increases.

Consumer surplus *is a measure of the difference between what a consumer is wiling and able to pay and the market price of a good.*

Activity 10:
"The monopolist has a price policy; the competitive producer does not". Explain.

5.2.6 Comparison of perfect competition and monopoly

In this section we are going to compare the two markets we have discussed so far. The following summary will help us to distinguish the main features of the two markets.

Table 2 : Comparison of Perfect Competition and Monopoly

	Competitive Industry	Monopoly Industry
1) *Goal of Firm:*	Profit maximisation MC = MR	Profit maximisation MC = MR
2) *Assumptions:*		
(a) Product	Homogeneous	May or may not be homogeneous
(b) Number of firms	Very large number	One
(c) Entry condition	Easy	No entry
(d) Cost condition	U shaped cost curve	U shaped cost curve
3) *Behavioural rules:*		
(a) Price strategy	Price taker	Price Maker
(b) Demand curve	Perfectly elastic	Negative sloping
(c) Policy variable(s)	Only output	Either output or price
4) *Promotion strategy:*	None	Little
5) *Profit:*	Normal profit *(SR, LR)	Abnormal profit (SR, LR)
6) *Resource allocation:*	Efficient	Not efficient

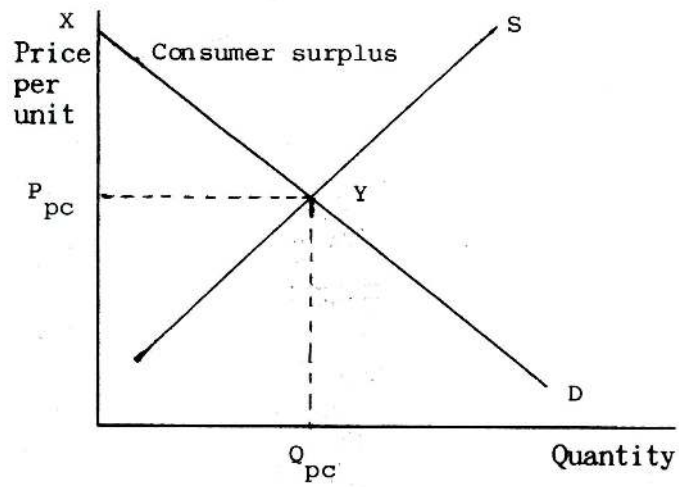
*(SR = Short run, LR = Long run)

Upto this point we have looked at five aspects of a monopoly. If we go further and compare the monopoly market structure and its counterpart, the market structure in perfect competition, the important question of resource allocation arises. This is set out as item 6 in Table 2. Be sure you are clear about the first five items before you proceed to item 6.

6.1 Resource allocation

Let us now deal with the last item - resource allocation. The perfectly competitive market structure results in allocative efficiency because profit is maximised and price is equal to marginal cost. What is the meaning of this statement? The firm operates at the minimum point of the long run average cost curve, and price and marginal cost are equal. Figure 5.3 shows a perfectly competitive market where we have market demand curve (D) and market supply curve (S). The market price is P (Perfect Competitive Price) determined by the interaction of D and S. The PC market produces Q_{pc} product. Here the consumer is able to enjoy the consumer supplies indicated by the P_{pc} by purchasing the quantity Q_{pc} at the point P_{pc}.

Figure 5.3
The perfectly competitive model



How would you explain that if a competitive industry is transformed into a monopoly - Just one firm determines price and quantity produced? Answer is: The industry demand curve becomes the monopoly firm's demand curve, and the industry supply curve becomes monopoly firm's marginal cost curve.

We can go back to the same Figure 5.3 and compare the monopoly, price and quantity which is illustrated in Figure 5.3a.

Figure 5.3
The perfectly competitive market

Figure 5.3a
Monopoly

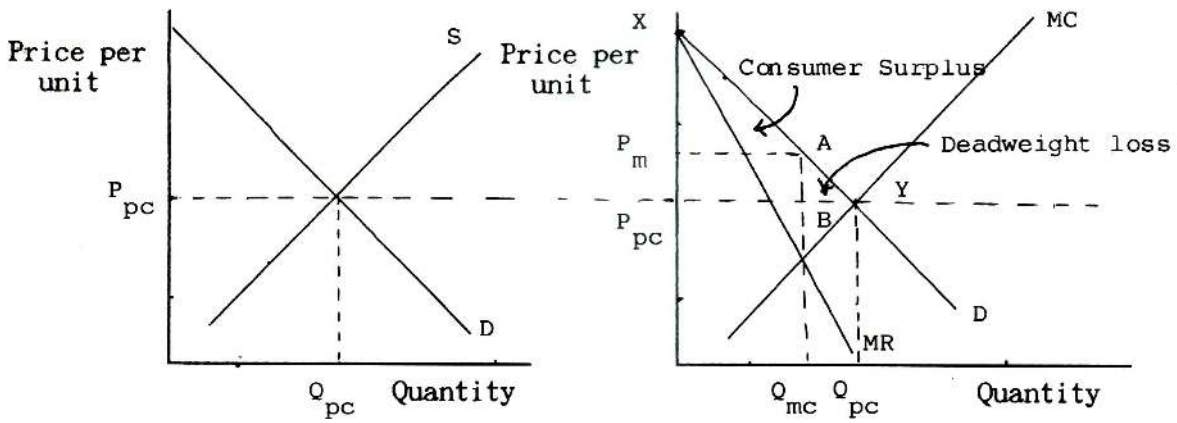


Figure 5.3a indicates that given the same costs, a monopolistic firm will produce much less desirable results. Here a monopolistic firm will maximize profits by producing an output Q_m and

changing a price of P_m where MR = MC shown in Figure 5.3a. The monopolist firm thus produces a lower quantity than does the perfectly competitive industry, Q_m compared to Q_{pc} and sells that small quantity at a higher price P_m compared to P_{pc}. (See table 3)

Table 3: Quantity and Price for two Markets Structures.

	Perfect Competition		Monopoly
Quantity	Q_{pc}	>	Q_m
Price	P_{pc}	<	P_m

The consumer surplus in a monopoly is the triangle P_mAX, which is smaller than the consumer surplus under perfect competition, $P_{pc}YX$. In other words who are the better off and who are the worse off in this process? Firms are better off and consumers are worse off under a monopoly, compared to perfect competition. Go back to the Figure 5.3a. In Figure 5.3a, the area $P_{pc}BAP_m$ is transferred from consumer to the monopoly firm. It is the monopoly profit (B) due to market power. Then what is the triangle BYA? The triangle BYA is lost to the consumer but goes to no one; it is called a dead weight loss.

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Study Guide :

This is the sixth lesson in a series of seven on market structures. We believe that studying these lessons from the beginning will enhance your understanding of the subject. To complete this lesson you will require about three to four hours of concentrated study. Try to comprehend the concepts, definitions and characteristics of monopolistically competitive markets. The activities provided in the middle of the lesson will further enhance your grasp of the subject. Attempt the review questions and discuss your findings with your colleagues in the study group.

* The difficulty of new comers entering the industry may permit a monopolist to acquire economic profits even in the long-run.

* A monopolist can increase his profits by practising price discrimination. The monopolist can separate buyers on the basis of different elasticities of demand and charge different prices for the same product.

* A comparison of monopoly and perfectly competitive firms implies that the monopolist will find it profitable to restrict output and charge a higher price than a competitive seller. This causes resources to be misallocated, resulting in smaller quantities being produced and sold at a higher price.

* X-inefficiency is said to occur when a firm's actual cost of producing a quantity of goods is greater than the minimum possible costs.

Review Questions

1. Given data on cost and demand, how is the SR profit-maximising output level for a monopolist determined?

2. Given the profit-maximising output, how is the price determined?

3. Compare the SR equilibrium position and MR equilibrium position for a monopolist.

4. What are the condition necessary for price discrimination?

5. Who gains and who losses from price discrimination?

6. Is price discrimination always inefficient?

7. What is meant by the deadweight loss of a monopoly?

LESSON SIX

MONOPOLISTIC COMPETITION

(Without product differentiation markets look rotten
where products stifle and die)

'Anonymous'

Introduction :

Perfect competition and monopoly are two extreme positions within the continuum of market structures. These two extreme market structures embody a set of features some of which may seem either oversimplified or unrealistic. For example, consider the assumption on complete standardisation of products manufactured by firms under perfect competition. Is it realistic to think that paddy produced by various farmers in this country is uniform in all aspects? On the other hand, take the case of a single firm producing one product under monopoly. How many so-called monopolies fulfill this conditions and other features of a monopoly. This is why both perfect competition and monopoly are considered somewhat theoretical in the real world situation. However, between these two structures there are a number of others that are much closer to reality. Monopolistic competition is one such structure. This lesson describes the features of monopolistic competition and how it is different from the other market structures such as perfect competition and monopoly.

Contents :

1. Monopolistic competition defined
2. Scope and characteristics
3. Short run equilibrium
4. Long run equilibrium
5. Non-price competition
6. Efficiency of monopolistically competitive markets.

Learning objectives :

After completion of this lesson you will be able to

(a) define concepts such as monopolistic competition, differentiated products, non-price competition

(b) describe the nature, characteristics and scope of monopolistic competition as a market structure

(c) explain the difference between monopolistic competition and other structures such as monopoly and perfect competition

(d) explain how monopolistically competitive firms determine their market equilibrium.

Deadweight loss *- the reduction of consumer surplus without a corresponding increasing monopoly profit when a perfectly competitive firm is monopoly.*

In addition, the monopolist not only imposes a deadweight loss but also produces at a higher cost per unit than does the perfectly competitive firm. Why? Because a monopoly firm unlike a perfectly competitive firm does not operate at the minimum level on the average cost. The high cost faced under a monopoly firm may go even higher because the monopoly firm does not have to face competition. In other words the monopolist becomes inefficient because of a lack of competition. This inefficiency is called X-inefficiency.

X-inefficiency *- is the tendency of firms not faced with competition to become inefficient.*

Summary:

* A monopoly firm maximises profit by producing up to the point where marginal revenue and marginal cost are equal. The monopolist's market situation differs from that of a competitive firm in that the monopolist's demand curve is down-sloping, causing the marginal revenue curve to lie below the demand curve.

6.1 Why monopolistic competition

The Sri Lankan ready-made garments sector has shown a steady growth during the past few decades, and today it is one of our major export income earners. Besides, any average textile shop in the city has lines of shelves packed with shirts, frocks, and other factory produced garments. Take the case of shirts. Any average shop will have a wide variety of shirts displayed in their showcases. These may differ in colour, size, texture of material, synthetic content, shape, type of sleeves, brand names, etc. Unlike in the case of a perfectly competitive market, the products are differentiated: each product is almost unique in terms of quality and capacity to satisfy varied consumer wants. As a result their prices too may vary.

Firms manufacturing shirts employ a variety of techniques to promote their products. For instance, advertising costs of shirts may be comparatively high depending on the intensity of the promotional drives launched by different firms. What sort of market structure explains this complex behaviour of firms producing ready-made shirts? Can a perfect competitive model explain it?

The model of monopolistic competition accounts for captures the bulk of real world competition discussed above. It embodies brand-name

proliferation, product differentiation, advertising, packaging, and many other forms of competition that are not dealt under the theory of perfect competition. Under this model of monopolistically competitive markets, many firms are in the business of producing slightly different products.

6.2 What is monopolistic competition

Monopolistic competition is a market structure, where a relatively large number of firms sell a differentiated product, where entry into the market is relatively easy, where the firm has control over the price at which the product is sold, and where there is a considerable degree of non price competition. It would be noticed that there is an overlap in the definitions of monopolistic competition and perfect competition. Ironically, the definition of monopolistic competition overlaps with that of monopoly too. In other words, a monopolistically competitive market is a peculiar creature having some features of a market structure at one end, and some features of the extreme opposite of that structure at the other end. Let us now identify these salient features of a monopolistically competitive market.

6.3 Salient characteristics

A number of characteristics peculiar to monopolistic competition make it another market structure worthy of attention and examination.

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They are;

6.3.1 Relatively large number of firms

Monopolistic competition is a market structure in which a relatively large number of small firms are involved in the business of production or service. Under this model, you do not need to have thousands of small producers. The number of firms may be much smaller. However the number has to be large enough to ensure that no single firm can influence the total market either individually or through collusion. The presence of a relatively large number of firms, each contributing a minute share of the total market dispels the feeling of mutual interdependence that may exist in a market controlled by a few large firms.

6.3.2 Product differentiation

Product differentiation is another important feature of a monopolistically competitive market structure. Monopolistically competitive firms turn-out variations of products by changing designs, workmanship, packaging etc, and presenting them to the public through promotional drives. Product differentiation refers to real or simulated differences between products manufactured by different firms resulting in individual buyers preferring the products of one firm to those of the other. These changes make a product look different in the eyes of the consumer.

Create physical or other differences between the products of firms which result in individual buyers preferring the product of one firm to the products of another

Consequently, a product of a monopolistically competitive firm may look unique and may not have perfect substitutes. This enhances its ability to exercise a limited control over price.

6.3.3 Non-price competition

Other than decreasing the price of its products the firm may attempt sales promotion, advertising and quality changes to increase sales.

Under perfect competition, firms become price takers. There is neither price competition nor promotional strategy under perfect competition. In the case of monopolistic competition firms produce differentiated products. Not only do they create differentiated products but also they use a promotional blitz to project those differences for which they depend heavily on advertising. Thus, price competition is relatively less important under monopolistic competition. Instead firms through the media emphasise the real and imaginary quality differences of their own products to win and retain customers.

6.3.4 Entry condition

Entry into monopolistically competitive markets may not be very easy. However, it is easer than in the case of an oligopoly or a monopoly. This relative ease of entry arises from the fact that firms are small in size requiring little capital to start small scale operations. However, non-price competition arising from quality differences and advertising considerations can make entry somewhat difficult in comparison with perfect competition.

Thus far we discussed four salient features of monopolistically competitive markets. They are,

i. presence of relatively large number of firms

ii. product differentiation

iii. presence of both price and non-price competition and

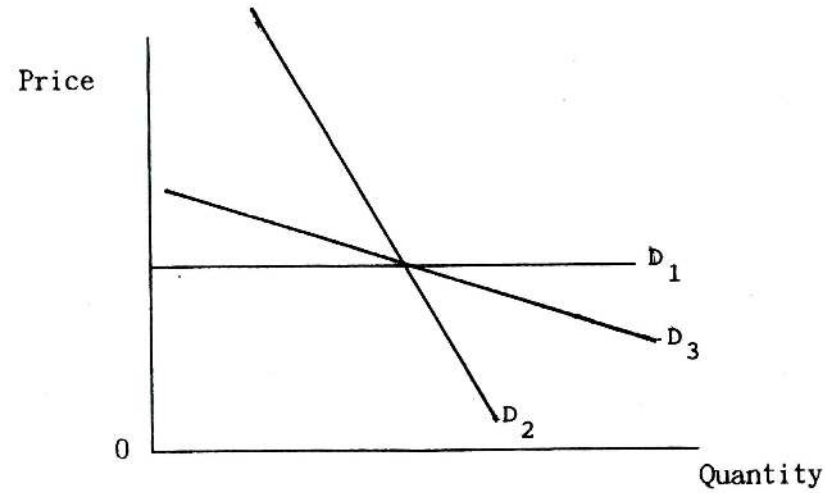
iv. relative easy of entry.

Arising from these major features a few other conditions make monopolistic competition a unique market structure. These conditions include

i. the nature of the demand curve which is downward sloping. However, unlike in the case of a monopoly, the availability of similar products which may be substitutable makes the demand curve of monopolistically competitive firms highly elastic. You may recall that the demand curve of perfectly competitive seller (D_1) is perfectly elastic. The shape of the demand curve of the monopolistically competitive firms depends on the degree of the product differentiation and the number of rival firms producing close substitutes.

Figure 6.1

Demand Curve of a Monopolistically Competitive Firm



D_1 – a hypothetical demand curve of a perfectly competitive firm. It is perfectly elastic and hence horizontal to the quantity axis. D_2 – a hypothetical demand curve of a monopoly which is relatively inelastic with a steep slope. D_3 – a hypothetical demand curve of a monopolistically competitive firm which is relatively elastic. Presence of similar products in the market can change consumer choice when price changes are substantive.

Comparison of features of monopolistically competitive market and perfectly competitive market.

Features	Monopolistic Competition	Perfect Competition
Number of firms	Many	Numerous
Type of Product	Differentiated	Undifferentiated
Entry condition	Relatively easy	Very easy
Demand curve	Perfectly elastic	Downward sloping (relatively elastic)
Long-run profit	Zero	Zero
Eg.	Ready-made garments	Paddy

6.4 Price Product Behaviour

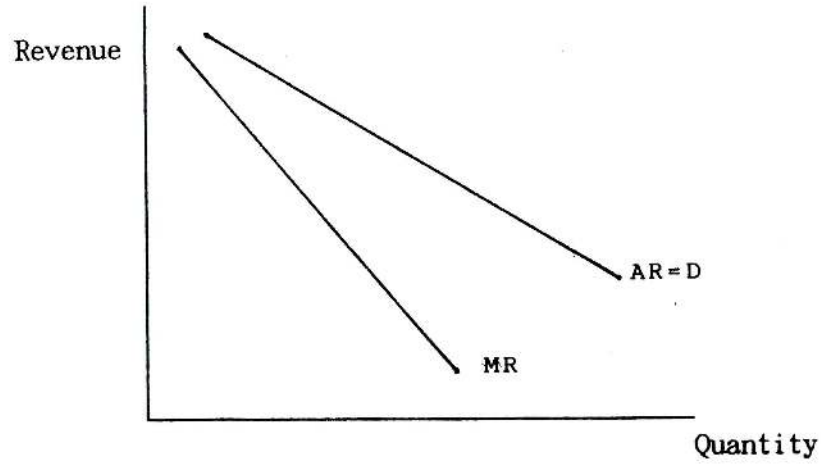
6.4.1 Short run equilibrium

The demand curve faced by a monopolistically competitive seller is highly price-elastic. The fact that firms produce differentiated products for which there are many close substitutes make the demand curve relatively downward sloping as given in Figure 6.1.

Figure 6.2 shows the revenue curves of (AR and MR) a monopolistically competitive firm selling a single product in the short run. Accordingly the demand curve is the average revenue (D = AR) curve and the marginal revenue (MR) curve occurs between the AR curve and the price (vertical) axis.

Figure 6.2

AR and AC Curves of a monopolistically competitive firm



In common with all profit maximising firms, the equilibrium production in the monopolistically competitive firm occurs when marginal revenue equals marginal cost (MR = MC) at point E. This determines the equilibrium quantity which is Q_1 and the price at which the product is sold is P_1. This is the meeting point of Q_1 and the demand curve at point A. However, the price of P_1 is above the average total cost of production which is marked at point B. This situation allows the monopolistic competitive firms to earn economic profits.

If you examine the diagram above the level of economic profit can be graphically explained as follows. The total revenue (TR) of the firm is denoted by the area AQOP. As you know the total revenue is an outcome of the average price multiplied by the number of units produced by the firm. Accordingly OQ_1 (which is the number of units produced) multiplied by OP (which is the average price) result in AQOP. This, in other words, is the total revenue (TR).

Similarly, the total cost which is the average cost (AC) multiplied by the number of units produced (OQ_1) can be depicted by the rectangle BQOC.

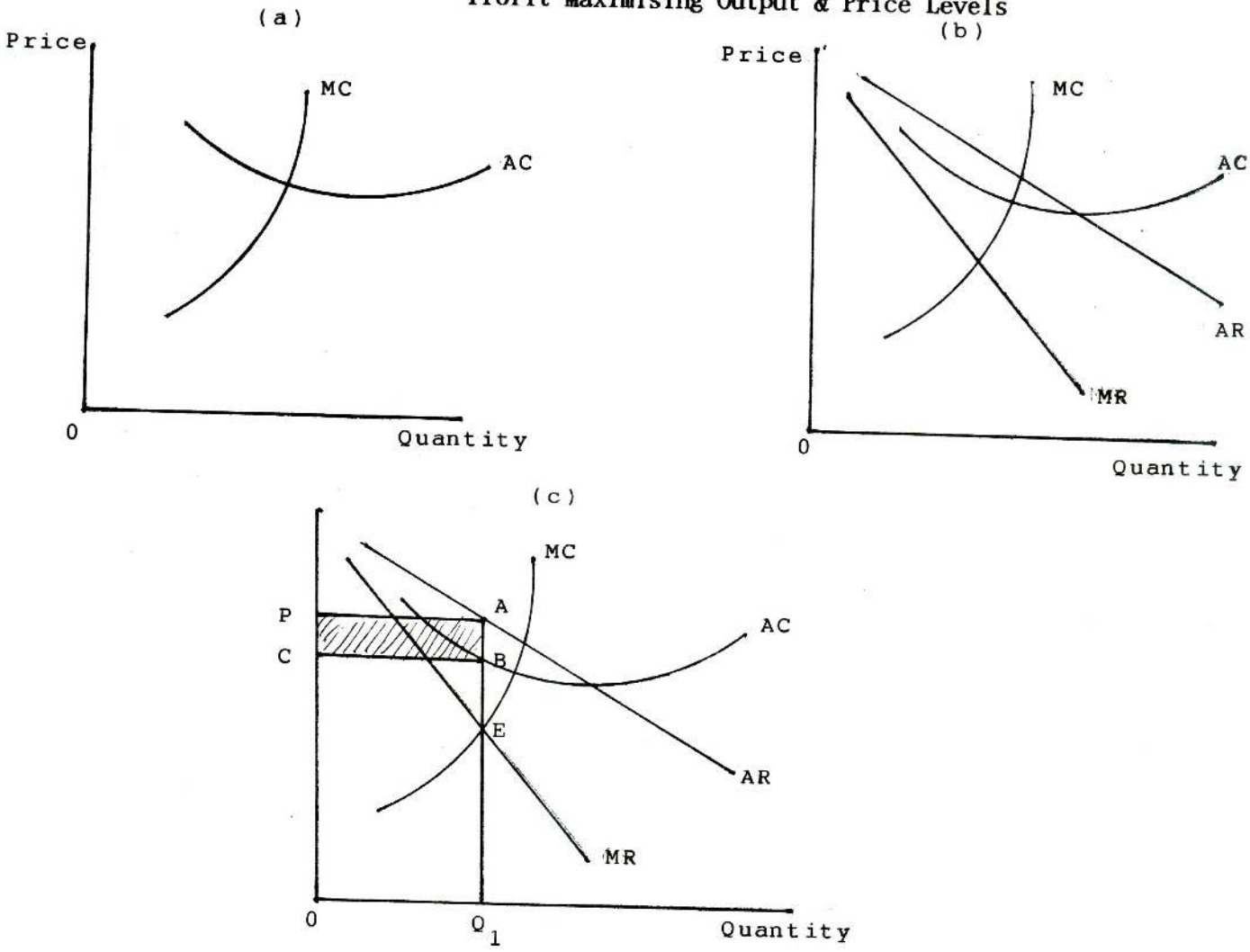
The amount of economic profit earned by the firm can be as follows.

Profits	=	TR - TC
where TR	=	AQOP and
TC	=	BQOP and
therefore,		
Economic profit	=	AQOP - BQOP
	=	ABCP.

Figure 6.3 graphically presents the amount of profit generated by the firm in its panels a, b and c. The rectangle ABCP depicts the amount of profits earned by the firm.

Figure 6.3

Profit Maximising Output & Price Levels



There is a possibility for firms in monopolistic competition to earn negative economic profits in the short run. Figure 6.4 below shows this possibility.

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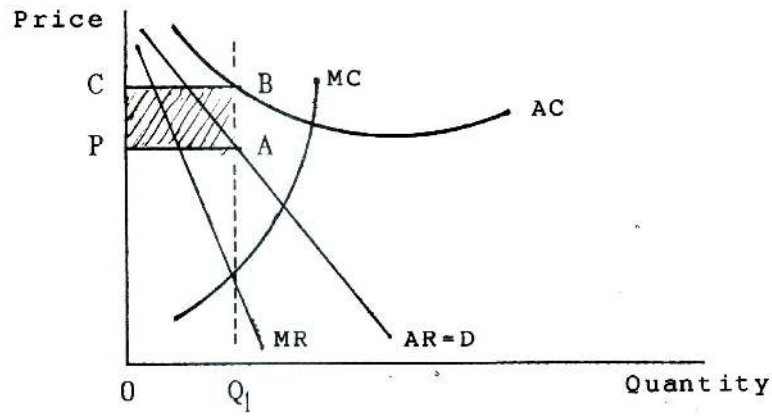
Figure 6.4

Negative Economic Profit



Rectangular BAPC negative profits (economic loss) to the firm.

It is seen that the firm produces Q_1 output at price P_1. However the average cost of production is C which is above the average price. This results in a negative economic profit (economic loss) shown by the rectangle BAPC. The relative ease of entry makes both economic profit, and economic losses a short term condition with respect to monopolistically competitive firms.

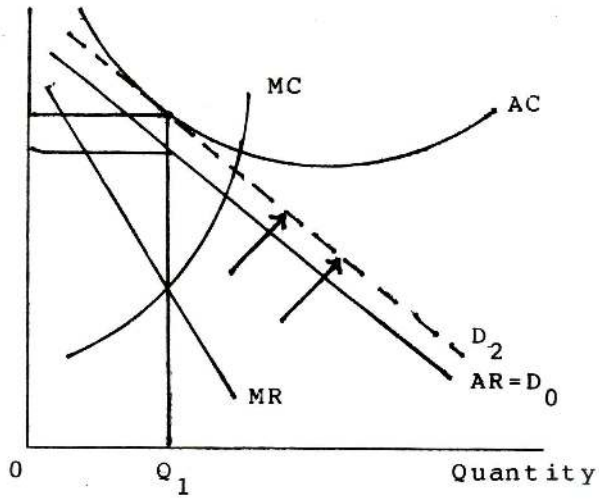
6.5 The long run equilibrium

The absence of barriers to entry allows new firms to enter and old firms to expand their scale of operations when monopolistically competitive firms earn positive economic profits as given in Figure 6.5.

These new firms produce close substitutes but not an identical product. However, the presence of substitutes affects the price level and consequently the demand curve starts shifting inward from D_0 to D_1 as indicated in Figure 6.5. This shift may continue until all firms earn zero economic profits. Conversely, if the firm is earning negative economic profits, other firms producing substitutes may either limit their production until the demand curve starts shifting outward from D_0 to D_2 as given in Figure 6.5.

Figure 6.5

Firms exit when Profits are Negative

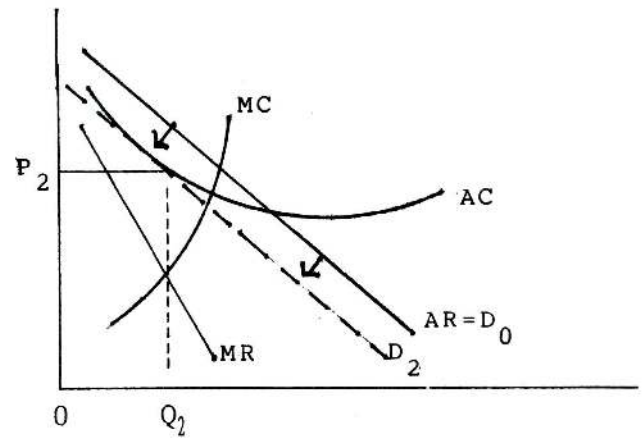


As firms exit Demand Curve shifts outward from D_0 to D_2.

Figure 6.6 below illustrates how economic profits are eliminated as a result of free entry and expansion of operations.

Figure 6.6

Free Entry and Profitability



Profits are eliminated as a result of free entry. D_0 is seen shifted inward until it reaches D_2.

You may find that the equilibrium output is Q_1 which is sold at P_1, at which price the average total cost equals the market price. Therefore they can earn zero economic profits in the long run.

ACTIVITY 1:

Illustrate how free exit leads to a new equilibrium when the firm is making economic loses.

6.6 Non-price competition

One of the most important characteristics of monopolistic competition is its capacity to bring about product differentiation more effectively than price differentiation. The downward sloping demand curve allows monopolistically competitive firms to make limited price adjustments. However, the presence of close substitutes controls this ability in the long run. Therefore, monopolistically competitive firms attempt to improve the quality standards of their products through product development. It helps firms to offer a wide range of types, styles, brands etc, like in the men's shirt market. This will be augmented by advertising which will create different small market niches for the different types developed.

6.7 Allocative efficiency and waste

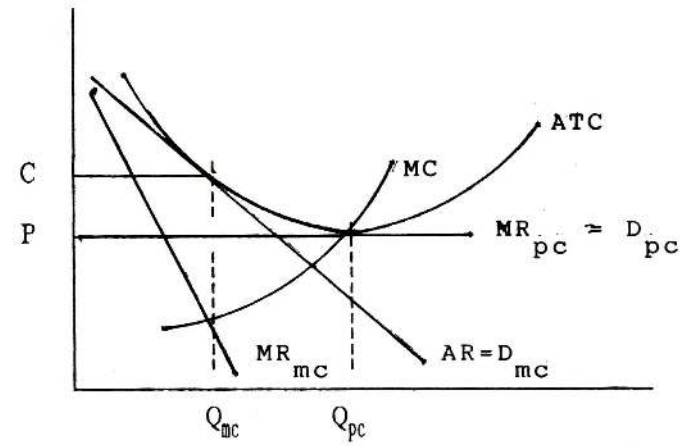
It is evident that the monopolistically competitive firm has to incur additional costs on product differentiation and advertising to remain in the market. Besides, monopolistic competition divides the market into small niches by providing differentiated products which are varied in consumer taste and preference.

In order to determine the effects of product differentiation and non-price competition on allocative efficiency, the long term equilibrium of a monopolistically competitive firm is compared with a perfectly competitive firm.

Figure 6.7 shows the long-run equilibrium of a monopolistically competitive firm and a perfectly competitive firm.

It is evident that monopolistic competition produces less and sells smaller quantities at a higher price. In Figure 6.7, the firm produces Q_{mc} and sells it at P_m. In contrast, perfect competition produces larger quantity of Q_{pc} and sells them at P_{pc} which is lower in price than the equilibrium price of a monopoly.

Figure 6.7
Comparison of long run Equilibrium under Perfect Competition and Monopolistic Competition



You may recall that perfectly competitive firms determine equilibrium level of production at the lowest point of the average total cost (ATC). This is the most important condition of allocative efficiency. However, monopolistically competitive firms, though they earn zero economic profits, determine their equilibrium at a point higher than the lowest point of the average total cost curve.

Summary :

Monopolistic competition is a market structure where many firms produce a differentiated product and the entry conditions into the market is relatively easy. The presence of product differentiation, and existence of non-price competition at a high level make monopolistic competition an important market structure model.

In the short run monopolistically competitive firms can earn positive economic profits. However, the condition of free entry and exit eliminates both economic losses and economic profits in the long run. The predominance of product differentiation forces monopolistically competitive firms to produce a lower output at a high cost. This affects the allocative efficiency of firms under this market structure.

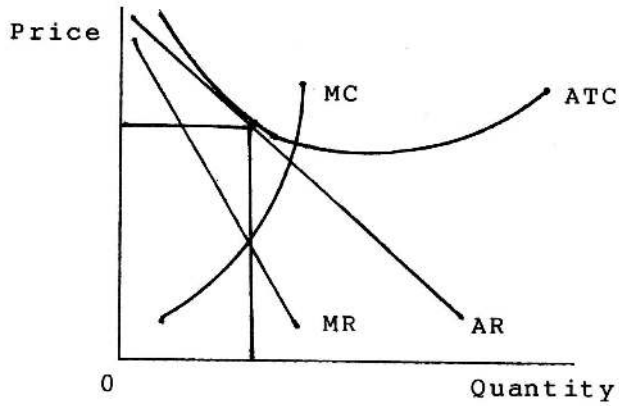
Review questions:

1. Define monopolistic competition.

2. Describe the salient features of the monopolistic competitive market structure.

3. How are the monopolistic competition and perfect competition similar. How do they differ?

4. Graph below shows the long run equilibrium of an individual firm.



Answer the following questions.

i. What is this market structure?

ii. Mark the long run price and quantity levels. How will this differ in the case of perfectly competitive model?

iii. How would you explain this difference?

iv. What are the implications of this difference?

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Glossary of terms :

Non-price competition refers to use of competitive tools other than price (reduction), such as quality changes, promotion and advertising to increase sales.

Product differentiation refers to real or simulated differences between products produced by different firms which result in individual buyers preferring the products of one firm to the products of another.

LESSON SEVEN

OLIGOPOLY

Introduction :

Oligopoly combines features of both perfect competition and monopoly, and is found in the large scale manufacturing industries dealing with food and drinks, household detergents and cosmetics. When you next visit your grocer check the main brand names and manufacturing firms involved in the production of milk foods. You will find brands like Nespray, Anchor, Highland, Lakspray, Amul and Ratti. Observe the main brands of toothpaste displayed in the showcases and the firms manufacturing them. Take the main Sinhalese and English daily and weekly newspapers. How many firms are involved in the production of these journals. Oligopoly attempts to capture the market behaviour of such products and firms producing them. It studies the behaviour of "Big Twos", "Big Threes", "Big Fours" and "Big Fives" in the market place.

Concepts :

1. Fewness and Concentration ratios
2. Mutual Interdependence
3. Kinked Demand and Non-collusive Oligopoly
4. Collusive Oligopoly
5. Price leadership Cost plus Pricing

Topics :

1. Characteristics of oligopoly
2. Why do oligopoly exist?
3. Measures of concentration
4. Price-output behaviour
5. Oligopoly and economic efficiency

Learning objectives :

After the completion of this lesson you will be able to

(a) define oligopoly and describe the underlying reasons for oligopolies

(b) describe the main characteristics of oligopolistic market structure

(c) graphically illustrate the price and output behaviour of an oligopolistic firm

(d) describe the economic significance of oligopolistic market structure.

Study Guide :

Before starting this lesson you are advised to complete the lessons on Perfect competition and Monopoly. First, glance through the lesson to identify its structure. This may be followed by your second reading which should be done carefully. You may need to spend about three hours to grasp this lesson fully. Attempt the activities, review questions and compare your notes with your colleagues. Discuss areas that are not clear with your day-school teachers.

7.1 Oligopoly concept, definition and occurrence

Oligopoly is a market structure in which there are a few firms. Some of these firms are large in relation to the size of the market. This structure is further characterised by the presence of differentiated or undifferentiated products, barriers to entry, and interdependence of firms on account of product and price behaviour.

ACTIVITY 1:

1. Obtain the circulation figures of the Sunday Observer, the Sunday Island, The Sunday Times and The Leader, the total of which will provide you with a rough estimate of the aggregate market for English weekend papers. Calculate the market share in percentages and fill the blanks given below.

Name of Papers	The Island	The Sunday Times	The Observer	The Leader	Sub Total
Total circulation					
% market share					

2. List a summary of characteristics of the weekend English newspaper market.
3. How many of the elements given in the definition are relevant for this market?

7.2 Characteristics of Oligopoly

7.2.1 Fewness

Oligopoly is characterised by a number of features. Of them, "fewness" of firms involved in the industry is fundamental. Here, "fewness" is used in relative terms to indicate that a small number of firms are in the business of production or servicing the entire market of the industry. If you take print journalism as an industry, where only few firms dominate the production of "national dailies" we call that market structure oligopolistic. Similarly, in the cellular phone industry when a few firms provide cellular telephone connections we call that market oligopolistic too. Therefore the dominance of the market by a small number of firms explains the concept of "fewness" in oligopoly.

7.2.2 Interdependence

Associated with the small number of firms is the degree of interdependence of firms. In perfect competition, firms do not interdepend because any single firm has a minute share of the market and therefore its individual decisions do not affect the market or the industry. In a monopoly, however the decisions taken by a single firm stands unchallenged because of its monopolistic power over production and pricing decisions. In contrast, an oligopolistic firm does not decide on matters related to production and price determination without carefully considering what

the other firms in the industry will do. This is because actions of an individual firm could be counteracted by actions of another firms in the industry. For instance a vigorous marketing strategy by one milk food firm may be counteracted by an equally vigorous marketing strategy by another milk food firm. The nature of the market structure is such that in making any change of price, product or promotion strategies, a firm should anticipate the counter strategies of the other firms in the industry as well.

7.2.3 Product type

In an oligopolistic industry products may be either standardised or differentiated. For instance cement, or aerated water may be standardised in content. Except the brand name, packaging or price, the quality and content of these products may be standardised and similar. This applies to steel, copper, aluminum, and industrial alcohol which will show standard chemical content. On the other hand tyres, milk food, soap, or newspapers may be differentiated in content, quality and outlook.

7.2.4 Entry and Exit

Another important characteristic of an oligopolistic market structure is the difficulty of new comers to enter. A number of reasons make entry of new firms to oligopolistic markets difficult. Some of these reasons also make the

exist of firms difficult. Therefore in oligopolistic markets, firms can earn positive economic profits for a longer time and continue their business without threats from new competition. The reasons that make entry and exits difficult are :

(a) *Cost conditions* that necessitate huge commitments in fixed costs and operational costs. For instance, mining factories, furnaces, warehouses, buildings, transportation costs, or stock holding costs make entry and existence in the steel industry difficult to any new entrepreneur.

(b) Related to this is the *economies of scale* pertaining to the product or service. You may recall that these economies of scale refer to decrease of unit cost as the quantity of production increases when all resources are variable. This condition necessitates an assured market large enough to enjoy scale economies. For new entrants an assured market that is large enough to enjoy scale economies may not be possible.

(c) *Inventions and innovations* enable firms to establish and maintain dominance in an industry.

(d) This may be further supported by *legal restrictions* that provide exclusive control over the use of innovations under patent laws. For instance IBM enjoyed patent on innovations to its personal computers for a quite long period usually not less than 17 years.

(e) Another barrier to entry arise from *control of essential resources* such as crude oil reserves in the oil industry or ownership of landing gates in airports in the air line industry. This is why Air Lanka cannot fly to a country or land at an air port without the necessary permission and landing rights.

7.3 Mergers

Merger is combining of two or more firms into one firm.

While entry restrictions limit the number of new entrants, mergers and take overs affect the number of actors involved in the production of goods and services of markets characterised by oligopoly.

There are three main types of mergers. When direct business rivals in the same industry combines their businesses it is known as a *horizontal merger.* If Keels combines with Elephant House in the business of the processed food industry it may be a horizontal merger. Combination of business by firms that were buyers

from or sellers to each other may be known as *vertical merger.* If Keels processed food firm combines with the firm of Prima poultry food, it can be a vertical merger. Mergers of firms in different line of business is known as Conglomerate mergers. For instance, a cement production company combining with insurance business (Mitzue) may be a *conglomerate merger.*

7.4. Market Dominance

It is evident that barriers to entry and mergers within industry cause fewness of firms in an oligopolistic market structure. The net effect is the dominance of the market by a few firms. The degree of dominance of the market by a number of firms is measured using two indices. They are

1. Concentration ratios
2. Herfindahl index

7.4.1 Concentration Ratios

The four firm concentration ratio is used to measure the degree of concentration within an industry. It generally presents the percentage of total industry sales accounted for by the four largest firms in the industry. For instance in 1982 in the USA, the total number of firms in the industry of motor vehicals and car bodies had been 284, while the four biggest firms accounted for 92 percent of the total sales. The balance 280 firms accounted for 8 per cent of the sales.

Therefore the concentration ratio is as follows.

$$= \frac{\text{Total sales of 1st, 2nd, 3rd and 4th largest firms added together}}{\text{Total sales of the industry}} \times 100$$

The four firm concentration ratio is calculated by summing the rates of the largest four firms in an industry and dividing by the total sales in that industry.

This ratio presents a summary measure of the degree of domination of the market by a few firms. However this measure fails to take into account the foreign competition. It also does not show the extent of concentration among the four firms. For instance in a situation where the largest firm accounts for 90 percent of the total market share, the four firm concentration ratio may be misleading.

7.4.2 Herfindahl Index

To overcome the above weaknesses, another ratio has been developed by economists. It is known as the Herfindahl index. The Herfindahl index is defined as the sum of the required market shares of each firm in the industry.

Herfindahl index = $(S_1)^2 + (S_2)^2 + \ldots (S_n)^2$
where S refers to the market share and subscripts 1,2, upto n refers to the firms.

The higher the Herfindahl index the more concentrated is the industry.

ACTIVITY 2:

The table below presents hypothetical figures pertaining to market shares of firms in toothpaste, washing soap and in the soft drinks manufacturing industries in Country X.

Industry	Market share of firms					
	1st largest	2nd largest	3rd largest	4th largest	5th largest	6th largest
Toothpaste	27	23	18	16	10	6
Washing soap	65	19	7	5	3	1
Soft drinks	48	26	24	3	0	0

(a) Calculate

i. the four firm concentration ratios

ii. Herfindahl index for each of the industry.

(b) Discuss the incidence of oligopoly in one of the industries.

7.5 Price-output behaviour

In monopoly and perfect competition, the price-output behaviour can be described using standard theories which have wide acceptance in micro economics. However, many reasons such as interdependence among firms, the type of market arrangements, and the presence of various strands of oligopoly preclude the development of a simple market model for oligopoly. Therefore economists use a number of explanations and models to describe price-output behaviour of oligopolistic firms.

We shall now examine the following four models in brief.

1. The Kinked Demand curve
2. Collusive Pricing
3. Price Leadership
4. Cost-plus pricing.

7.6 Kinked Demand curve

Kinked demand curve model applies to non-collusive oligopolistic markets. This model can be simplified by constructing a market for an industry with three firms namely, A, B, C each accounting for one third of the market. Given the interdependence of firms within this market the shape of the Demand curve of A depends on whether

(a) firm B and C will exactly match any price change initiated by firm A or

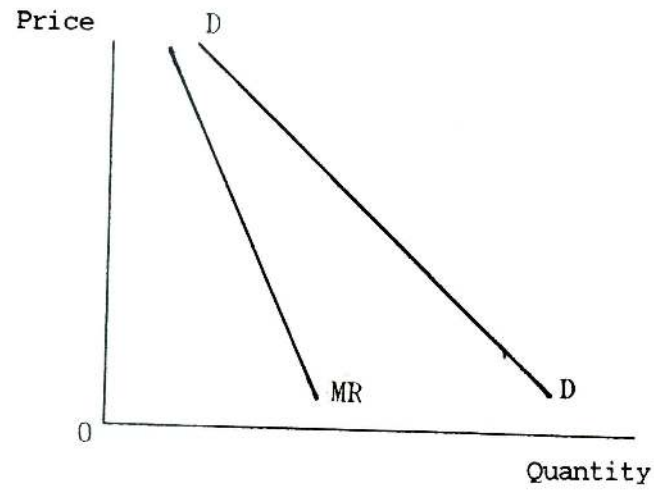
(b) whether B and C will simply ignore any price change involved by A.

7.6.1 Matching exact price strategy

If B & C decides to match the price changes of A the demand curve of A will look like DD in Figure 7.1.

Figure 7.1

Demand Curve when Price Change is matched



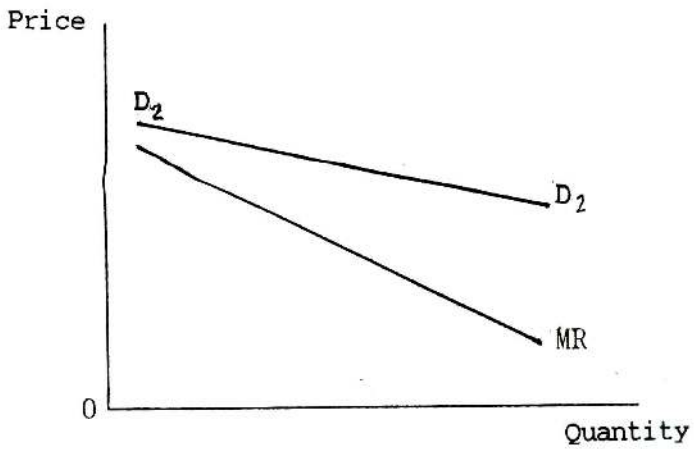
This is because any revision of prices whether upward or downward will be exactly followed by firms B and C. As a result A will not make any gain in its sales at the expense of B and C.

7.6.2 Ignore price strategy

If B and C decides to ignore any price change involved by A, the shape of the Demand curve of A may look something like D_1D_1 given in Figure 7.2.

Figure 7.2

Demand Curve when Price Change is ignored



You may notice that this demand curve is relatively more elastic than the previous one in Figure 7.1. This difference arise from the fact that when A lowers his price, B and C will not lower their prices and consequently his sales will increase significantly at the expense of firms B and C. Conversely, when B increases his prices B and C will not increase theirs making a significant drop in As sales.

These two scenarios will guide monopolistic firms to formulate a strategy by combining some elements of both options of matching and ignoring

price increases. The Demand curve therefore may combine both options of

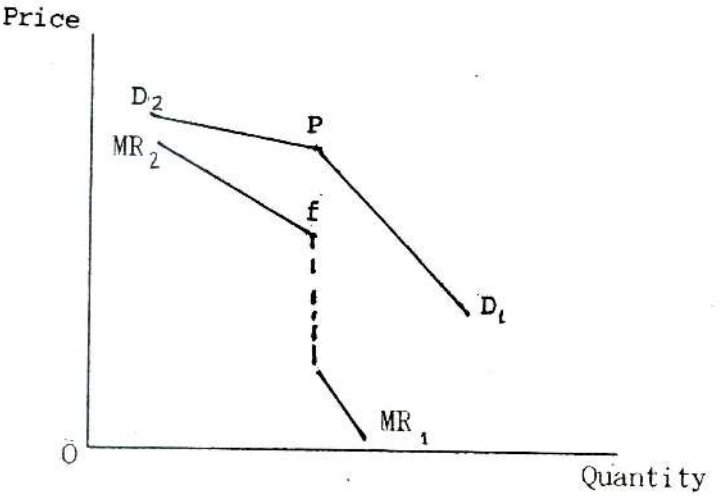
a. ignore price increase and

b. match price decline.

7.6.3 Kinked Curve

The resultant Demand curve will look like D_2PD_1 given in Figure 7.3.

Figure 7.3
When Strategies are Combined



In this demand curve D_2P line depicts an option where rivals ignore A's strategy. PD_1 segment of the demand curve depicts the option where rivals

match As strategy. It is this logic that causes a Kinked Demand curve for oligopolistic firms. Notice that the D_2P segment of the curve is highly elastic while the D_1P segment is less elastic.

This awkward shape of the demand curve (AR) has its effects on the marginal revenue curve (MR) too. In Figure 7.3 the MR_2 portion of the Marginal Revenue curve reflects the D_2P portion of the Demand curve while MR_1 portion reflects the D_1P portion of the Demand curve. This anomaly in the demand curve has resulted in an odd shape in the MR curve as well. The slope of the MR curve is steep at the top most portion followed by a vertical doted line and another relatively steep portion.

Figure 7.4 illustrates how price is determined under the Kinked demand curve. The firm maximises where MR = MC. As part of the MR curve is vertical, and as the MC curve intersects the MR curve in the gap (dotted line) the resulting price is P_1 and quantity is Q_1. Along this dotted area, any rise in cost say, from MC_1 to MC_2, the price and quantity produced do not change.

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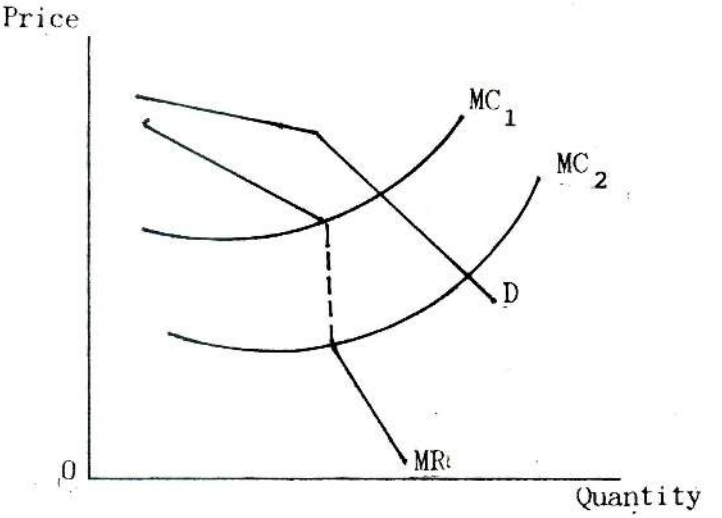
Figure 7.4

Reasons for Price Rigidity under Oligopoly



This explains the price rigidity of the oligopolistic firms even when cost considerations change significantly. Another reason for price rigidity is the fear of triggering price wars among rivals that could result in overall losses to all rival firms.

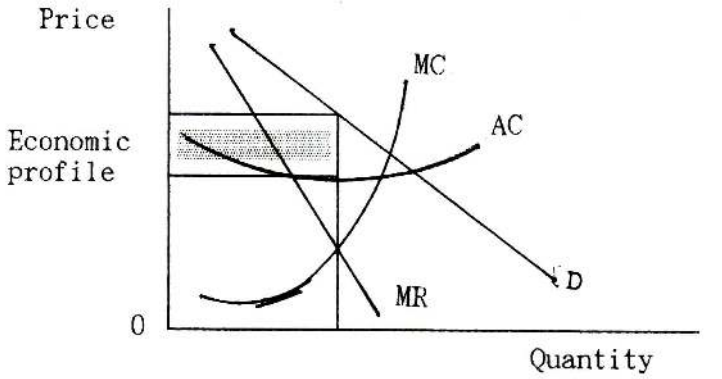
7.7 Collusive oligopoly

One of the biggest disadvantages of independent, kinked demand type oligopoly is the danger of a price war breaking out. It is this danger that induces firms to seek for collusive control over prices that will ensure stable price and profit levels.

When oligopolistic firms producing homogeneous products are faced with similar demand and cost curves, they tend to behave collusively to maximise joint profits. As given in Figure 7.5 below, each oligopolistic firm charges P_1 prices to produce Q_1 output because it is profitable for each firm to collude and agree to produce the same output at the same price.

Figure 7.5

Collusive Behaviour ensures Economic Profits



The most comprehensive form of collusion is the cartel which involves a formal written agreement with respect to production and price. The Organisation of Petroleum Exporting Countries

(OPEC) was one of the most effective cartels where they managed to control output to increase price levels and profitability of the thirteen oil producing countries in the 1970s.

7.8 Price leadership

Under this model firms in an oligopoly may decide to follow price changes initiated by one of the firms, perhaps the largest in the industry. You may recall that every time the national Savings Bank revised its interest rates on deposits, all the commercial banks followed suit. This is a crude example of price leadership strategy.

7.9 Cost-plus pricing

Under the cost-plus pricing model the oligopolist uses a formula to estimate cost per unit of output when the firm operates at a minimum of 75 per cent capacity. The capacity utilisation level is important because the unit cost tends to decline with the increased utilisation of capacity.

Once the cost per unit is known the firm adds a percentage markup above the unit cost to determine the selling price. This formula was used in the automobile industry by General Motors in the 1980s.

7.10 Economic efficiency

Traditionally, oligopoly is considered less efficient because firms tend to restrict output short of the point of lowest unit cost. This is possible because of entry restrictions and also because the collusive behaviour of firms lead to the formation of cartels and the incidence of unfair trade practices.

Schum-peter and Galbraith

However some economists like Schum-peter and Galbraith believes that oligopoly encourages competitive behaviour at a higher level that leads to technological progress in the respective industries. They believe that only those market structures that assure economic profit together with competition, promote investment in research and development.

Summary :

Oligopoly is a market structure in which there are few interdependent firms that are insulated by barriers to entry, and characterised by either undifferentiated or differentiated products. A variety of reasons such as cost conditions and control of essential resources result in the emergence of oligopolistic firm. The price and output behaviour of this market structure is somewhat complex, and a number of models such as the kinked demand curve price leadership and cost plus price models have attempted to explain this behaviour. The inherent uncertainty in this

market structure provides incentives for cooperation and collusion among firms enabling them to maintain economic profits for a longer period. Although this structure may not be as efficient as the perfect competitive model, it has the advantage of providing a conducive environment for research and development imitatives by firms.

Review Questions:

1. What is oligopoly?

2. Describe the similarities between monopolistic competition and oligopoly.

3. How does the kinked demand curve describe the strategic behaviour of an oligopolistic firm?

4. Compare and contrast the following pairs of concepts.
   i. Four firm concentration ratio and Herfindahl index.
   ii. Mergers and collusion.
   iii. Price leadership and cost plus pricing.

Glossary of terms :

Barrier to entry : Something that artificially prevents the entry of firms into an industry.

Cartel : Written or oral agreement among firms to set the price of a product and the output.

Concentration ratio	:	The percentage of the total sales of an industry made by the largest selling firms.
Cost-plus pricing	:	A procedure to determine the price for a product in which a percentage mark up is added to the estimated unit cost of production.
Fewness	:	A relatively small number of firms (in an industry).
Kinked demand curve	:	The demand curve which is based on the assumption that rivals will follow a price decrease and will not follow a price increase.
Price war	:	A continued decrease in the prices charged by the firm with a view to increase sales and revenue of individual firms at the expense of the rivals.

RESOURCE MARKETS

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LESSON EIGHT

AN OVERVIEW OF RESOURCE MARKETS

Introduction :

For many years now, profits made by paddy farmers in Sri Lanka, have been dropping steadily, for a number of reasons. One of them is that labour costs have risen appreciably. Due therefore to the difficulty of engaging labour, farmers have turned to the use of tractors. The question thus arises, why a farmer substitutes one form of input of another in his agriculture operation.

A number of other questions also arise. Why is the average salary of a graduate university teacher Rs 9,000 per month and the average salary of a school teacher who is also a graduate only Rs. 5,000? Why is the cost of manufacturing a shirt in Sri Lanka only one tenth the cost of manufacturing the same shirt in the United States? Why was the daily wage paid to a worker in the dry zone during the Maha season of 1994, Rs. 125, while in the wet zone the wage was Rs. 90, in the same period. These questions will be addressed in this and subsequent lessons.

This lesson provides an overview of the resource market - the elements that are common to each market and how each market works. It also deals with the profit on the farms.

Contents :

1. Resource Markets: labour, land, capital and entrepreneurship.
2. Payment (price) for resources: wages, rent, interest and profit(s).
3. Demand for resources: derived demand.
4. Supply of resources
5. Marginal Physical Product (MPP)
6. Marginal Revenue Product (MRP)
7. Least - Cost method
8. Profit maximisation

Learning Objectives :

After the completion of this lesson you will be able to:

1. differentiate a resource market from a product market.
2. define and describe the concepts of (a) derived demand (b) marginal physical product (c) Marginal revenue product and (d) Marginal resource cost.

3. explain why a substitution effect is different from a output effect in a resource market.

4. Define and describe (a) The Least-cost method, and (b) The Profit-maximising method.

Study Guide : This is an overview of Resource markets. Read the lesson carefully with the learning objectives. Try to understand fully the definitions and descriptions given in each section. You may spend about three hours to complete this lesson.

8.1 What is a resource market?

A farmer uses resources to produce agricultural products. He may purchase land, capital and employ labour to produce a commodity like paddy. If a farmer wants to produce paddy, he must have the factors of production i.e. land, labour and capital. For this reason, the demand for resources is often described as a *derived demand*. Resources do not directly satisfy consumer wants, but do so indirectly by producing goods and services.

You may recall that in the case of agriculture four types of resources are necessary - land, labour, capital and entrepreneurial ability. Accordingly, you may have one market for each resource factor; labour, capital, land and so on. The market for university lecturers, for example, requires the services of a person to formulate economic planning, to work in the planning division and to teach economics, among other duties.

Payment for each resource and its requisite quantity are determined in the resource markets. For example, the wage rate and the number of people employed are determined by the labour market. Likewise rent and the extent of land used are determined by the land market. The capital

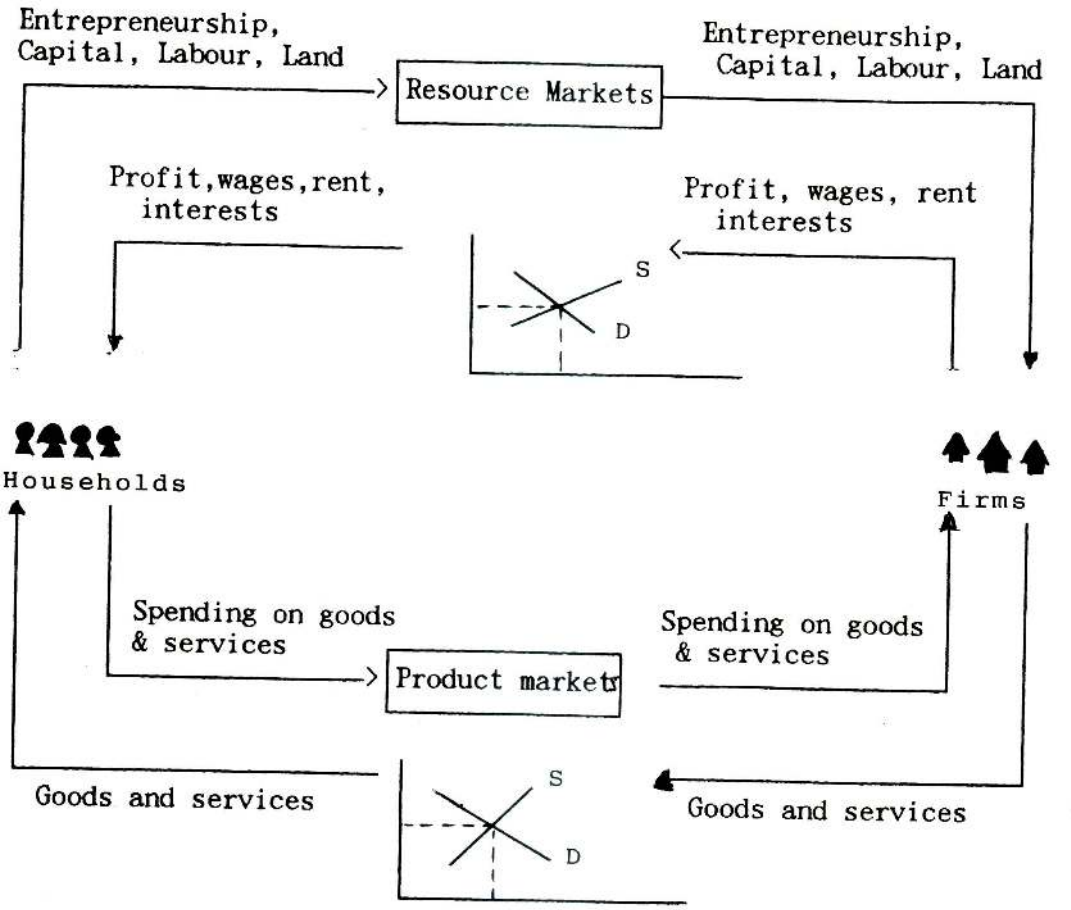
market determines the interest rate and the quantity of capital used. Finally, profit is the revenue left to the entrepreneur after all costs have been paid.

8.1.1 Firms and households

In the lesson on National Income, you would come across the Circular Flow theory as shown in Figure 8.1. It represents a highly simplified form of the National Income of a country. The market resource of demand and supply connect the product market to the top half of Figure 8.1, and the resource market to the bottom half. Now in this simplified economy there are two sets of economic agents, household (the left hand box) and business firms (the right hand box). To understand the Resource markets, you need to realise the role of firms and households.

Figure 8.1

The Circular Flow of National Income



We assume that the objective of firms is to make profits, and to do so they produce goods and services to be sold in the product market. The upper half of Figure 8.1 shows how purchases of resources by firms and sales of resources by

individual household members interact in the resource market to determine price levels and quantity.

Households buy goods and services from firms, as shown by the line going from firms to households; and firms sell goods and services and receive revenue, as shown by the line going from households to firms.

If we look at the other side of the flow chart, households are the sellers and firms the buyers of resources. Households sell resources, as shown by the line going from households to firms and firms pay households income, as shown by the line going from firms to households.

8.2 Profit and utility

Business firms are there to make a profit by producing goods and services that are sold in the product market. How does a firm maximise its profit? A common sense answer is that a firm uses the resources that will enable it to maximise profit.

You may recall that firms maximise profits when they operate at the level where marginal Revenue (MR) equals Marginal Cost (MC). As you know if MR is greater than MC, firms will acquire resources in the belief that they could increase profits by increasing resources.

MR = MC

MR > MC

MR < MC

On the other hand, if MR is less than MC, then firms will reduce the resources used.

Households, on the other hand, maximise utility. Now how do households, the owners of resources, decide how much they should offer for sale? They do this by estimating the additional gains to be make by supplying more resources. The gain should be greater than the extra cost of supplying additional resources.

ACTIVITY 1:
How do you assess the value of an additional hour of work as against the normal working hours.

Households consider alternatives and select the ones with the greatest utility value. In summary, households supply resources in a way that maximise their utility.

The circular flow diagram illustrates the roles of firms and households in the product and resource markets:
Firms maximise profits while households maximise utility.

In the next section, we will consider how businesses decide on the amount to be paid to a worker for the purchase of a land or pay for a machine and so on.

8.3 The Market demand for and supply of resources

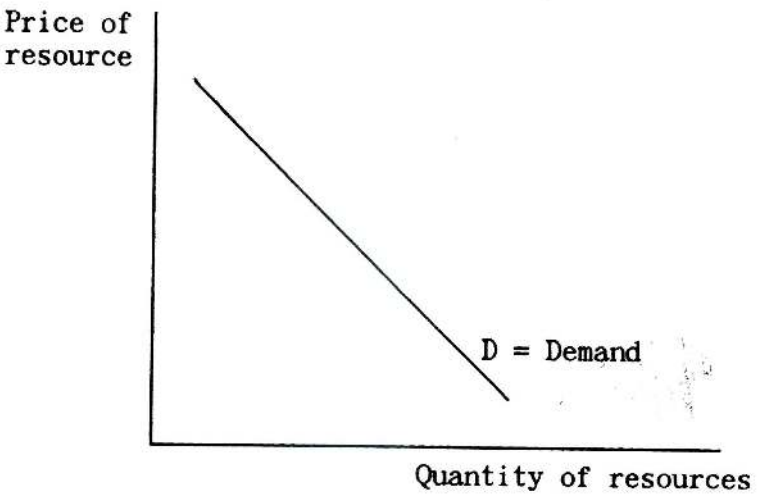
We saw that firms demand resources and households supply resources. Based on this, we could draw the supply and demand curves for the resource market. These curves for the resource market are similar to the supply and demand curves for the product market.

8.3.1 Market demand

The demand curve in the product market is similar to the demand for the resource market. Demand refers to what consumers (product market) or producers (factor market) are willing and able to buy at a given price, at a given time, ceteris paribus, other things being equal. (See Figure 8.2)

Figure 8.2

The Demand Curve for Resource Market



8.3.2 Substitution effect and income effect

If you study the demand curve, you will notice a firm's response to the price of a resource. If the price of a resource falls, that resource being relatively less expensive, firms will be able to substitute the less expensive resource for the resource which presently being used. When firms feel that lands in urban are relatively more expensive than in rural area, they would shift their factories to rural areas. Even though we may want to hire specialists in particular areas like finance, management, and even accounts, we might engage economists who may be less expensive. This preference for one type of resource to another is called the substitution effect, influenced largely by costs.

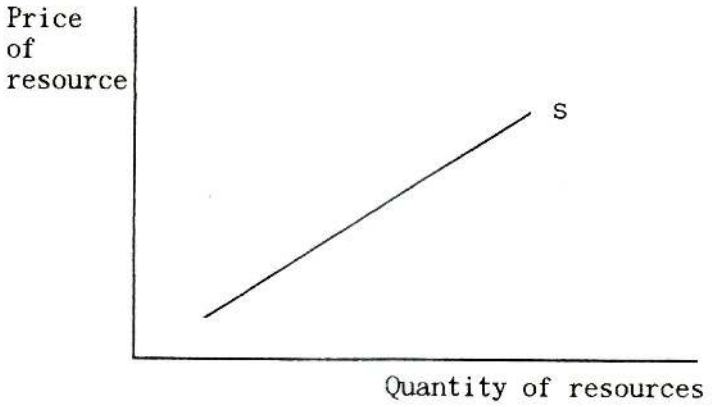
Also, if a particular resource is available at a lesser price, a firm would be able to increase its use of this resource in the production process. At a lower price, ceteris paribus, firms can purchase more resources for the same total cost. This is the income effect. If the price of a computer drops by 50 percent, a firm could buy two computers instead of one. Here we have to understand that although the firm will not be buying the second machine it will be in a position to do so. As we saw in the product market, the demand curve for a resource slopes downwards because of price and the possibility of substitutes.

ACTIVITY 2:
As shown in the Figure 8.2, why does the demand curve in the resource market have an inverse relationship to the prices of the resource and the quantity demand?

8.3.3 **Market supply** The market supply of a resource is the total of all individual supplies to the market. (See Figure 8.3)

Figure 8.3

The Market Supply of a Resource



The resource supply curve slopes upward. Why? As in the product market, the resource market also is subject to two factors, i.e. the willingness and the ability to supply the resource at a higher price rather than at a lower price - ceteris paribus. If you have a skill for writing computer programme you could market your skill and get an income, with which you would be able to purchase goods and services.

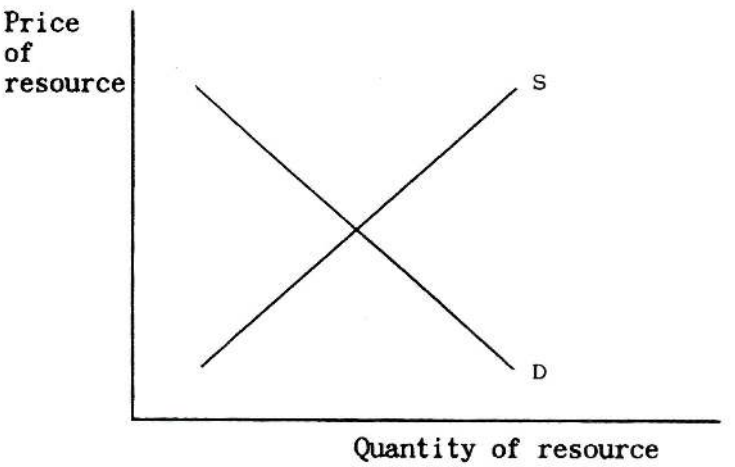
If the owners of resources feel that the prices of these resources are now higher than opportunity costs, they will then be ready to supply their resource. For instance, an increase in the price of crude oil naturally induces more exploration, drilling and pipeline construction. When the price of crude oil increases the supply

also increases to keep pace with the demand, ceteris paribus. Similarly, people move from one job to another because of the different wage rates offered. The higher the wage rate offered the greater the number of people willing to work there, other things being equal.

8.3.4 Equilibrium

The interaction of the demand and supply in a resource market determines a factor's equilibrium price and quantity and invariably decides the income of resource owners. For instance, the demand and the supply curves in the resource market determines how much a person could earn in a particular trade.

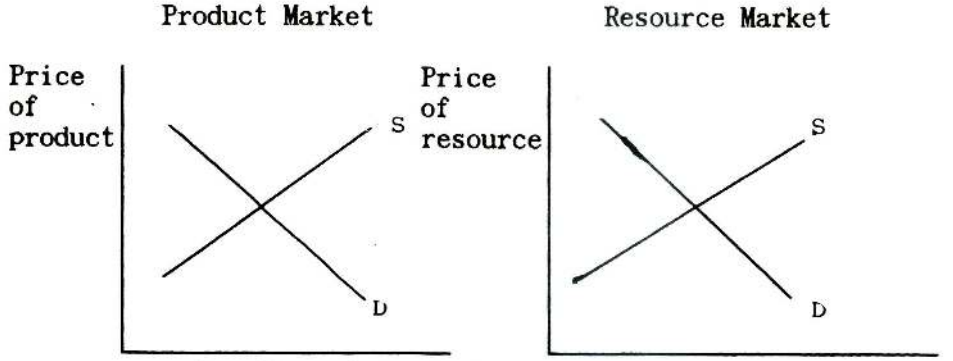
Figure 8.4
The Resource Market and its Supply and Demand Curves



The Figure 8.4 shows the resource market and its supply and demand curves. The demand curve reflects the inverse relation between the price of the resource and the quantity demanded. The supply curve of a resource reflects the direct relation between the price of the resource and the quantity supplied. How then does one decide on the equilibrium? Equilibrium occurs where the two curves intersect. As you know, the quantity demanded and the supply are the same at the point of equilibrium.

ACTIVITY 3:

What are the similarities and the dissimilarities in the following figures.



8.4 Resource Earnings:

Transfer earnings

Economic rent

Resource earnings consist of two parts namely, transfer earnings and economic rent. Transfer earnings constitute the minimum amount necessary

to keep the resource in its present use. In other words, transfer earnings is what a resource could earn in its best alternative use (its opportunity cost). It is the amount that must be paid to get the resource to "transfer" to another use. Then what is economic rent? Any excess it earns over transfer earnings is called economic rent.

The concept of economic rent, the surplus of total earnings over transfer earnings, is analogous to the economist's concept of profit as a surplus over opportunity cost.

8.5 The demand for a resource by a single firm

So far we have discussed the resource market from the point of view of all firms and households. We have two further issues to be addressed: First, how an individual firm decides to hire resources; and second, how firms sell their output in different market structures - perfect competition, monopoly, monopolistic competition and oligopoly. The suppliers of resources also operate in different market structures.

Let us consider how suppliers of resources like firms operate in different market structure. Thus buyers (firms) and sellers (owners) of resources may operate in the same or in different types of markets. For instance an oligopoly firm may

purchase resource from a monopoly supplier and a monopoly firm may purchase resources from a oligopoly supplier. In other word, if we want to fully understand the resource market, we need to know two things:

i. in what kind of a product market the firm sells its output, and

ii. in what kind of a resource market the firm buys it resource.

This section address the above questions by using two concepts:

(a) Marginal Revenue Product (MRP)
(b) Marginal Factor Cost (MFC)

8.5.1 Individual firm demand: Marginal Revenue Product

The derived demand for a resource depends not only on (a) the productivity of that resource but also on (b) the price of the commodity it produces. Therefore we have to look at two components: the physical component and the value component.

In Table 1, we were able to identify the role of *productivity* and the *product price* which determine resource demand. Here it is assumed that a firm adds one variable resource – labour, to its fixed plant.

Table 1: The demand for a resource

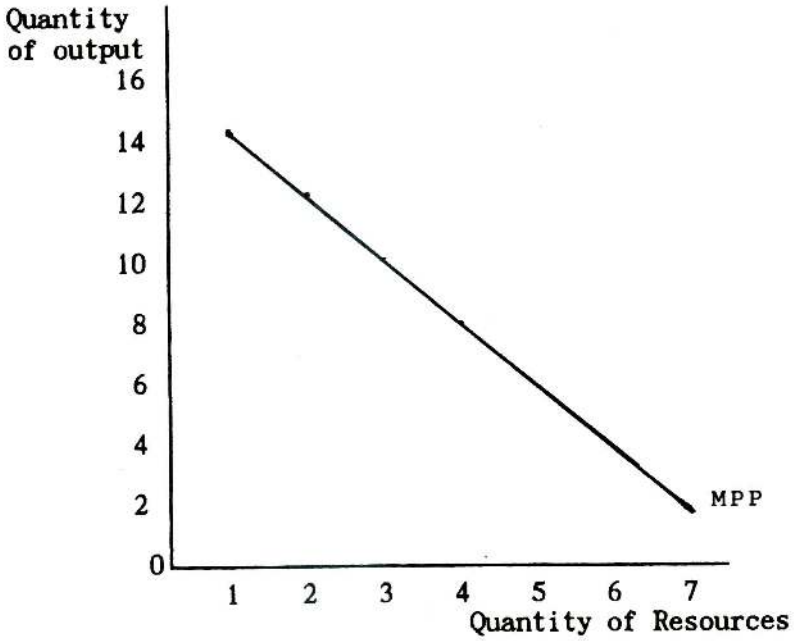
(1) Unit of resource	(2) Total product	(3) Marginal Physical Product (MPP), or (2)	(4) Product price (P) (Rs.)	(5) Total revenue, or (2)x(4) (Rs.)	(6) Marginal Revenue Product (MRP), or (5) (Rs.)
0	0		3	0	
1	14	14	3	42	42
2	26	12	3	78	36
3	36	10	3	106	26
4	44	08	3	132	22
5	50	06	3	150	18
6	54	04	3	162	12
7	56	02	3	168	6

(a) The Physical components

As the quantity of the variable factor vary, output will varies. As the firm adds further units of the variable factor to a given quantity of the fixed factor, the addition to output will eventually get smaller and smaller. Column 1 through 3 reminds us that the Law of diminishing returns is applicable in this situation. The extra output produced by an additional unit of the variable factor is called its Marginal Physical Product (MPP). The MPP of skill labour for a firm is listed in column 3 of the Table 1 and the MPP curve is drawn in the accompanying Figure 8.5.

Figure 8.5

The Marginal Physical Curve



The MPP curve declines according to the Law of diminishing marginal revenue. Note that the MPP curve is negatively sloped: the Law of diminishing rates, each unit of labour adds less to total output than the previous unit.

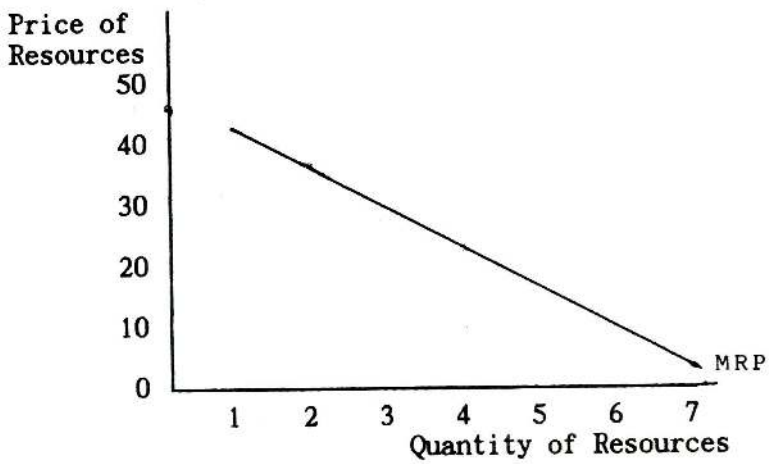
(b) The value component

The second component of the derived demand is the price of the commodity it produces. Here it is assumed that the product price is constant because of a competitive product market. Under the competitive product market the price is given

or determined by the market. To convert the marginal physical product (MPP) of Table 1 (Col. 3) into a marginal revenue product, we need to know the value of the extra physical product. The MPP depends on the technical conditions of production, but the value to the firm of this extra product depends on the price of the product. Here the firm is a price-taker. In this example, it is Rs. 3.00. Multiplying column 2 by column 4, we get the total revenue data of column 5. From the total revenue data we can compute the marginal revenue product (MRP) - the increase in total revenue resulting from the use of each additional variable input. This is indicated in column 6 of Table 1 and illustrated in Figure 8.6.

Figure 8.6

The Marginal Revenue Product



(c) The firm's demand curve for a competitive resource market

Now let us derive the firm's demand curve for factors of production when the firm is a price-taker in the factor market. Just as product price and marginal revenue are equal in a purely competitive product market, so resource price and marginal resource cost are equal when a firm is hiring a resource competitively. This can be restated as:

Price of Resource = Marginal Resource Cost (MRC)
factor(s)

In a purely competitive labour market the wage rate, for instance, is set by the supply of and demand for labour. In other words a single firm cannot influence this wage rate. Thus, the total resource cost increases by exactly the amount of the going wage rate for each additional worker hired: the wage rate and MRC are equal.

Figure 8.6 shows a MRP curve for labour on the assumption that the firm sells its product in a competitive market at a price Rs. 3.00 a unit. Figure 8.6 curve further shows how much would be added to revenue by employing one more unit of the production factors at each level of total employment.

Accordingly, employing the data in column 6 of Table 1, we find that if the wage rate is Rs. 41.95, the firm will hire only one worker. This is so because the first worker adds Rs. 42 to total revenue and slightly, less than Rs. 41.50 to total costs. For each successive worker, however, we find that MRC exceeds MRP, indicating that it will not to be profitable to hire any of those workers. If the wage rate is 35.95, we expect the firm to hire both the first and second workers. Similarly, if the wage rate in Rs. 25.95, three will be hired; if Rs. 2.195, four; and if 17.95, five will be hired and so on. It is evident that the MRP schedule constitutes the firm's demand for labour, because each point on this schedule (curve) indicates the number of workers which the firm would hire at each possible wage rate which may prevail. This is shown in Figure 8.7.

Figure 8.7
The Demand Curve

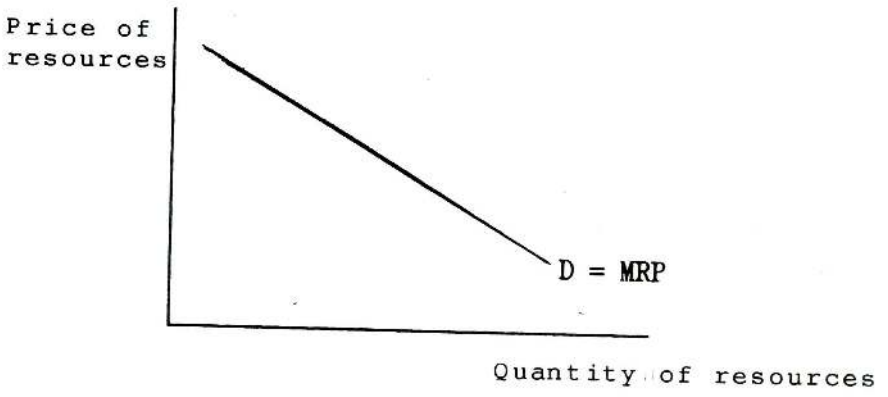
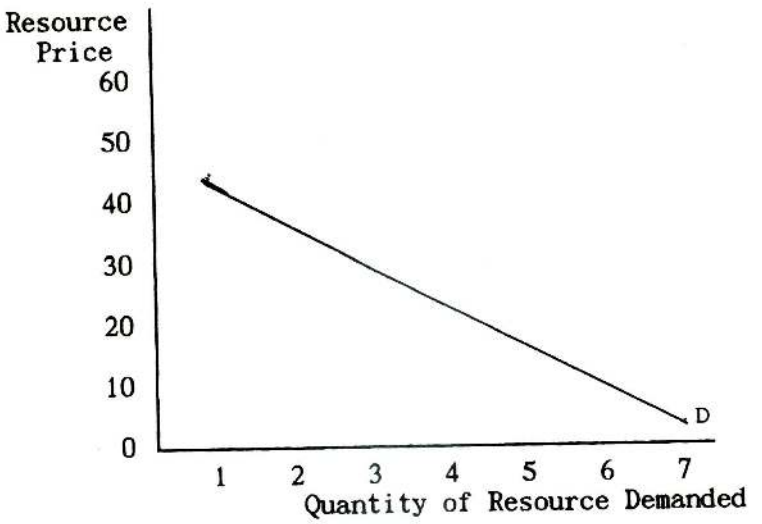


Figure 8.7

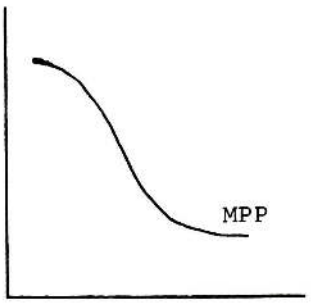
Seller's Demand for a Resource (Competitive Market)



The curve of Figure 8.7 shows the amount of labour employed in terms of the price of labour. Such a curve is derived from Figure 8.6 by taking various prices of the variable factor, and reading off the amount used from the marginal revenue product curve.

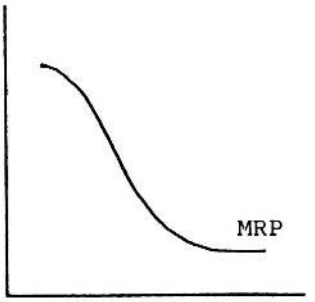
Figure 8.7.1, 8.7.2, 8.7.3 gives a summary of the demand for a resource by a single firm: Each additional unit of the factor employed adds a certain amount to total product (Figure 8.7.1) and hence a certain amount to total revenue (Figure 8.7.2) and this determines the amount of the factor firms will demand at each price (Figure 8.7.3).

Figure 8.7.1



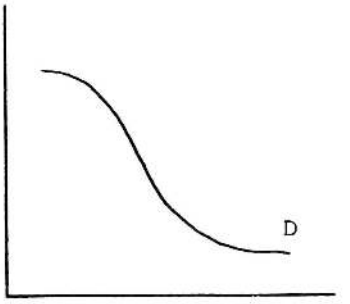
The MPP curve

Figure 8.7.2



MRP curve

Figure 8.7.3



Demand curve

(a) The MPP curve

Figure 8.7.1 provides data that is consistent with the marginal productivity theory: It shows the addition to the firm's output produced by an additional unit of labour hired. The curve is downward- sloping because of the Law of diminishing return.

(b) The MRP curve

MRP shows the addition to the firm's revenue by the employment of each additional unit of labour. It is the marginal physical product from Figure 8.7.1 multiplied by the price at which that product is sold. In this case the price is assumed to be Rs. 3.00.

(c) The demand curve

Since the firm will hire the factor until the marginal value product is equal to the factor's

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price, the firm's demand curve - Figure 8.7.3 is the same as the marginal revenue product curve in Figure 8.7.2.

8.6 The firm's demand curve for an imperfect market

Our analysis so far has assumed that the firm is operating in a competitive market where the price is given. However, our analysis will become more complex when we assume that the firm is selling its product in an imperfectly competitive market. Monopoly, oligopoly and monopolistic competition in the product market all show that the firm's product demand curve is down-sloping. The following table (Table 2) takes this into account. Now we can use the same data of Table 1 with different product prices.

Table 2 : The demand for a resource: imperfect competition in the sale of the product

1 Unit of resource	2 Total product	3 Marginal Physical Product (MPP) or $\Delta 2$	4 Product price (Rs.)	5 Total revenue, or (2)x(4) (Rs.)	6 Marginal Revenue Product (MRP) or $\Delta 5$ (Rs.)
0	0		3.80	0	
1	14	14	3.60	50.4	50.4
2	26	12	3.40	88.4	38.0
3	36	10	3.20	115.2	26.8
4	44	08	3.00	132.0	16.8
5	50	06	2.85	142.5	10.5
6	54	04	2.75	148.5	6.0
7	56	02	2.65	148.4	- .9

As we discussed, the MRP of the competitive seller declines for one reason: The Marginal Product diminishes. But the MRP of the imperfectly competitive seller declines for two reasons: The Marginal product diminishes, and the product price declines as output increases. In this case, the firm is not a price taker for its product. The value to the firm of an extra unit of output will now be less than its price because, to sell the extra unit, the firm will have to reduce the price on all units sold. Therefore, the marginal revenue due to an extra unit of output is less than its price. Hence, where any firm faces a downward sloping demand curve for its product, the marginal revenue product is expressed by:

MRP = Marginal Physical product multiplied by the Marginal revenue from the sale of an extra unit.

Let us examine the Table 2. The second worker's marginal product is 12 units. These 12 units can be sold for Rs. 3.40 each or, as a group, for Rs. 40.8 (12 x 3.40). But this is not the MRP of the second worker. Why? Because in order to sell these 12 units, the firm must take a 20 cent price cut on the 14 units produced by the first worker-units which could have been sold for Rs. 3.60 each. Thus, the MRP of the second worker is only Rs. 38.00 [40.80 - (14 x 20 cents)]. Similarly, the third worker's MRP is 26.80. Although the 5 units this worker produces are

worth 3.20 each in the market, the third worker does not add Rs. 16.00 to the firm's total revenue, when the 20 cent price cut is considered which must be made on the 26 units produced by the first two workers. In this case the third worker's MRP is only 26.80 [= 38.00 - (26 x 20 cents)]. And so it is for the other figures in column 6. If we compare two market models (perfect competition and imperfect competition) we would understand the nature of the elasticity faced by two MRP curves. In other words, the MRP curve - the resource demand curve - of the imperfectly competitive producer tends to be less elastic than that of a perfect competitive producer. At a wage rate or MRC of Rs. 35.95 both the purely competitive and the imperfectly competitive seller will hire two workers. At 25.95 the competitive firm will hire three and the imperfectly competitive firm also three. But at 21.90 the competitive firm will hire four and the imperfectly competitive firm only three. And at 17.95, the purely competitive firm will takes on five employees and the imperfect competitive only four.

ACTIVITY 4:

1. Draw a MRP curve by using the data appeared in Table 2.
1. Compare the above MRP curve appearing in Table 1.

8.7 Rule for employing resources: MRP=MRC

The MRP schedule in the Table 1 constitutes the firm's demand schedule for labour. How do we explain why this is so? To answer this we must first discuss the considerations that make it worthwhile for a profit-seeking firm to hire a resource. To maximise profits, a firm should hire additional units of any given resource so long as each successive unit adds more to the firm's total revenue than it does to costs. Here we have special terms for each additional unit of labour or any other variable resource, that add to total cost or to total revenue. We have already learned that MRP measures how much each successive worker adds to total revenue. On the other hand, the amount which each additional unit of a resource adds to the firm's total (resource) cost is called the marginal resource cost (MRC), also known as marginal factor cost or marginal input cost. Now we have two ways of determining the employment of resources called the MRP and MRC. Therefore we can restate our guide for hiring resources as follows: It will be profitable for a firm to hire additional units of a resource upto the point at which that resource's MRP is equal to it MRC. Here you will recognise that this MRP = MRC formula is very similar to the MR = MC profit maximising one employed throughout our discussion of price and output determination. Two approach used here is

the same but MRP and MRC apply to inputs of resources, rather than to output of products.

8.8 Optimal combination of resources

So far we have examined a firm's decision in relation to one variable input, namely labour, assuming that all other resources are constant. But we know that firms use several resources and make decisions regarding all resources. Firms, in the long run, do vary the amounts of all of the resources they employ. The question is what combination of resources a firm will choose when all the resources are variable.

For convenience, our analysis will proceed on the basis of two resources: Labour and capital. However, this can easily be extended to any number of resources.

The optimum combination of resources can be arrived at by two interrelated methods, thus as follows.

(1) the least-cost combination of resources required to produce any given level of output?
(2) the combination of resources that will maximise a firm's profitability?

These two methods/questions will now be explained.

8.8.1 The least-cost rule

The least-cost consideration will indicates the mix of resources a firm should use to produce a given output at minimum cost. This happens when the last rupee spent on each resource entails the same marginal product (MP). The cost of any output is minimised when the marginal product per rupee of each resource used is the same.

Suppose we have two resources, labour and capital. How do we combine these two resource in line with above method. It can be expressed as follows.

$$\frac{\text{MP of labour}}{\text{Price of labour}} = \frac{\text{MP of capital}}{\text{Price of capital}} \quad \text{——(1)}$$

Condition (1) implies the cost minimising position. Suppose that the prices of capital and labour are Rs. 10.00 per unit, and the Marginal Products of capital and labour employed are 50 and 90 respectively. Our equation (1) however tells us that this is clearly not the least costly combination of resources. Why? MP_l/P_L is 90/10 and MP_c/P_c is 50/10. If the firm spends Rs. 10.00 less on capital and shifts that rupee to labour, it will lose the 50 units of capital produced by the marginal rupee's worth of capital, but will gain the 90 units output from the employment of an extra rupee's worth of labour. The net output will increase by 40 (=90–

50) units for the same total cost. Here we have to realise that this shifting of rupees from capital to labour will slope a firm's MP curve for labour and make its MP curve for capital rise. It will finally move towards a position of equilibrium where equation (1) is fulfilled. At that point the MP of both labour and capital might be 70.

A lesson to be learnt from the above analysis is that the producer must consider both the productivity of the resource as reflected in diminishing marginal productivity data and the prices (costs) of the various resources. Both are important when the firm takes decisions regarding all resources.

8.8.2 The profit-maximising rule

The second method of the optimal combination of resources is the profit-maximising rule. There are many different levels of output which a firm can produce in the least costly way. But you may recall under Profit and Utility (section 8.2) where we emphasised that firms maximised profit when they operate at the level where MR = MC. Let us now derive a comparable rule from the standpoint of resource inputs.

Earlier in this lesson we learnt that profit is maximised when the wage rate, or price of labour (P_L) equals the marginal revenue product of labour

(MRP) or simply, $P_L = MRP_L$. The same rule can be used for the other resources- for example, capital. Capital will also be employed in a profit-maximising way when its price (interest) equals its marginal revenue product or $P_C = MRP_C$. Thus in general terms, we could conclude that a firm's profit maximising combination of resource occurs when each input price equals its marginal revenue product: $P_L = MRP_L$

$P_C = MRP_C$

The above rule is alternatively expressed as

$$\frac{MRP_L}{P_L} = \frac{MRP_C}{P_C} \quad \text{————(2)}$$

The above equation, however, should be applied with discretion. It is not sufficient that MRPs of the two resources be proportionate to their prices. In other words, that the MRP should be equal to their prices and the ratios therefore equal to 1, is not sufficient. Why? Let us look at the example: If MRP_L = Rs. 150, P_L = Rs. 50, MRP_c = Rs. 90, and P_c = Rs. 30, the firm would be under-employing both capital and labour even though the ratios of MRP to resource prices were identical for both resources. This implies that the firm can still expand its profits by hiring additional amounts of both capital and labour. This can be done by moving down their down-sloping MRP curves. When the firm reaches MRP_L to

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Rs. 50 and MRP_C to Rs. 30, then the firm would maximise its profit. The ratios would now be 50/50 and 30/30: this would be equal to 1.

Summary :

* Resources are classified into four types: Land, Labour, capital and entrepreneurial ability.

* Income derived from the above forms of - rent, wages, interest, and profit are determined in the resource markets.

* There are two actors in the resource markets: Buyers and Suppliers, Firms (buyers) buy resources from suppliers. Households (suppliers) sell resources to the buyers. In this process firms maximise profits, while households maximise utility.

* The firm's demand curve for a resource is downward sloping. It is a proportion of the resource's MRP curve.

* Returns on resources are equal to their marginal revenue in a perfectly competitive resource market while they are less than their marginal revenue product in a monopsonistic resource market.

* There are two methods of optimising the combination of resources: least-cost method and profit-maximising method. The least-cost method states that a given level of output will be produced with the least costly combination of resource when the marginal product per rupee's worth of each input is the same. The profit maximising method states that a firm will employ the optimum combination of resources when the price of each resource used is equal to its marginal revenue product.

Review Questions:

1. What is the significance of a resource market?
2. Explain the meaning of the statement that the demand for a resource is a derived demand.

3.1 Complete the following labour demand table for a firm. Assume that the firm operates in a competitive market.

Units of labour	Total product	Marginal product	Product price	Total Revenue	Marginal revenue product
1	17	....	10	....	.....
2	31	....	10	....	.....
3	43	....	10	....	.....
4	53	....	10	....	.....
5	60	....	10	....	.....
6	65	....	10	....	.....

3.2 Show in schedule form and graphically the labour demand curve of the above firm.

4. Using the substitution and output effects, explain how a decline in the price of resource X might cause an increase in the demand for substitute resource Y.

5. State whether the following figures are consistent with maximum profit rule for a firm.

(a) MRP_L = Rs. 30; P_L = Rs. 6; MRP_C = Rs. 30; P_C = 6

(b) MRP_L = Rs. 28; P_L = Rs. 12; MRP_C = Rs. 20; P_C =5

(c) MRP_L = Rs. 8; P_L = Rs. 8; MRP_C = Rs. 10; P_C = 10

Key terms :

Firms and households
Resource Market
Profit and utility
Derived demand
Marginal Revenue product (MRP)
Marginal Physical Product (MPP)
Marginal Factor Cost (MFC)
MRP = MRC rule
Substitution and output effects
Least-cost rule
Profit-maximising rule

Checklist :

1. Study the fundamental concepts.
2. Relate them to the real world through cases and examples.
3. Compare your answers with your colleagues.
4. Discuss difficult areas with your day school tutor.

LESSON NINE

LABOUR MARKET : PART I

Introduction :

I am sure that most of your relatives and friends are doing different jobs in different organisations, earning different incomes. Have you ever wondered: why they choose to work; how they decide how many hours to work; why some of them earn better incomes; and how firms choose how much labour to employ? No one can supply clear answers to these questions without having a knowledge of labour. This lesson, therefore, endeavours to give some insights into understanding labour in its various dimensions.

Contents :

1. Definition of labour
2. Characteristics of labour
3. Labour productivity
4. Supply of labour
5. Demand for labour
6. Firm's equilibrium in the labour market
7. Derivation of Demand Curve
8. Equilibrium wage
9. Imposition of minimum wage

Concepts :

1. Labour market
   The area within which demand and supply determine the wage for a particular type of labour.

2. Backward-bending labour supply curve
   A labour supply curve that has a positively sloped segment at low wage rates and negatively sloped segment at high wage rates.

3. Equilibrium wage
   It is the wage rate at which the quantity of labour supplied in a given time periods equals the quantity of labour demanded.

Learning Objectives :

After reading this lesson you will be able to

(a) define labour and labour productivity,

(b) explain supply of and demand for labour,

(c) analyse the effects of the imposition of a minimum wage.

9.1 Definition of labour

Labour consists of all human efforts of body or of mind which are undertaken in the expectation of reward.

This definition implies two facts, i.e.,

i. Labour can be physical as well as mental. Unskilled workers do physical labour whereas scientist engaged in mental work.

ii. Labour/work is supplied not for intrinsic but for some kind of reward. For example, if a professional singer sings in his bathroom this cannot be described as work. On the other hand, if he sings in public to earn his livelihood his performance could be described as his work.

9.2 Characteristics of labour

Labour is an important factor of production in almost all countries, including Sri Lanka because so much of the population is either buying or selling labour, or is dependent upon such sales and purchases for a livelihood.

Labour has special characteristics as compared with the other factors of production.

i. *Labour is quantifiable.*
If a worker does not work on any particular day, his labour for that day cannot be counted.

ii. *Labour cannot be separated from the labourer.*

The labourer has to go himself to the place of work, be physically present and offer his services. This requirement is peculiar to labour alone. A capitalist can be separated from his capital, the landlord from his land, but the labourer cannot be physically separated from his task.

iii. *Labour is an active factor of production* unlike Land and capital which are passive factors.

iv. *Labour is mobile*

As compared with other factors of production labour has a high degree of mobility.

v. *Supply of labour is inelastic*

The supply of labour can neither be increased nor reduced easily and quickly because adequate time is required to effect changes in the supply of labour.

9.3 Labour productivity

Refers to the output a worker produces in an hour, a week or a year.

Obviously, an increase in productivity means that the labour force has become a more effective

instrument of production. There are a number of factors affecting the productivity of labour.

1. Wages/salary and other benefits.
2. Working conditions such as working hours, rest intervals, leave, ventilation, lighting etc.
3. Prospects for future growth
4. Supervision and direction.
5. Conditions of equipment and tools used by the worker.
6. Trade union restrictions.
7. Social and religious beliefs of workers.
8. Racial and inherited characteristics of workers.
9. Climate

ACTIVITY 1:

It is said that Japanese don't have a strong sense of leisure and they often don't differentiate clearly between work and leisure. Hence, Japanese workers are rated as highly efficient. In contrast, Sri Lankans work comparatively fewer hours per week, and rarely work on Sundays; they take every available holiday as well as short-leave. Some says bluntly that Sri Lankans are lazy while others argue that Sri Lankans place a greater value on leisure than, say, the Japanese.

Identify the socio-economic considerations primarily responsible for the relatively low productivity of the average Sri Lankan worker.

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9.4 Supply of Labour

When you closely look at a daily time table of any average person you will find that he or she spends the day either working or relaxing. The time spent on relaxing is called leisure time. People generally spend their non-working hours sleeping, watching television, visiting friends etc.

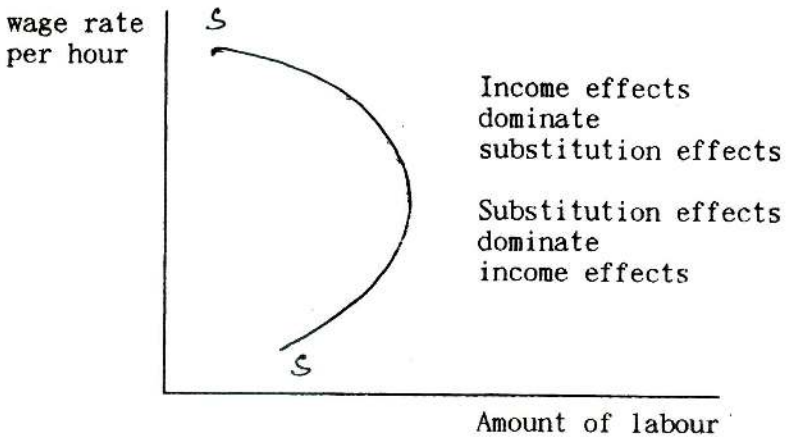
As there are only 24 hours for a day, people have to decide how to divide this time between working and other activities. If one spends more time on working he or she will have less time on non-work activities and vice versa.

Working time involves an opportunity cost which is the amount of leisure that one must be given up so as to devote time to working. One may work 10 hours and relax 14 hours (10 + 14 = 24) while another person may work 8 hours and relax 16 hours (8 + 16 = 24). The choice of such a labour-leisure combination is based on the satisfaction one obtains from each activity. As we saw, the satisfaction derived from either activity depends on the wage rate because opportunity cost of working involves a sacrifice of leisure time. Hence, the higher the wage rate the greater the return from leisure time given up, and vice versa.

When the wage rate is so low that an individual does not earn a sufficient income, his preference for earning will be relatively greater than leisure; when wage rates rise the individual will work more hours devoting less time for leisure. Hence, at lower levels of wages the individual substitutes wage income for leisure time. This is called the substitution effect of rise in the wage rate. However, the individual does not go on substituting work for leisure indefinitely. When the wage rate has risen to a level which is sufficient to yield a sufficient income to satisfy a person's fixed minimum wants, his preference for leisure will be relatively greater than earning, and thus having more income now, would work less devoting more time for leisure. This is called the income effect of wages which works in the opposite direction to the substitution effect. It is because of these two effects that the labour supply curve of an individual bends backwards.

Figure 9.1

Income and Substitution Effects



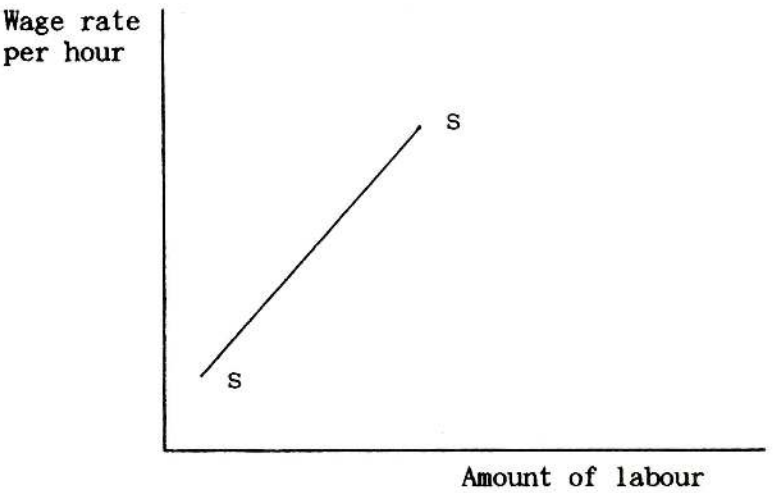
As shown in the Figure 9.1 the amount of labour supply may rise or fall as the wage rate rises depending on which effect is stronger. As the substitution effect is stronger than the income effect at lower wage rates, the amount of labour supplied rises initially. At higher wage rates income effects dominates substitution effects motivating the individual to reduce his work input.

9.4.1 Labour Market Supply Curve

It consists of the horizontal sum of all individual labour supply curves. It is generally an upward sloping supply curve because the majority of people work more as the wage rate increases.

Figure 9.2

Labour Supply Curve



ACTIVITY 2:

For some years there has been an oversupply of commerce and art teachers in Sri Lanka. Shortages, however, have appeared in a few areas like mathematics as well as computer education. The reason is that persons with such qualification have been able to get better paid jobs. With the recent introduction of an unprecedented pay hike for teachers, the Ministry of Education thinks that shortages in supply would correct itself and more science graduates would enter the profession in view of the better prospects envisaged.

1. To what extent do you share the optimism of the Ministry of Education?
2. Why is there an unbalanced supply of teachers?

9.5 Demand for Labour

Demand for labour can be explained through the Marginal Productivity Theory that was explained in a previous lesson.

The theory, as we learned, has three major aspects:

i. *Marginal Physical Product (MPP)*
This means an addition made to total output by the application of an additional unit of labour.

ii. *Marginal Value Product (MVP)*
It is the money value of marginal physical product.
MVP = MPP X Market price

iii. *Marginal Revenue Product (MRP)*
It is the increment in the total revenue.

An imaginary Table 1 can be used to explain these three concepts.

Table 1 : MPP, MVP and MRP

1 Number of Workers	2 TP	3 MPP	4 Price	5 MVP	6 TR	7 MRP
0	0	-	2/=	-	-	-
1	50	50	2/=	100	100	100
2	100	50	2/=	100	200	100
3	140	40	2/=	80	280	80
4	170	30	2/=	60	340	60
5	190	20	2/=	40	380	40
6	200	10	2/=	20	400	20
7	200	0	2/=	0	400	0
8	180	-20	2/=	-40	360	-40
9	150	-30	2/=	-60	300	-60

In the above table it is assumed that perfect competition prevails in the product market. Therefore, the price of the product (Rs. 2/=) for an individual firms remain the same whatever the level of its output. As more units of labour are employed (while other factors of production remain constant) the total output increases but at a diminishing rate. In other words each successive input of labour yields progressively less additional revenue to the firm. This is because of the operation of law of the diminishing marginal returns.

Law of diminishing marginal returns

The marginal physical product of a variable factor declines as more of it is employed with a given quantity of fixed inputs.

9.6 Equilibrium Employment

A firm is eager to hire workers whose marginal revenue product exceeds or equals their wage rate. Now let us assume that an unlimited number of workers are willing to work for Rs. 40/= per day. Then the firm must decide how many workers it will hire at this rate. According to our table, up to fifth worker, their marginal revenue product exceeds or equals the going wage rate of 40/=. The firm will, therefore, hire five workers because at this number of workers the firm can earn the maximum possible benefits. If the firm were to hire 3 units of labour it would be earning less than the maximum possible because the employment of the fourth worker at 40/= wage rate could earn marginal revenue product of 60/=. Therefore, the firm will continue hiring workers until the MRP is equal to the level of the market wage rate and that level is five workers. On the contrary, if the firm were to hire more than five workers it would be losing because additional workers would add less than their wage rate. Expressed differently, hiring more workers beyond the point where MRP = wage rate will cost more in wages than the revenue earned.

9.6.1 Change in wage rates

Suppose for the moment that the workers agree to work for only Rs. 20/= per day. On this basis the firm will, be able to hire a sixth worker without sacrificing any profit because at this level MRP would be equal to the wage rate. On the contrary, if the wage rate is Rs. 60/= the firm would employ four workers on the basis that MRP would be equal to the wage rate at this point too. One clear conclusion can now, be drawn: as the wage rate decreases the firm increases its demand for labour and vice versa.

9.7 Derivation of Demand Curve for Labour under perfect competition

If there is perfect competing in the labour market the average wage rate remains unaltered at every level. Then the average wage line would be horizontal and the marginal wage rate coincide with it.

As shown in the Figure 9.3, if the average wage is W_1 the firm will hire L_1 units of labour as at L_1 units of labour, its MRP is equal to the wage rate W_1. This is shown by the point X where MW_1 = MRP.

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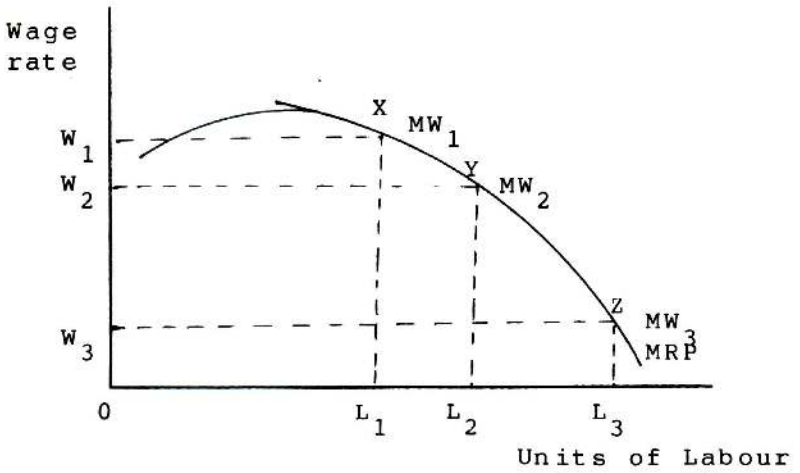
Figure 9.3

MRP and Wage Rate



If the wage rate falls to W_2 the corresponding marginal wage curve is MW_2. The MRP curve cuts this MW_2 line at point Y. The demand for labour then will rise to L_2. At a lower wage rate of W_3 demand for labour will increase to L_3. It is, thus, obvious that given the wage rate we can read the quantity demanded by the firm from the marginal revenue product curve of labour.

The MRP curve usually rises upward to a point and then slopes downward. Therefore, it should be noted that only the downward sloping portion of the MRP curve forms the demand curve for labour.

9.7.1 Industry Demand Curve for Labour

The marginal revenue product curve of a firm for labour indicates the different quantities of labour which that firm will employ at different wage rates. If we add horizontally the MRP curves for labour of all the firms in the industry we will get the total industry demand curve for labour.

ACTIVITY 3:

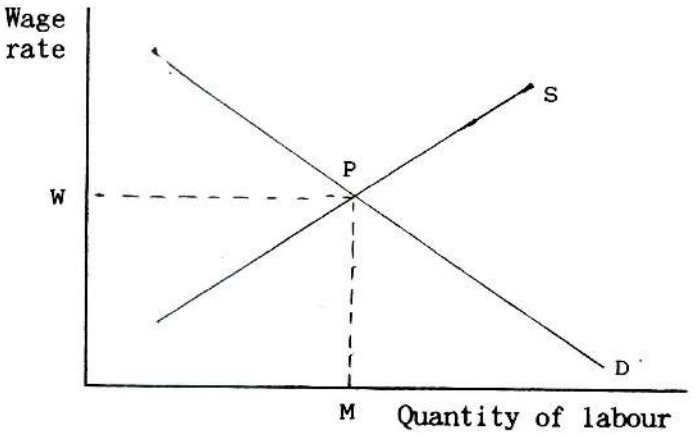
The Government of Sri Lanka is considering a reduction in the number of public holidays.

What impact would this have on the economy in general and on the labour market in particular?

9.8 Equilibrium wage

Equilibrium wage means the wage rate at which the quantity of labour supplied in a given time period equals the quantity of labour demanded. This can be depicted in Figure 9.4.

Figure 9.4
Equilibrium Wage



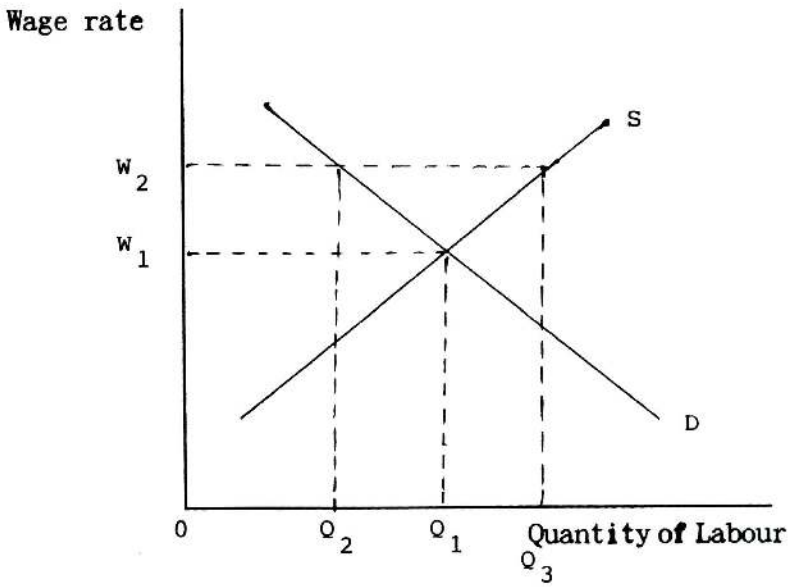
Demand and supply curves intersect at P. Then OW is the equilibrium rate of wage while OM represents the quantity demanded and supplied of labour.

9.8.1 Imposition of minimum wage

The objective of a minimum wage is to ensure workers a decent standard of living. If the minimum wage exceeds the equilibrium wage a labour surplus will result. This is shown in Figure 9.5.

Figure 9.5

Imposition of Minimum Wage



In the absence of a minimum wage, the equilibrium wage is W_1 and quantity demanded and supplied of labour is Q_1. Now the minimum wage of W_2 is imposed by the government. At W_2 wage rate Q_3 workers are willing to work. However at this wage rate firms are prepared to hire only Q_2 number of workers. Therefore $Q_2 - Q_3$ amount of labour remain as surplus.

Key terms : Labour
Labour productivity
Labour supply
Backward bending supply curve
Labour demand
Average wage
Marginal wage

Review Questions:

1. Define labour.

2. List characteristics of labour.

3. What are the factors affecting productivity of labour?

4. Why is the individual labour supply curve backward bending?

5. Define equilibrium in the labour market.

Examination-type Questions:

1. "There are a number of non-economic factors in the labour market". Comment.

2. Could the payment of wages on the basis of marginal productivity of labour be justified?.

3. Use the marginal productivity theory of labour to predict the impact on the firms employment level in the following situations.
   (a) A decrease in the wage rate
   (b) The conversion of the firm from a perfectly competitive firm to a monopolistically competitive firm.

4. How would you use the Marginal productivity theory to explain the demand for labour.

5. "The slope of the short-run supply curve for labour has both positive and negative slopes". Comment.

LESSON TEN

LABOUR MARKET : PART 2

Introduction :

In the previous lessons we have had a definition of labour, its characteristics, individual and market supply of labour, the demand for labour and equilibrium in the labour market. With this knowledge now we can examine the wage determination and a firm's equilibrium in different market situations.

Contents :

1. Firm's Equilibrium
2. Wage determination under perfect competition
3. Wage determination under imperfect competition
4. Trade union and Wage determination
5. Wage Differentials
6. Wage Discrimination
7. Occupational Segregation

Concepts :

1. Wage
   Payment made or received for work or service

2. Equilibrium
   The point at which quantity demanded and quantity supplied are equal at a particular price.

3. Monopsony
   A market in which there is only one buyer of the good, service or resource.

Learning Objectives :

After reading this lesson you will be able to identify factors relating to wage determination in the different market situations, examine the reason for wage differentials, wage discrimination and occupation segregations.

10.1 Firm's equilibrium

Regarding the employment of labour, how does a firm determine the absolute amount of labour it has to use or employ and what factors govern its decision about this?. The firm's equilibrium with respect to the use of labour will answer these questions. We shall explain the firm's equilibrium in all of the following possible situations.

i. Perfect competition in both the labour and product markets.

ii. Perfect competition in the labour market, but monopoly (single seller) or imperfect competition in the product market.

iii. Monopsony (or single buyer) in the labour market but perfect competition in the product market, and

iv. Monopsony in the labour market and monopoly in the product market.

10.1.1 Wage determination under perfect competition

In the previous sections we noted that in a perfectly competitive labour market the average wage rate (AW) remains unaltered at every wage level. A firm operating in such a market cannot affect the wage rate. Therefore, the labour supply curve (AW) for a single firm under perfect competition in the labour market will be

perfectly elastic (horizontal straight line) at the level of the prevailing wage rate, and as the average wage line (labour supply curve) is horizontal, the marginal wage line will coincide with it.

As explained in the section on demand for labour, a firm will continue employing more units of labour as long as the marginal revenue product of labour is greater than the marginal wage rate, and will achieve an equilibrium position where the marginal revenue product of labour is equal to the marginal wage rate. This can be shown in a diagram. The equilibrium wage, W, is determined by the demand for and supply of labour in the industry, and the firm therefore, has to take this wage rate as given. See Figure 10.1.1 and 10.1.2.

Figure 10.1.1

Industry

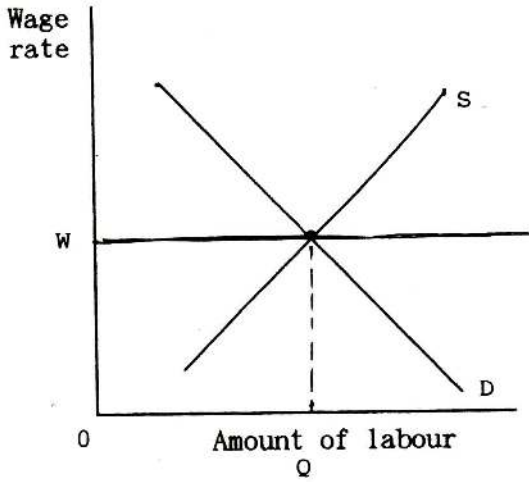
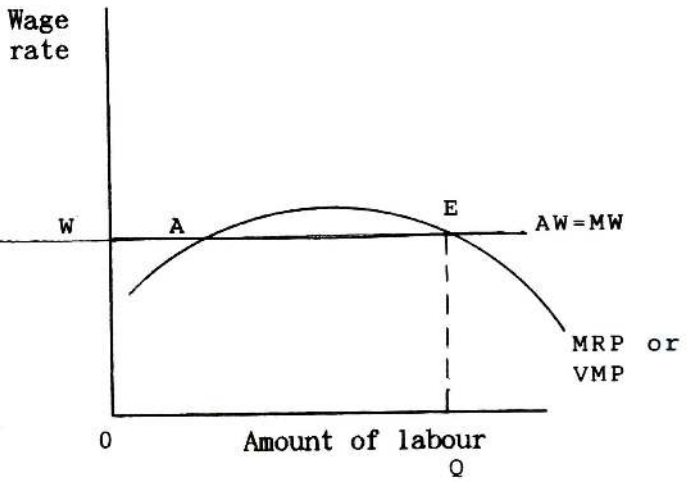


Figure 10.1.2

Firm



This wage rate is both average wage (AW) and marginal wage rate (MW) for the firm. This is also the labour supply curve for the firm because at this given wage rate it can hire any amount of labour.

The equilibrium condition is MRP = MW. In our figure this condition occurs at two points, i.e. point A and point T. At point a, the MRP curve cuts the MW curve from below. If the firm hires more workers beyond this point, additional workers bring more MRP than their average wages. Hence, the firm does not stop at point A. If the point A cannot be the equilibrium we have to examine the point E where the MRP curve cuts the MW curve from above. If the firm hires more workers beyond this point, additional workers bring less MRP than their average wages and it will not be profitable for the firm to increase employment further. Then point E should be the equilibrium. It can be seen from the figure that under perfect competition the wage rate is equal to the marginal revenue product of labour.

$$MRP = MW = AW$$

Our table reveals that the MRP and MVP are equal where there is perfect competition in the product market. Therefore, we can expand the above

equilibrium equation as below.

$$MRP = MVP = MW = AW$$

10.1.2 Short-run equilibrium vs Long-run equilibrium

In the short run there are two possibilities.

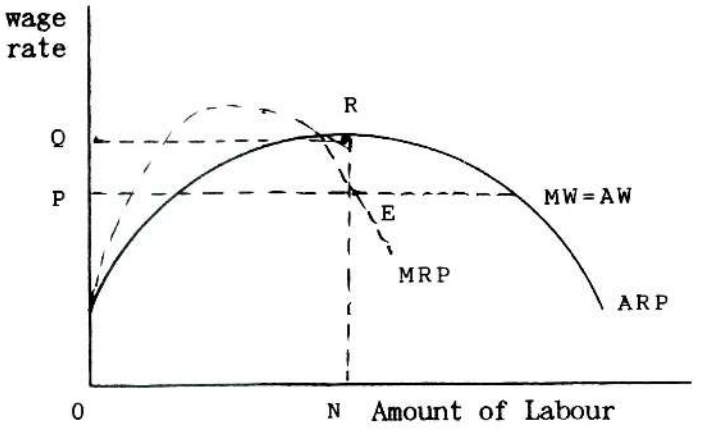
i. The average wage can be lower than the average revenue product (ARP) of labour. If this is the case, the firm will earn surplus profit by employing labour.

ii. The average wage can be higher than the average revenue product (ARP) of labour. In that case the firm will suffer a loss.

However, in the long-run the firm will neither earn profits nor suffer losses because the short-run profit will attract other firms to enter the industry while short-run loss might force some firms to leave the industry.

Suppose there is a profit in the short-run. This as shown in the Figure 10.2.

Figure 10.2
Profit in the Short-run



The firm is in equilibrium at E where MRP = MW. The equilibrium level of labour is ON at which ARP is equal to RN. This is greater than the average wage which is equal to EN. Therefore the firm is making super normal profit shown in the rectangle PERQ.

This profit attracts other firms. As many firms would now be in the industry the demand for labour will rise. As a result the industry wage rate will rise, shifting upwards the average wage curve for the firm. With the entry of firms the output of the product will also rise which will result in the fall in the price of the product.

As a result, the ARP and MRP curves will shift downward. The final result of all these adjustments will be that the long-run equilibrium of the firm will be established where ARP = AW, so that the firms earn only normal profits.

Figure 10.3.1
Short-run profit

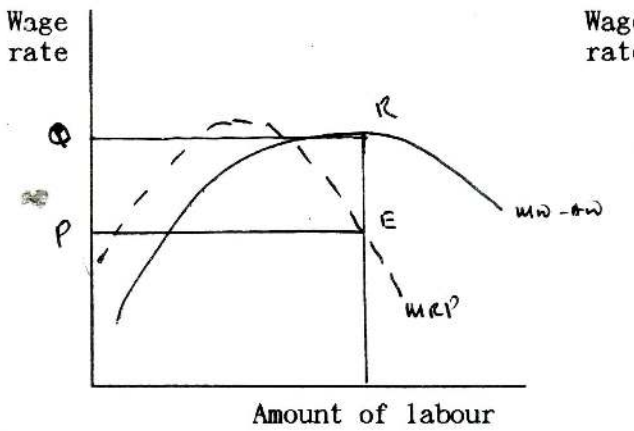
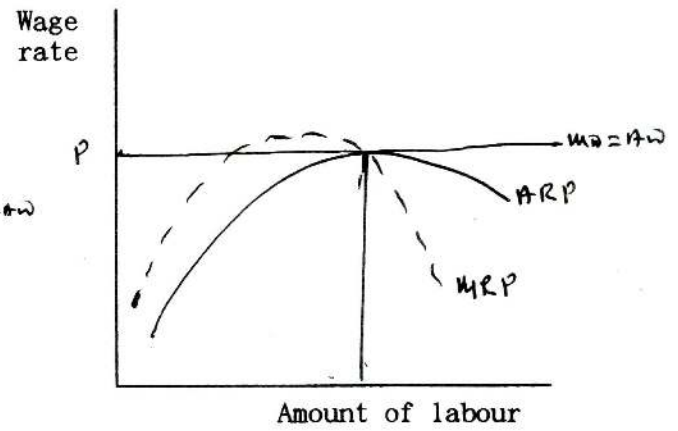


Figure 10.3.2
Long-run equilibrium



As shown in Figure 10.3.2, under perfect competition in the long-run, the wage rate is equal to both the MRP and ARP

MRP = ARP = AW = MW

Since MRP is equal to MVP in a perfect competition in the product market,

MRP = MVP = ARP = AW = MW

ACTIVITY 1:

In the month of March, 1995 approximately 2500 job seekers rushed to post offices all over the country to send application for nearly 100 junior clerk positions in the branch offices of the Sri Lanka Development Bank. How do you view this situation?

10.1.3 Determination of wages under imperfect competition in the product market and perfect competition in the labour market

When the product market is not perfectly competitive the price is not a given one. Because under imperfect competition in the product market, the average revenue curve or demand curve facing an individual firm slopes downward. In other words, as the firm increases its output (and sales) by employing more units of labour the price of the product declines. As a result MRP is not equal to MVP and at every unit of labour the MVP is greater than the MRP (see the Table 1)

Table 1 : Wage rate – Imperfect Competition in the Product Market and Perfect Competition in the Labour Market

Units of labour	TP	MP	Price	MVP	TR	MRP
0	0	–	–	–	–	–
1	50	50	2.0	100	100	100
2	100	50	1.90	95	190	90
3	140	40	1.80	72	252	62
4	170	30	1.70	51	289	37
5	190	20	1.60	32	304	15
6	200	10	1.50	15	300	–4
7	200	0	1.40	0	280	–20
8	180	–20	1.30	26	234	–46
9	150	–30	1.20	36	180	–54

If there is imperfect competition in the product market, and assuming perfect competition in the labour market, the firm will be in equilibrium at point E where MRP = MW.

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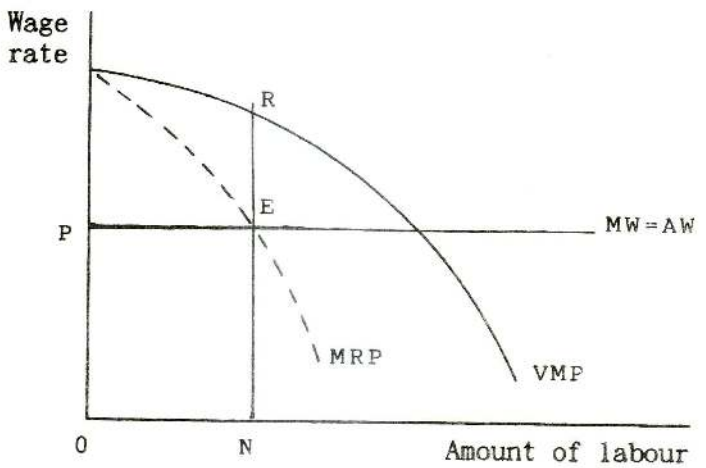
Figure 10.4

Wage rate : Imperfect Competition in the Product Market and Perfect Competition in the Labour Market



The equilibrium employment of labour is ON and equilibrium wage is NE (or W). However, the NE wage level is less than the MVP of ON amount of labour which is NR. Therefore, labour gets RE less than the value of its MVP. According to Joan Robinson, a renowned economist, labour is exploited when it is paid less than the MVP. Thus, exploitation here is RE.

ACTIVITY 2:

The following informations are given to you.

No. of labour	1	2	3	4	5
Total output	10	25	35	40	40

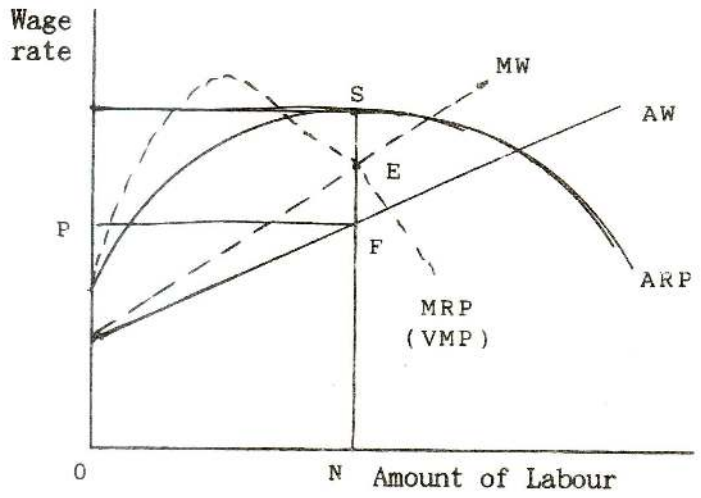
If the output price is Rs. 5/= and wage rate is Rs. 10/= determine how many units of labour the firm will want to acquire.

10.1.4 Determination of Wage under Monopsony in the labour market and perfect competition in the product market

Monopsony is said to exist in the labour market when there is a single buyer for labour. In such a labour market the average wage line (or labour supply curve) is not a horizontal one but a rising curve. This is because the monopsonist (the single buyer) will have to increase the wage rate to hire more labour. As AW curve is rising the MW curve, which is the slope of the AW curve, above is the slope of the AW curve. This is shown in the Figure 10.5.

Figure 10.5

Wage Rate : Monopoly in the Labaour Market and Perfect Competition in the Product Market

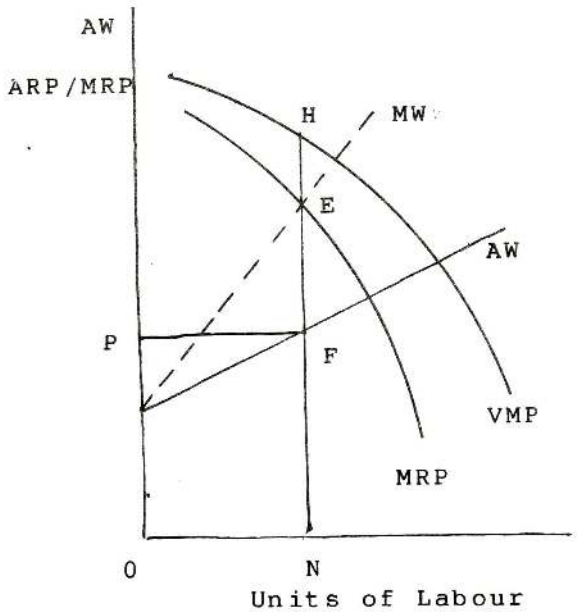


The firm will be in equilibrium at point E where MRP is equal to MW. The equilibrium amount of labour is ON. However, the average AW at the equilibrium is NF. In other words labour is being paid a NF wage while its marginal revenue product is NE. The difference (EF) between the marginal revenue product (NE) and the wage paid to labour (NF) is called monopsonistic exploitation of labour.

10.1.5 Determination of wage under Monopsony in the labour market and imperfect competition in the product market

When there is imperfect competition in the product market, MRP and MVP will not be equal, and the later will be greater than the former. Also the MW curve will be above the rising AW curve, because the firm has monopsony in the labour market.

Figure 10.6



As shown in the figure, 10.6 the firm is in equilibrium at the point E where MRP = MW. The equilibrium amount of labour is ON. The wage rate at this level is FN which is less than both MRP and MVP of labour. Therefore, labour is subject to exploitation and the total exploitation here is HF which consists of EF and HE. The gap, EF, between MRP and AW is due to the existence of monopsony in the labour market and is therefore called monopsonistic exploitation of the labour. The gap, HE, between MVP and MRP is due to the existence of monopoly in the product market and is therefore called the monopolistic exploitation of the labour. To sum up, labour is subject to double exploitation under condition of monopoly-monopsony.

ACTIVITY 3:

In Sri Lanka, as elsewhere in the developing world wages are not set in free and perfectly competitive market conditions. The lowest paid workers in our society often suffer from a lack of bargaining power, and have become easy targets for exploitation by employers. Hence, the government has seen the absolute need to enforce minimum wage levels and it is taking measures towards this.

What impact would enforcement of minimum wage laws have on the island's labour market?

10.2 Trade union and wage determination

When labour is exploited paying wages less than its marginal revenue product, the workers if formed into a union could speak with one voice thereby achieving control of the labour supply. The result is a bilateral monopoly - a monopsony of buyers facing a monopoly of sellers.

In a bilateral monopoly, wages and amount of labour are not determined simply by supply of and demand for labour. They are determined by direct negotiation between employers and labour unions. The process by which unions and employers hammer out a compromise is called collective bargaining under which the both side meet to negotiate a mutually agreeable contract specifying wages, working conditions, allowance, and any other aspects. The resulting contract usually extends

over two or three years and during this period unions are bound not to take trade union action against the management.

ACTIVITY 4:

One of the most notable developments of the 1980s in the Sri Lankan labour market was the sharp drop in trade union activities. The drop in trade union activities to a sizeable section of the intellectuals, reflected far-reaching political shifts that fundamentally tipped the balance of power in favour of employers. Some however argue to the contrary, that it was not because of the alleged "anti-union attitude" of the government but because of successful collective bargaining.

How does the political environment affect the strength of trade unions?

10.3 Wage differentials

Some occupations receive higher wages while others get less. For example, a university lecturer gets more than 10,000/= while a university clerk receives less than 3000/=. Why do wages differ from job to job, and from person to person. There are a few reasons for these wage differentials.

i. Certain jobs are quite unpleasant because work places are in undesirable locations, are dangerous, or affect health. Such jobs offer higher wages as compensation, for example, coal miners, and deep-sea divers earn 90% more than the average worker.

ii. People differ with respect to their skills, training and abilities. The more qualifications they have, the higher their wages will be. It is because they have a higher marginal product than unskilled workers, and their supply is smaller than that of unskilled workers.

iii. Seniority may bring higher income because of the additional skill and abilities of an older worker, and because firm provides incentives for experienced worker to remain with the firm.

ACTIVITY 5:
In Sri Lanka, children of parents who are teachers seem to have a high degree of academic and professional success. They acquire skills and ability within a short span of time and occupy white-collar jobs with good salaries. The major reason for their success is that they were brought up in a highly academic environment and their parents being teachers were able to motivate them to work hard at their studies.

How does the level of education brings wage differentials.

10.4 Wage discrimination

Wage discrimination exist when two group of workers (say while and blacks) working in the same occupation receive different average wages unrelated to their marginal productivity. Race

and gender are currently the most prominent of the factors that bring about wage discrimination. Religion, gender preference and ethnicity heritage are some other reasons for wage discrimination.

ACTIVITY 6:

Most female workers embarking on careers in executive posts thought they could be a successful executive, wife and mother. More and more women, however, are discovering that it is impossible to have equal success in both the office and in the home. They, as a result have to choose between career and family. A growing proportion are apparently opting for family either by switching to other occupations that provide more flexible hours such as teaching or giving up work altogether to be full-time housewives.

How do family commitments of female workers affect the labour market?

10.5 Occupational segregation

Occupational segregation takes place where a section of workers, say women, is excluded in one way or another from certain desirable occupations and are crowded into less desirable ones where their presence depresses wages. The most common occupational segregation is the separation of jobs by sex. Some jobs are filled entirely by women and certain jobs entirely by men.

ACTIVITY 7:

Although in Sri Lanka the proportion of women has increased in nearly all, white-collar occupations, some jobs are still done mostly by males.

Identify male dominated and female dominated occupation in Sri Lanka.

key terms :

Equilibrium wage
Average wage
Marginal wage
Perfect competition
Imperfect competition
Firm's equilibrium
Trade union
Collective bargaining
Monopsony
Wage differentials
Wage discriminations
Occupation segregation

Review Questions

1. What is an equilibrium wage?
2. What is the basic condition for a firm's equilibrium?
3. Why is equilibrium different under different market situations?
4. When is MRP equal to MVP?
5. What is the exploitation of labour?
6. What do you understand by collective bargaining?
7. Why occupation segregation by sex might occur?

Examination Type Question

1. "Wages under pure competition are equal both to the marginal and average product of labour" Explain.

2. How are wages determined under imperfect competition?

3. "When either product market or labour market is imperfect workers are vulnerable to exploitation". Examine critically.

LESSON ELEVEN

LAND MARKET

Introduction : Rent is a commonly used term. It is the payment made for the use of something, such like a car, a dormitory room, and so on. To a business executive "rent" is the payment made for the use of a factory building, machinery or ware house facilities. However, if you closely look at these payments, you will realize that these payments are confusing and ambiguous. Why? Because the cost of a dormitory room, for instance, includes interest on the money/capital the university has borrowed in financing the dormitory construction, wages for other services, utility payments and so on. Then what is "rent" in economics?

We turn now from an overview of resource markets to specific features of the land market. As you know a key natural resource is land. This lesson starts with the market for land. You will see how the price of land and the quantity demand are determined. We will examine the concept of economic rent with respect to land.

The aim of this lesson is to detail the main features of the land market.

Contents :

1. Pure Economic rent
2. Market for land
3. Differences in land rent
4. Allocation of land

Learning Objectives :

After the completion of this lesson you would be able to,

(a) define the some of the key concepts such as economic rent, land productivity, allocation of land.

(b) differentiate the economist's use of the Term "rent" from everyday usage.

(c) explain how rental payments are useful in determining the use of land in the most productive ways.

(d) explain why economic rent is a surplus from the point of view of the economy as a whole, but a cost factor from the individual's point of view.

Study Guide :

In this lesson we try to apply the concepts used in the previous lesson. You may spend two to three hours to complete this lesson. Use the terms and concepts as a guide. Answer all the review questions at the end of the lesson. You are advised to discuss your problems with your tutor at the day school.

Before reading this lesson make sure you know the meaning of:

Derived demand, marginal physical product and marginal revenue product.

11.1 Economic rent

The term rent is used in two ways: First, as the payment for the use of something such as a building, van or a room; Second, as payment for the use of land which is fixed in extent. The latter definition explains the payment to landowners for the use of their land.

Economists use the term "rent" in a narrower but less ambiguous sense: Economic rent is the price paid for the use of land and other natural resources which are completely fixed in total supply. In other words, the rental payment for land is distinct from wages, interest and profit payments. This lesson examines two areas: "Economic rent" and the determinants of the rent on land.

In the next couple of lessons you will learn the meanings of wages, interest and profit payments for other resources.

11.2 The supply of land

Economists, particularly the classical economists consider the supply of land to be perfectly inelastic: No matter how high its rental, the amount of land is fixed, and no matter how low the price, the land remains the same. The income generated by a factor of production, in this case land, whose supply is perfectly inelastic, is referred to as pure economic rent.

In order to be simple and uncomplicated let us examine pure economic rent through the supply and demand analysis. Let us assume, first, that all land is equally productive. Second, that all land is only capable of producing just one product - say paddy. And finally that rent for the land is determined in a competitive market.

ACTIVITY 1:

Before going on to the next section, answer the following questions:

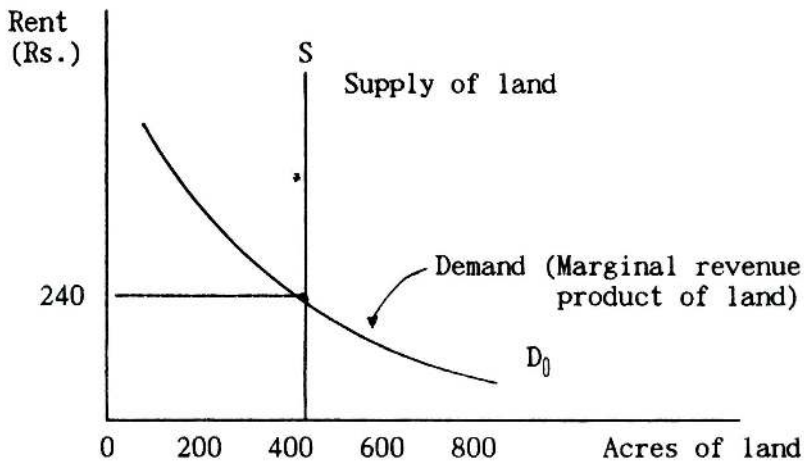
i. What do we mean when we say that the supply of land is perfectly inelastic?

ii. Define the term "competitive market"?

Figure 11.1 shows how pure economic rent is determined by supply and demand in a competitive market. What are the main features of the two curves of the figure? First, the supply curve (SS) of landowners for land by our definition is a vertical line: This means that the amount of land available (the supply) does not vary with changes in the rent that it earns. Second, the demand curve of farmers is down sloping:

Figure 11.1

Market for a Resource in Fixed Supply.



This shows that the marginal product of land falls as more land is used in combination with fixed quantities of labour and capital because of diminishing return. Here, we are interested in the unique feature of the supply side: As reflected in SS, the supply of land is perfectly inelastic - On the other hand, land has no production cost: it is "a free and non reproducible gift of nature".

However, we could argue that within limits existing land can be made move usable by cleaning, drainage, irrigation etc. But these activities generate capital improvements and not changes in the amount of land as such. And also those improvements are marginal to the total

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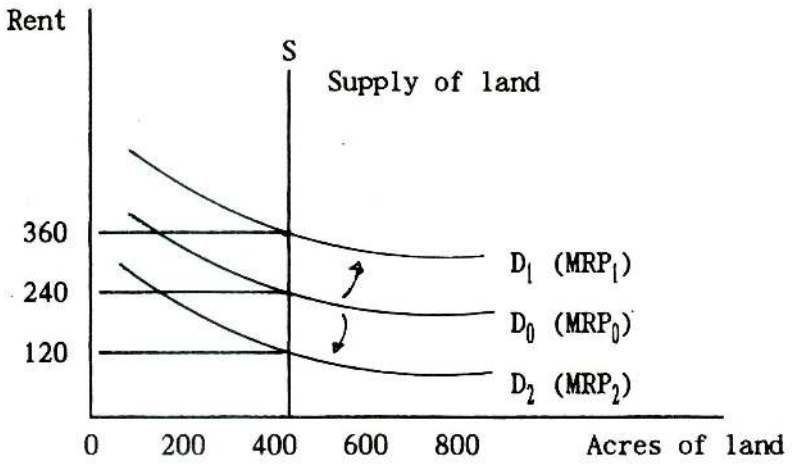
amount of land in existence. Therefore, such alterations do not affect the basic argument that land is a resource that is fixed in supply.

The land rent is determined at the point at which the demand curve and the vertical supply curve intersect, Rs. 24.0 per acre in Figure 11.1. The vertical supply curve means that demand is the only active determinant of land rent; supply is static.

If in Figure 11.2, the demand for land (MRP) should increase from D_0 to D_1 or decline from D_0 to D_2 land rent would change from Rs. 240 to Rs. 360 or Rs. 240 to Rs. 120, but the amount of land available would remain unchanged at 4.2 thousand acres.

Figure 11.2

All Increase in Demand

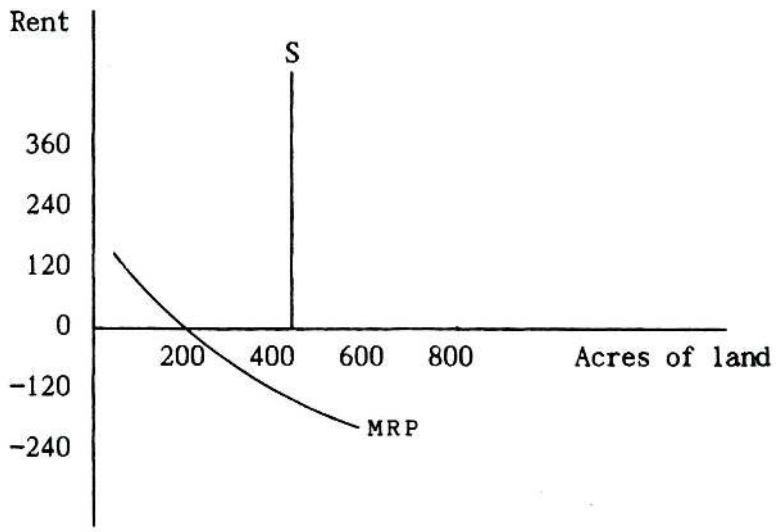


Changes in economic rent will not alter the amount of land available; the supply of land cannot, under any circumstances, be is simply not increased. Even with a higher rent no new land could be supplied.

If demand for land is only D_3 as in Figure 11.3, land rent will be zero; This is because land will be a "free good" not being scarce enough in relation to demand for it to command a price. Even with a higher rent no new land could be supplied. The higher rent cannot make owners increase the quantities of land available. Pure economic rent does not act as an incentive to resource owners to increase or decrease quantities supplied.

Figure 11.3

Zero Land Rent



ACTIVITY 2:

Before moving to the next section define each of the following concepts in your own words.

(i) Pure economic rent (ii) Supply curve for land

(iii) Demand curve for land (iv) Marginal Revenue Product

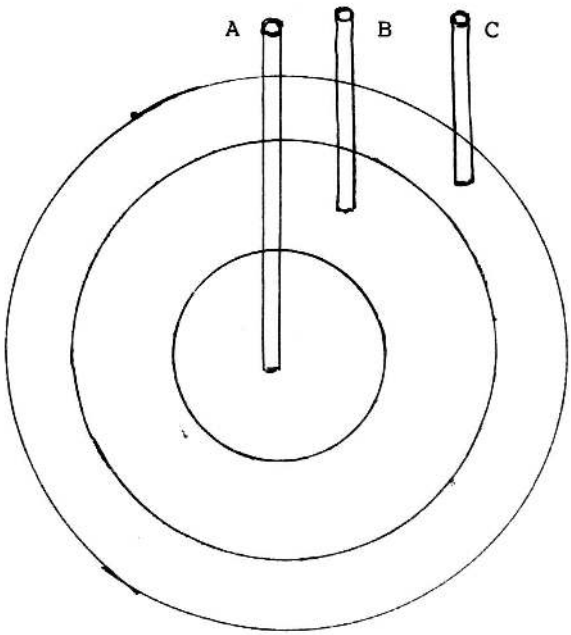
(v) Zero land rent (vi) "Free good" (vii) Higher land rent

11.3 Productivity differences

So far we have assumed that all units of land are of the same grade or have the same potential. In practice, this is clearly not so. For instance, the price of land in the city of Colombo, Sri Lanka, is about one million rupees per perch; outside the city land sells for about half that amount. Different pieces of land earn widely varying rents because of differences in demand. Demand for blocks of land in Colombo is higher than the demand for similar blocks outside the city. Other things being equal, tenants will pay more rent for a unit of land which is well situated with regard to facilities like materials, labour, and customers, than for a unit of land whose location is remote and lacks these advantages. Generally, high land rents occur in the large metropolitan areas. In our example, the marginal revenue product of land in the city of Colombo is higher. Situation is a major determinant of the marginal revenue product of a particular piece of land.

Figure 11.4

Rent based on Differences in the Location of Land

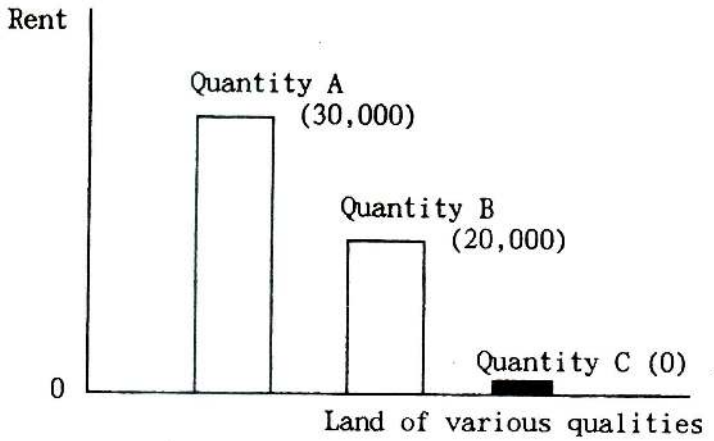


As seen in Figure 11.4, Land A, because of its greater convenience and lower transport costs, earns a higher rent than land B. Land C, in a relatively poor location, earns no rent at all.

In addition, the geographical features of the land, such as good soil, rainfall and temperature also increase the marginal revenue product of the land. The productivity potential of lands is not even a uniform. Marginal land C in Figure 11.5, for instance, which is unsuitable for cultivation earns no rent. On the other hand, high yielding land A, earns a high rent.

Figure 11.5

Rent based on Differences in Quality of Land



Land in dry zone with irrigated water has a comparative advantages in producing paddy, land in upcountry for producing tea,, and land in colombo city for shopping complexes. For that reason not all land earns the same rent in a competitive market.

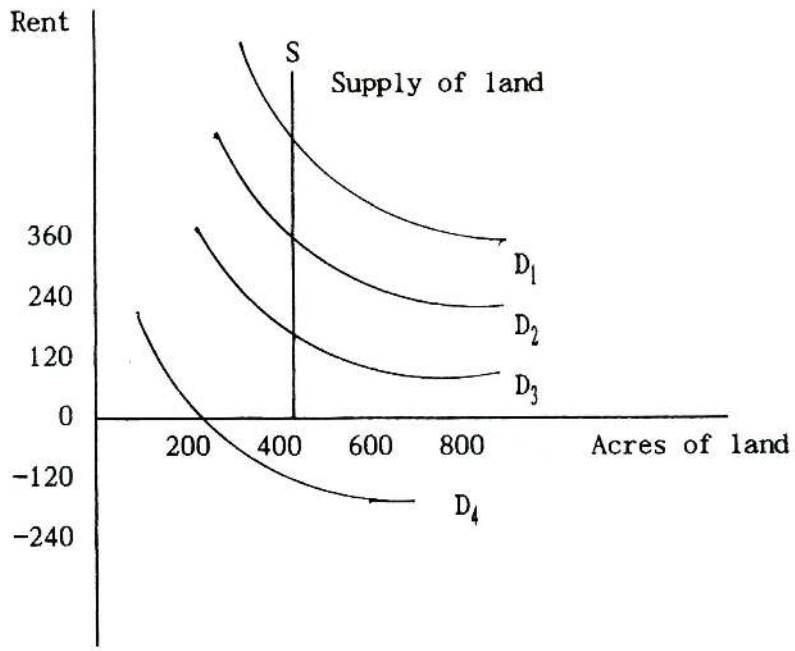
Land differs in terms of its fertility, its climate, and its location advantages.

(a) **Different rent(1)**

As we now know, different pieces of land have different degrees of productivity in various application. Now assume, that only one agricultural product say paddy, can be produced

on four grades of land. Each land is available in the fixed amount OS. (See Figure 11.6)

Figure 11.6
Different Degrees of Productivity



When combined with identical amounts of capital, labour and other resources, the productivity - or more specifically, the marginal revenue productivity of each grade of land is reflected in demand curves, D_1, D_2, D_3, and D_4 (Figure 11.6). Now how does one interpret these different curves?

Firstly, grade 1 land is the most productive, as reflected in D_1. Secondly grade 4 is the least productive as shown in D_4. This indicates that the economic rents for grades 1,2 and 3 land will be R_1, R_2 and R_3 respectively, due to the greater productivity of these grades of land.

ACTIVITY 3:
How do you value Grade 4 land of Figure 11.6? What is its rent?

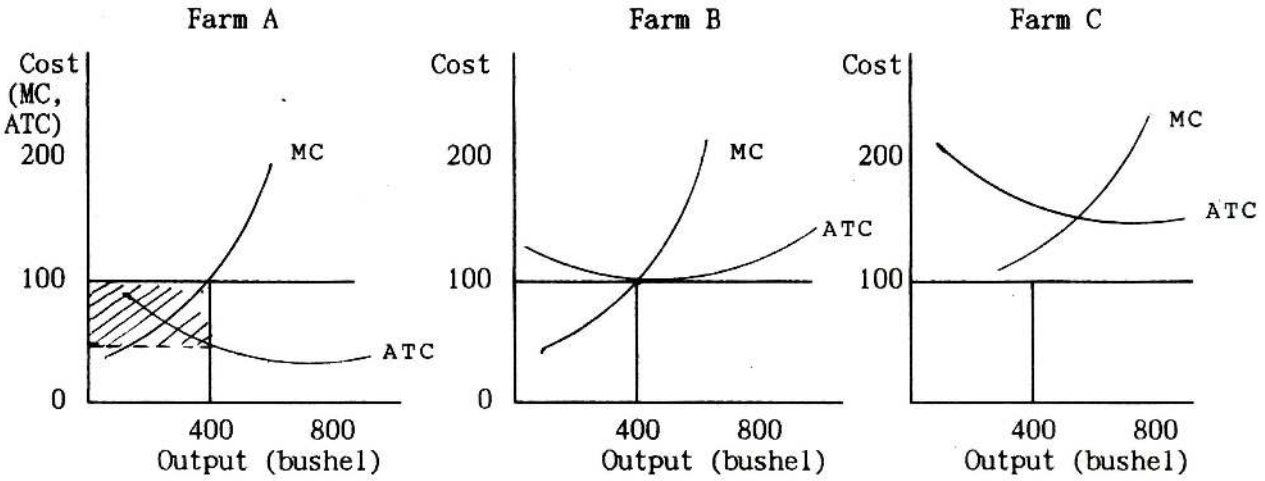
(b) **Different Rents(2)**

Now let us look at a relatively complex situation - the yield of different pieces of land in different farms.

Consider Figure 11.7(a), 11.7(b) and 11.7(c) which show the marginal costs(s) and average total cost(s) of producing paddy in three different farms on different extent of land.

Figure 11.7(a) Figure 11.7(b) Figure 11.7(c)

Yield of Different Pieces of Land in Different Farms



The costs include labour, machinery, fertilizer and other related inputs except the land itself. At a market price of Rs. 100 per bushel, farm A will produce 400 bushels per year, farm B will produce 400 bushels per year, and farm C will not find it worthwhile to grow paddy at all. How is this explained?

First, you have to find out the equilibrium point of all the farms. Farm A's equilibrium point is the intersection of MC and MR, point A. Likewise, farm B and Farm C's equilibrium points are point B and point C respectively. Secondly, you have to identify the average total cost curves (ATC). The

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figures show average total cost curves for three paddy farms that differ only in terms of the quality of their land. Now you have enough information, namely,

i. The Farms' Equilibrium Point
ii. Marginal Revenue and Marginal Cost
iii. Average Total Cost for the three farms

With this information, find out each individual farm's profitability.

Farm A

Given the market price (Rs.100) and the output, farm A receives Rs. 100 per bushel and incurs an average total cost of Rs. 80 per bushel. The Rs.20 profit is from the higher productivity of the land on farm A. It is an example of what is called differential rent.

Farm B

At a market price of Rs.100 a bushel of paddy, farm B just breaks even on its total costs, and earns no differential rent.

Farm C

At a market price of Rs. 100 a bushel Farm C would not find it worthwhile to produce for sale.

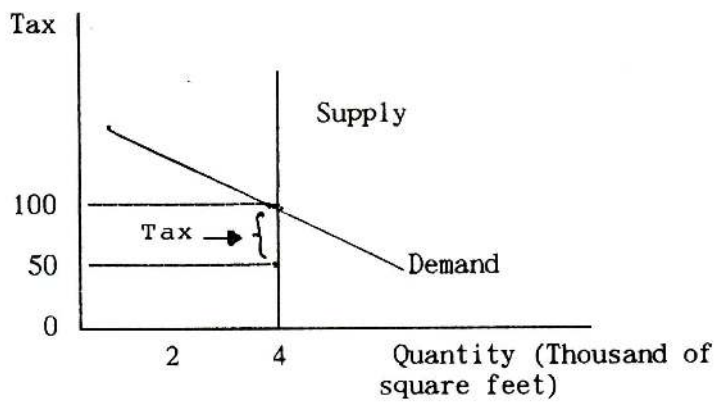
ACTIVITY 4:
Suppose, the market price were to rise to Rs. 120 per bushel, what would be the results?

11.4 Land tax

So far we have assumed that the supply of land is perfectly inelastic. How would the land market be selected if a land tax is operated? If a tax were placed on land, whose supply is perfectly inelastic, the owners would be able to pass the tax on to their tenants or to bear the entire tax themselves.

Figure 11.8 shows the market for land. The equilibrium rental value is Rs. 100 per square foot per year. If a tax of Rs. 50/- per square foot is imposed on this market, the quantity supplied would not change.

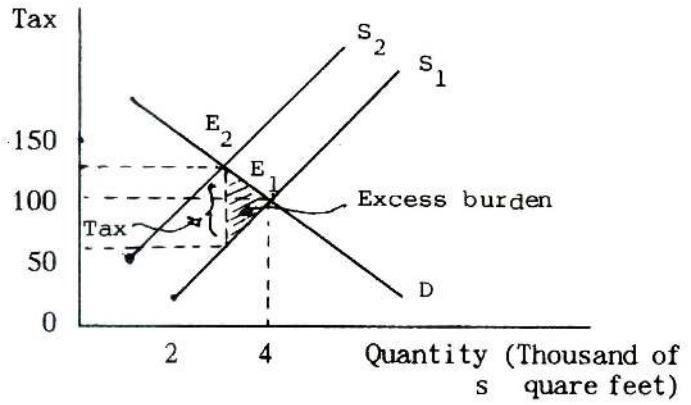
Figure 11.8
Land Tax



Competition among landowners would prevents them from passing on the tax to the tenants who occupy their lots; thus, the rent tenants pay on land would remain at Rs. 100 per square foot.

In contrast, if you construct a building on the land, a part of tax would be passed on to the tenants because buildings, which are a form of capital, are not perfectly inelastic. Figure 11.9 shows the market for buildings constructed on the same land.

Figure 11.9
Tax on Buildings



At the beginning, the rental for buildings was also Rs. 100 per square feet. A tax of Rs. 50 per square foot is the cost to the owners and shifts the supply curve upward from S_1 to S_2. Part of the tax is passed on to tenants in the form of an increase in the rental price per year to Rs. 125 per square feet. The quantity of floor space

provided falls by half a thousand square feet. The shaded area shows the annual extra burden imposed by the tax.

11.5 Rent and the allocation of land

We have also assumed so far that land has only one use. However, we know that land usually has a number of alternative uses. Think of what a typical large city looks like. Tall buildings are clustered in the city center. As the distance from the city center increases, the density and the height of the buildings decrease. Why? What is the significance of this? It indicates that although land is a free gift of nature and has no production cost from the viewpoint of society as a whole, the rental payments by individual constitute production costs. Let us assume that the land in the city of Colombo has only two uses, commercial and residential. Figure 11.10(a) shows the market for the commercial use of the land. The supply of commercial land slopes upwards because as the rentals rise, more landowners would offer their land for commercial purposes, ceteris paribus.

Figure 11.10(a)

(a) The market for commercial use of land

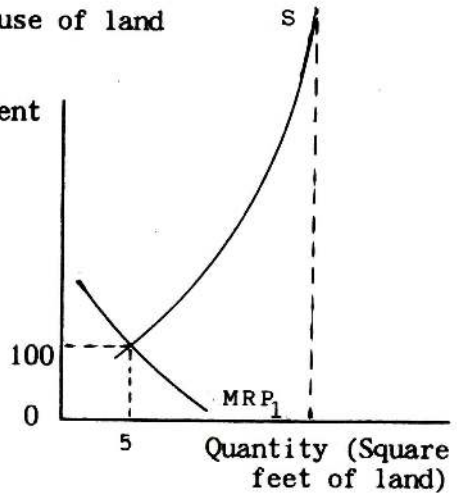


Figure 11.10(b)

(b) An increase in demand for commercial use of land

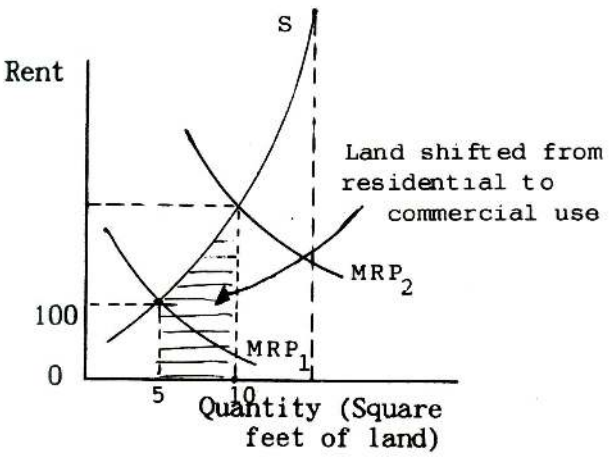


Figure 11.10(a) shows that currently, five thousand square feet are used for commercial purpose and the rest for residential purposes. This is determined by a rental rate of Rs. 100. Suppose, the number of businesses increases and moves to the city. Then what would be the rental rate? The rental rate of current commercial area would rise. This is shown as the move from MRP, to MRP_2 in Figure 11.10(b). As rates rise, from Rs. 100 to Rs. 150, a certain amount of land that was used for residential purposes is now used for commercial purposes. The rental rate thus determines the allocation of resource for alternative purposes. In other words, as the rental rate changes, the allocation of land for

different purposes, changes. Here the market for land brings about the particular business relationship between landowners and tenants. The shaded areas shows the land changed from residential to commercial use.

ACTIVITY 5:

Define the following concepts:

1. Productivity differences	2. Different parcels of land
3. Higher Marginal Revenue	4. Different rent
5. Location of land	6. Different farms with different qualities of land
7. MR and MC	8. ATC
9. Land tax	10. Alternative uses

Summary :

* The purpose of this lesson is to illustrate specific features of the land market.

* The demand for and supply of land determine the rent of land.

* Economic rent is the price paid for the use of land whose total supplies are fixed.

* Rent is a surplus in the sense that land would be available to the economy as a whole even in the absence of all rental payments.

* Differences in land rent are explained in terms of the differences in productivity.

* Productivity varies with the location of the land, its fertility, and the climate.

* Land rent is a surplus rather than a cost to the economy as a whole; however, because land has alternative uses rental payments by firms are correctly regarded as costs.

* Land has a number of alternative uses. eg. commercial, residential etc.

Review Questions

1. How does the economist's use of the term "rent" differ from everyday usage?

2. What would you expect the rent of land to be,
   (a) If a new type of fertilizer is developed, capable of increasing the productivity of all land by 10 percent?
   (b) If a flood makes all low-grade land uncultivable, spoiling all "marginal" and "Submarginal land and leaving only the land that had been called "Superior" available for cultivation?

3. "Rent is equal to the difference between marginal cost and average cost, multiplied by output"
   (a) Prove this proposition with the aid of a graph.
   (b) Is the proposition correct even if competition is not perfect? Explain with a graph whether this is so or not.

4. "Though rent need not to be paid by society to make land available, rental payments are very useful in determining the most productive uses of land". Comment.

Checklist :

1. Read the learning objectives given at the beginning of the lesson.
2. Read the lesson in relation to the learning objectives.
3. Answer all the review questions.
4. Read the summary carefully.

LESSON TWELVE

CAPITAL : INTEREST

Introduction :

In our previous lessons on the costing of the various factors of production we discussed wages, the cost of labour and rent the cost of land. This lesson deals with interest on capital.

It is important that at the outset we should be quite clear about *what is meant by capital.* The fundamental distinguishing feature of capital is that it is made by man. The main types of capital asset are machines, factories, railways, vehicles and the like.

Capital is therefore unique among the factors of production in that man exercises complete control over its creation.

In this lesson we will confine our attention to those capital goods which are bought and sold simply as factors of production.

Contents :

1. Definition of capital
2. Roundabout production
3. Interest and capital
4. Present value and future value
5. Saving and investment

Learning objectives :

After the completion of this lesson you will be able to

(a) define some of the key terms such as capital, interest, present value and future value.

(b) explain what is meant by roundabout production.

(c) define capital market.

(d) differentiate between the concepts of capital, land and labour as factors of production.

Study guide :

Read lesson carefully with respect to the learning objectives, the activities, and review questions. Spend up to 3 to 4 hours to complete this lesson.

12.1 What is capital ?

Capital refers to all manufactured aids to production, that is, all tools, machinery, factory equipment, storage, transportation, and distribution facilities used in producing goods and services and getting them ultimately to the consumer.

Five other points are pertinent. First, capital goods ("tools") differ from consumer goods in that consumer goods satisfy wants directly, whereas capital goods do so indirectly by facilitating the production of consumer goods.

Second, the term "capital" as here defined does not refer to money. True, business executives and economists often talk of "money capital", meaning money which is available for use in the purchase of machinery, equipment, and other production facilities. But money, as such, produces nothing; hence it is not to be considered as an economic resource. Real capital -tools, machinery, and other production equipment - is an economic resource; money or financial capital is not.

Third, for purposes of the management of resources, capital is generally divided into fixed and variable capital. For instance, in the farming sector fixed capital consists of investments in land improvements, buildings, roads, fences, water channels, irrigation

structures, machinery, equipment and implements. The variable capital on the other hand, includes such items of capital as seed, food, fuel, fertilizers, insecticides, pesticides, etc. This major classification of fixed and variable capital is known by many other terms such as fixed and working, fixed and operating, non-recurring and recurring capital, and so on.

Fourth, capital on the other hand is classified according to the time period in which the additional returns from the investment are sufficient to recover (or repay) the capital costs. In this way, capital is usually classified as *short - medium*, and *long - term* capital and accordingly the loans or capital borrowed are described as short, medium, and long - term loans.

Finally, there is another important classification of capital which draws a distinction between capital financed from one's own savings, which is known as *equity capital* and that financed from borrowings which is known as *debt capital*. The proportion of total assets owned by a company is known as the equity ratio and is an important indication of the soundness of the company's capital position.

Capital Goods:
All those man-made aids to further production, such as tools, machinery and factories, which are used up in the process of making other goods and services rather than being consumed for their own sake.

ACTIVITY 1:
Give as many examples of capital as you can.

12.2 What is interest?

The interest is the price paid for the use of money. More precisely, the interest rate is the amount of money one is required to pay for the use of one rupee for a year.

Interest is usually stated as a percentage of the amount of money borrowed rather than as an absolute amount. It is more convenient to say that one pays 12 percent interest than to say that interest is "Rs. 120 per year per Rs. 1000". Furthermore, stating interest as a percentage facilitates the comparison of interest rates paid on loans of different amounts. By expressing interest as a percentage, we can immediately compare interest rates, unlike saying Rs. 864 per year on Rs. 5760 or Rs. 3600 per year on Rs.24,000. In this case both interest payments are 15 percent - a fact not at all apparent from the absolute figures.

12.3 **Roundabout production**

If you sacrifice or even limit current consumption, you could save extra money for future use. And if you have enough savings you would be able to buy capital goods, say a tractor, with which more output can be had. This higher output would enhance your consumption capacity in the future: This process is called *roundabout production.* In other words with roundabout production, everything produced today is not consumed today. On the other hand, if all existing resources were used today - if the forests were cleared and every bit of timber used, and if the world's supply of oil were extracted and used - living standards today would be much higher but the future would be bleak : and in that process there would be no roundabout production.

Foregoing some current consumption allows households, businesses and societies to obtain resources that can be used to increase future production and consumption.

ACTIVITY 2:
The saving rate in South Korea nearly 2 times the rate in Sri Lanka. How might this difference effect the two economies.

12.4 Rental price and purchase price

If you wish to farm, you can either buy the land or you can rent it for a specific period of time. The same is true for all capital. A firm often has the option of either buying or renting capital goods.

The rental price of capital is the amount that a firm pays to obtain the use of a capital good for a given period of time. . The rental for one week's use of a piece of capital is analogous to the weekly wage that is paid price for labour.

12.4.1 MRP and Rental Price

In a previous lesson, we learnt that a profit maximising firm would operate to hire labour until its marginal revenue product (MRs) equals its wage. A firm in a capital market situation is no exception: A firm will go on hiring capital until its MRP equals its rental price. If we assume that all firms face a competitive market, the same rental price will have the same MRP of capital.

12.4.2 Capital and implicit price

A capital good may also be used by the firm that owns it. In this case the firm does not have to pay out any rental. However, the rental price is the amount that the firm could charge if it leased its capital to another firm. It is thus the opportunity cost to the firm of using the

capital good itself. This reflects the value to the firm of the services of its own capital that it uses in the production process.

Whether the firm pays out the rental price directly or calculates it as cost of using its own capital, the profit maximising firm equates the rental price of a capital good over the current production period to its marginal revenue product.

ACTIVITY 3:
What is the marginal revenue product?

12.4.3Purchase price

The purchase price of capital is the price that a firm pays to buy a capital good. When a firm buys a capital good outright, it gets the use of that item of capital throughout its lifetime. What the capital good contributes to the firm will be equal to the expected marginal revenue product of the good's services over the good's lifetime. The price that the firm is willing to pay would be related to the total value that the good is expected to produce during its lifetime. The term "expected" indicates that the firm is usually uncertain about the prices at which it will be able to sell its outputs in the future.

12.5 The capital market

The capital market is the channel through which consumers and producers tailor their present behaviour to match future plans. The demand for and supply of capital determine the equilibrium quantity and cost of capital (or price of capital). First let us look at the demand for and supply of capital.

12.5.1 Demand

To know whether it would be economic to purchase a machine it would be necessary to compare the present purchase price and the expected return after a period of time. To make this comparison it is necessary to take into account that people prefer to consume today instead of waiting until tomorrow; that there is a risk that future payoffs will not be made; and that there is the possibility that money in the future will not purchase as much as it does today. The value today of an amount to be paid or received in the future is called *present value*. The value at a future date of an amount to be paid or received today is called the *future value*.

Present value of future returns

How can the future and present values be calculated? If you have Rs. 400,000 today, you can deposit that Rs. 400,000 into an account that will yield the principal (the original amount Rs. 400,000) plus the interest after some period of time. If the interest rate is 14 percent per

year, you will get interest of Rs. 56000 after one year.

400,000 x .14 = 56000

(The original amount x the interest rate)

Thus, Rs. 456000 after one year is the future value of Rs. 400,000 today at an interest rate of 14 percent; or Rs. 400,000 today is the present value of Rs. 456,000 one year hence at a 14 percent interest rate:

Rs. 456,000 = Rs. 400,000 (1 + .14)

Let us express "one year in the future" as FV (future value) and "today"" as PV (present value). Then we can write

FV = PV (1 + interest rate)

If we divide both sides by (1 + interest rate), we have

PV = FV / (1 + interest rate)

Thus, the present value, PV is Rs. 400,000

PV = Rs. 456,000 / (1.14) = 400,000

This tells us that if we have an amount of money today, we can figure out what it will be worth if it is invested at compounded interest for some number of years. Similarly, if we aim at getting a specific sum of money at some future date, we can figure out how much we would need to invest

today to get that amount a particular by that date.

Future value of present returns

To go from the present to the future, we multiply PV by the interest expression, and to go from the future to the present we divide FV by the interest expression.

Calculating the present value of future payments and present and future values is simple when you are looking at only one year. The calculations become more complicated when you are looking ahead several years. If there is a stream of values, such as with a company paying Rs. 400,000 per year for 10 years, you could calculate the present value of each payment and sum all the values to get the present value of the entire stream. For example, A sum of money is to be invested now to earn Rs. 400,000 in ten years at 8% interest (cost of capital) find the present value.

The following formula can be used for this purpose

$$PV = \frac{FV}{(1 + i)^t}$$

where PV = Present value

FV = Future value

i = Interest rate / cost of capital / discount factor

t = Number of years / time period

Once the rate of interest has been selected, the discount factors for the years of cash flows can be calculated but this is a long and tedious process. Fortunately, discount tables provide a quick reference to the discount factors. Using discount factors the above example can be computed as follows.

i. Future cash flow in 10 years Rs. 400,000/=

ii. Discount factor under 8%

interest in 10 years = 6.7107

Present value = 6.7107 x 400,000

= 26,84280

Note: 6.7107, this number is the present value of payments of Rs. 1 per period for 10 years at 8 percent.

In order to get the future value of the income, we can use a following formula:

$FV = PV (1 + i)^t$

FV = Future Value

PV = Present Value

i = Interest

t = Time period or t years

The above formula tells the future value of income after t years at i percent.

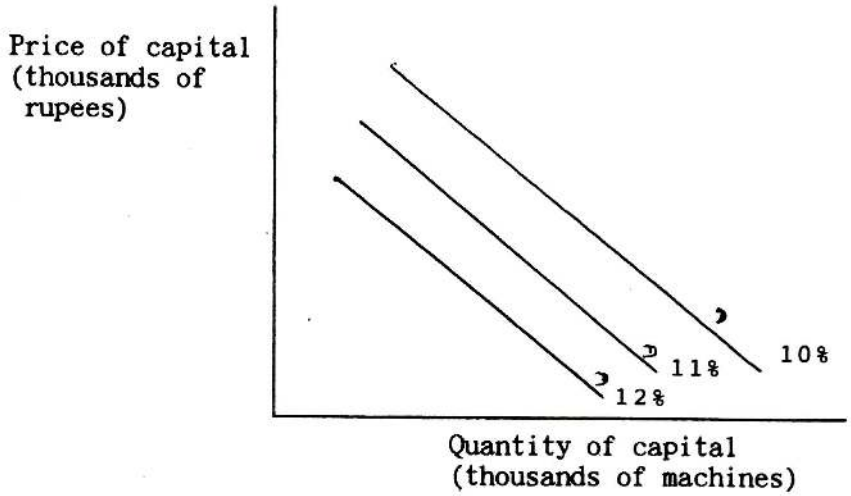
It tells us that what we did in the text is reversible. If we have an amount of money today, we can figure out what it will be worth if it is invested at compounded interest for some years. Similarly, if we are going to have some amount of money at some future date, we can figure out how much we would need to invest today to get that amount at the specified date in the future.

Our argument tells us that the two sums, PV and FV, are linked by the compound interest expression $(1 + i)^t$. To go from the present to future, we multiply PV by the interest expression, and to go from the future, to the present we divide FV by the interest expression.

The market demand for capital is shown in Figure 5.1 as a downward sloping curve with the quantity measured along the horizontal axis and the price of capital measured along the vertical axis.

Figure 12.1

The Firm's Demand for Capital



An increase in the price of capital, say from Rs. 40,000 to Rs. 50,000 per machine in Figure 12.1, would reduce the quantity of capital goods demanded, from 700,000 to 600,000 machines. This represents a case where, for instance, a farmer may postpone the purchase of a new tractor if the price increases.

The demand curve for capital shifts when one of the non-price determinants of demand changes. Perhaps the most important non-price determinant of capital is the interest ratio. You have seen how an increase in the interest rate decreases the present value of a future stream of income.

In exactly the same manner, a high interest rate lowers the present value of the marginal revenue product of capital, causing the demand curve for capital to shift in. Each time the interest rate increases, from 10 to 11 to 12 percent, the demand curve for capital shifts in, as shown in Figure 12.1 by the move from D (10%) to D (11%) to D (12%). The number in parentheses next to the demand curve represents the interest rate associated with each demand curve.

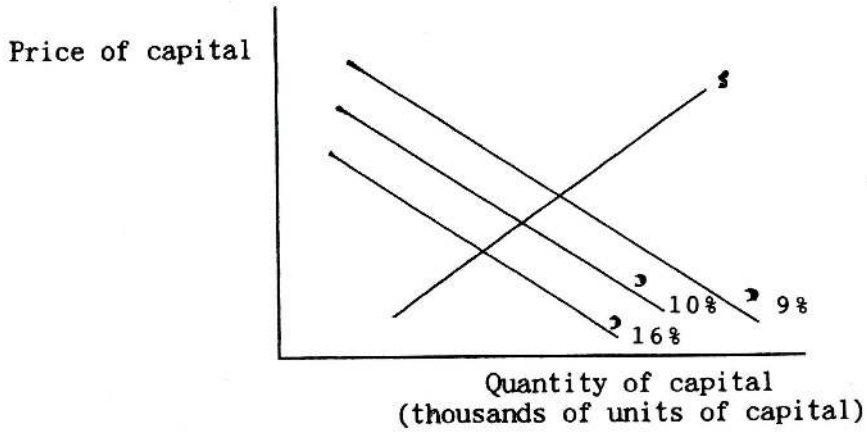
The demand curve also shifts when any other determinant of demand changes: technological change, expectations and changes in capital. For example, a business that expects strong demand for its goods purchases more capital now, causing the demand curve for capital to shift out.

12.5.2 Supply

Some firms specialise in producing capital goods. IBM produces computers, Tyre Ltd. supplies tyres. Boeing supplies airlines and so on. As we know the quantity of capital goods supplied by these producers depends on the price of the capital. In Figure 12.2 the supply of capital is shown as an upward sloping curve. As the price of capital rises, the quantity that producers are willing and able to offer for sale rises, as shown in Figure 12.2 by the upward - sloping curve.

Figure 12.2

The Demand and Supply of Capital



12.5.3 Equilibrium

The demand for and supply of capital determine the price of capital. It also determine the quantity produced and purchased. As we know, changes in demand or supply change the equilibrium price and quantity. The capital market is no exception: for example, changes in the interest rate affect the demand for capital and thus the price of capital. If the interest rate rises, the demand for capital decreases and the price of capital falls, as shown in Figure in the move from D (9%) to D (10%) to D (16%). At an interest rate of 9 percent, 100,000 units of capital are demanded; at an 10 percent rate of interest 90,000 units of capital are demanded; and at a 16 percent rate of interest, 75,000

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units of capital are demanded. As the demand for capital shifts in, the price of capital falls. Now, it is possible to sum up this discussion as follows. An entrepreneur wishing to buy a particular asset (capital) will have to consider:

i. The prospective yield of the asset, calculated by adding together all the earnings from it over its whole working life.
ii. The cost of asset.
iii. The rate of interest or discount.

As a whole, the entrepreneur can either compare the net prospective yield of the asset (minus the cost of the asset) with the interest which will have to be paid on the money borrowed to buy it; or alternatively, he can compare the cost of asset with the discounted role (the present role) of its prospective yield. In either case, he will reach the same decision about whether to buy the asset or not.

Let us look at this decision again: if the net prospective yield of the asset (minus it cost) exceeds the interest which will have to be paid to borrow the money needed to buy it, or if the discounted net prospective yield exceeds the lost of the asset, it will be brought. On the other hand, if the interest (and capital) payments to

repay the cost of the asset is greater than its (discounted) net prospective yield, the asset will not be bought: for this will mean that the cost of asset (over its life) will be greater than the returns from it.

Summary :

The term capital is used to describe all those instruments of production which are deliberately made by man to be used to carry on production. The chief types of capital assets are machines, factories, railways, vehicles, and the like.

Capital goods differ from consumer goods. Real capital is an economic resources. Money or financial capital is not. Capital is divided into fixed and variable capital.

The interest rate is the price paid for the use of money. Interest is usually expressed as a percentage of the amount of money borrowed.

Roundabout production is the process of saving and accumulating capital in order to increase production, and thus consumption, in the future.

Present value is the equivalent value today of some amount to be received in the future. Future value is the equivalent value in the future of some amount received today.

The demand for and supply of capital determine the price of capital. An increase in the price of capital lowers the rate of return on capital. Conversely, a decrease in the price of capital raises the rate of return on capital.

The rate of interest represents the rate of return on alternate uses of the funds invested on capital.

Glossary of terms: Capital, interest rate, roundabout production, present value, future value, capital market.

Review Questions:

1. What is capital?
2. What is interest?
3. What is roundabout production?
4. What is the capital market?
5. Who are the demanders and suppliers in the capital market?
6. Calculate the present values of the following:
   a. Rs. 12,000 one year from today at interest rates of 5, 10 and 15 percent.
   b. Rs. 12,000 per year for 5 years at interest rates of 5, 10 and 15 percent.
7. If the rate of return on capital is higher than the rates of return on all other assets, what will occur? What happens in the other resource markets as a result?

Check list :

1. Read the lesson carefully.

2. Define in your own words that the terms given in the glossary.

3. Before you finish the Lesson, make sure that you are fully conversant with the concepts used in this lesson.

LESSON THIRTEEN

ENTREPRENEURSHIP

Introduction :

During the inter-war period one Hinni Appuhamy, a poor villager from the deep South came to Colombo. He brought nothing from the village but a firm determination to become a rich man. In the inhospitable capital city he slept on the pavement in busy Pettah, often inviting the wrath of the police patrol parties. He did all sorts of jobs to feed himself. Even a moderate success eluded him until he started selling biscuits. Unable to purchase even a bicycle he went on foot from house to house selling biscuits. After a few years of hard work Appuhamy was able to collect a couple of rupees to start making his own biscuits. In the very first month the biscuits he made were either as hard as stone or as soft as powder. Appuhamy threw the whole lot out but not his firm determination. He regretted not having technical knowledge. Yet he experimented, adjusting the mix of ingredients till he acquired the correct recipe to make a delicious biscuit. He sold his product under the brand name of 'Maliban'. Within a few years Hinni Appuhamy was able to establish 'Maliban' as a prominent brand in the confectionery market. Before his death in the late 1970s, Appuhamy was able to establish a business empire.

Hendrick Silva Hettigoda toured India in the early years of this century. He learned two things from his great neighbour. One was astrology and the other is Ayurvedic medicine. In returning to Sri Lanka he devoted more time to astrology confining his ayurvedic treatments only to relatives and family friends who soon spreaded the news that Hettigoda was a miracle native doctor. Hettigoda realized that many Sri Lankans, although concerned, did not consult a doctor when they were down with common illnesses like a headache, rheumatic pain, cold, flue etc. The idea occurred to him to market his Ayurvedic formulations. The result was the birth of Siddhalepa, an ointment for nearly all minor ailments. The initial response was moderate, if not poor. Hettigoda, therefore, devised a novel marketing plan. He knew that during the Sri Pada season the climbing of the 7000 foot holy mountain in a near freezing temperature would give the pilgrims, especially the elderly, some physical discomfort. Siddhalepa was distributed free of cost to these devotees who came from all over the island. They return to their villages with the message of the extraordinary efficacy of Siddhalepa. Despite his weak financial position Hettigoda continued the free distribution of the wonder balm. Simultaneously he launched an advertising campaign. The message was precise - "Do you remember the friend who helped you during the Sri Pada pilgrimage? Siddhalepa is a reliable

doctor for your home". After that the rise of Hettigoda was meteoric. Now in most homes, if not in all of them, Siddhalepa is used as a reliable medicine.

Both Hinni Appuhamy and Hettigoda were entrepreneurs, individuals, who recognised an opportunity for making profits, collected and organised the resources needed and who not afraid to take the calculated risk.

Contents :

1. Definition of Entrepreneurship
2. Entrepreneur and entrepreneurial ability
3. Characteristics of an entrepreneur
4. Forms of Entrepreneurship
5. Contribution of entrepreneurs
6. Entrepreneurship and profit
7. Accounting profit and economic profit
8. Gross profit and net profit
9. Theories of profit (Rent theory of profit, Dynamic theory, Innovation theory, Risk theory, Uncertainty bearing theory, Monopoly theory)
10. Evolution of profit theories

Concepts :

1. *Entrepreneurship*
   The process of initiating a business venture, organising the necessary resources and assuming the associated risk and reward.

2. *Entrepreneur*

   Someone who recognises a viable idea for a business product or service and acts on it.

3. *Creativity*

   The development of novel solutions to perceived problems.

4. *New ventures*

   An enterprise that is in the process of being created by an entrepreneur.

5. *Risk*

   The possibility that a chosen course of action could lead to loses rather than the intended results

6. *Innovation*

   A new idea applied to initiating or improving a process, product or service.

Learning objectives : After reading this chapter you should be able to

(a) define entrepreneurship and entrepreneurs

(b) describe the importance of entrepreneurship

(c) explain the characteristics of an entrepreneur

(d) distinguish the difference between accounting profit and economic profit and examine the profit theories.

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13.1 Characteristics of an entrepreneur

An insight into the world of these two persons helps us better understand the distinguishing characteristics of an entrepreneur.

1. Entrepreneurs are willing to take risks.
2. They are innovative.
3. They have the ability to recognize market opportunities that have not been evident to any others.
4. They have great individual commitment.
5. They feel that they control their destiny largely through their own efforts.
6. Entrepreneurs have clear visions and plans to achieve those objectives.
7. They work incredibly hard despite obstacles and discouragement.
8. Entrepreneurs are unperturbed by business vicissitudes.
9. They have the ability to bring startling changes within a short period.

13.1.1 Entrepreneurship and entrepreneurial ability

Lie in the process of organising land, labour and capital while taking the attendant risks in the expectation of a future reward.

Entrepreneurial ability is the capacity to recognise a profitable opportunity and the willingness and capability of organising land, labour and capital while undertaking the risks

associated with the project. This is a special gift that only a few individuals have. Entrepreneurial ability therefore is considered a distinctive resource rather than just an aspect of labour. Hence, entrepreneurship is treated as one of the four main factors of production.

13.1.2 Forms of entrepreneurship

There are three general categories of entrepreneurs: classic entrepreneurs, intrapreneurs and change agents.

Classic entrepreneurs are those who identify a business opportunity and allocate their available resources to tap that market. Intrapreneurs are entrepreneurialy oriented people who seek to develop new products, ideas and commercial ventures within the context of a large organisation. By contrast change agents are managers who seek to revitalize established concerns in order to gain a competitive edge in the modern market place.

13.1.3 The contribution of entrepreneurship

i. *Economic Growth*

Entrepreneurship leads to the creation of many new businesses that help fuel economic growth.

ii. *Innovation*

Entrepreneurs have introduced many new products and services that have changed the way we live.

iii. *Employment opportunities*

New ventures of entrepreneurs provide fresh job opportunities.

13.1.4 Entrepreneurs and profit

The owners of land, labour, and capital receive rent, wages and interest; entrepreneurs receive economic profit for their innovative way of organising and managing resources in an uncertain economic environment. Hence, profit is a reward or a price or a return paid for entrepreneurship.

13.2 Accounting profits and economic profits

In the pure accounting sense profit is what remain of a firm's total revenue after it has paid individuals and others for materials, capital and labour supplied to the firm. In calculating accounting profit only explicit costs (payment made by the firm to outsiders) are deducted from revenues. It therefore ignores implicit costs, that is, dues for resources which are owned and employed by a firm.

In contrast, economic profits are what remain after both explicit and implicit cost have been deducted from a firm's total revenue. The

accountant's definition and the economist's definition of profits are compatible only if the accountant includes both explicit and implicit cost in determining profits.

13.2.1 Gross-profit and net profit

Profit consists of Gross profit and Net profit. Gross profit is the surplus which accrues to a firm when it subtracts its total expenditure from its total revenue. The following four items are included in gross profit.

i. Remuneration for the factors of production contributed by the entrepreneur himself

Sometimes, the entrepreneur contributes his own capital to the business, or he may himself act as the manager of the business. In that case, the interest accruing on his capital and his salary will be included in his gross profit. While calculating net profit the entrepreneur should subtract those items from his gross profit.

ii. Depreciation and Maintenance charges

These are also part of the firm's expenditure. Such expenditure has also to be subtracted from the gross profit to arrive at net profit.

iii. Monopoly profit

It is possible that the entrepreneur is a monopolist in his field. As such he will earn monopoly profit. Such a profit has been earned not on account of his business ability but on account of the fact that he holds a monopoly in his particular field. The monopoly profit has, therefore, to be deducted from gross profit to arrive net profit.

iv. Chance profit

It is possible that the entrepreneur earns a high profit due to some set of circumstances, say, the outbreak of war. The price of his product goes up and he earns a huge profit thereby. Such a profit is called 'chance profit'. Now this profit is due not to any special ability on the part of the entrepreneur, but to mere chance. Therefore, it has also to be deducted from gross profit to arrive at net profit.

13.2.2 **Net profit**

The balance which remains after deducting the above four items from gross profit is called net profit. The net profit is the reward for the following three functions performed by the entrepreneur.

i. *Reward for co-ordination*

The entrepreneur organises and co-ordinate the work of production.

ii. *Reward for risk bearing*

Risk is an integral part of entrepreneurship. At least a portion of the income that entrepreneurs receive therefore is a reward for their willingness to take the risks investing their time, capital and abilities in a world of uncertainty.

iii. *Reward for innovation*

Entrepreneurs originate new production techniques or manufacture altogether new products. This innovative ability brings its own reward in the form of profits.

ACTIVITY 1:

In the early 1970s an enterprising youth from a Colombo suburb realised that there was a huge market for quality 'papadam'. He borrowed a couple of hundred rupee notes and started making papadam in the backyard of his house in Kadawata. Mixing Indian and Sri Lankan papadam making techniques he produced varieties of papadam with different tastes. The initial turnover of his business was not encouraging. Undaunted by this setback the budding entrepreneur launched a personal promotion campaign, novel in many ways. He sent his sales teams to the several canteens of public and private offices in the capital, Colombo and distributed instantly made papadam to workers who were taking their lunch. As a token support to the sales team, many purchased a few packets of papadam to be fried at home later. Despite the weak financial situation he continued his promotional campaign with a free distribution. Slowly, but steadily, his sales grew. Then he diversified his business producing instant mixtures for hoppers and Dosai, tomato toast, and varieties of pickles etc. Urban dwellers whose daily schedule was so tight and who were too busy to make these time-consuming yet tasty food items became loyal customers of this entrepreneur. Thereafter, he never looked back and today his business is worth millions.

i. Can you identify this entrepreneur.

ii. List a few well-known entrepreneurs of Sri Lanka and explain your reasons for their success as entrepreneurs.

13.3 Theories of profit

There is no unanimity as yet among economists about the true nature and origin of profits. A part of the confusion is due to the lack of agreement among economists about the proper function of the entrepreneur. Some have held the view that the function of the entrepreneur is to organise and co-ordinate the other factors of production. According to them, entrepreneur earns profit for performing this function. According to this view, entrepreneur is a special type of labour, and profits a special form of wage. Some others have described the entrepreneur as a risk taker and profit the reward for risk undertaken. Another school of economic thought has described the entrepreneur as an innovator and profits as a reward for his innovativeness. It is, therefore, useful to examine the different theories of profit. We will briefly discuss some of them.

i. Rent Theory of profit
ii. Dynamic Theory of profit
iii. Innovation Theory of profit
iv. Risk Theory of profit
v. Uncertainty bearing theory of profit
vi. Monopoly theory of profit

13.3.1 Rent theory of profit

This theory was propounded by the American economist Francis L Walker. According to him, there was a good deal of similarity between rent and profit. While rent is the payment for the use of land, profit is the reward for the ability of

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the entrepreneur. Just as land differs in usefulness entrepreneurs differ in business acumen. And just as rent on better land is assessed by its productivity over marginal and super-marginal lands, similarly, the profit of the more successful entrepreneurs results from their superior ability over mediocre ones.

13.3.2 Dynamic theory of profit

This theory was first propounded by an American economist, Prof. J.B. Clark, who defined profit as the margin of the prices of goods over their costs. Profit was thus a "dynamic surplus" and it arises due to dynamic changes in society. Profit, according to Prof. Clark, cannot arise in a static society, where there is no uncertainty of any kind. In such a static society economic activities of the previous year would be repeated the following year without any change. The prices of the goods in such a society would be equal to their costs of production. There would be no profit for the entrepreneur. He would only get wages for his labour and interest on his capital. Thus, according to Clark, profit in a static society either does not arise, or if it does arise, it is fictional profit. But society is dynamic. According to Clark, three main changes are constantly taking place in society: (i) Changes in the size of the population, (ii) Changes in the supply of capital, (iii) Changes in production techniques.

13.3.3 Innovation theory of profit

This theory has been developed by J.A. Schumpeter. He also attributes profits to dynamic changes, but in place of the five generic changes mentioned in the Dynamic Theory, Schumpeter explains profit in terms of innovation in the productive process. According to him, profit is the reward for innovation. For him innovation refers to all those changes in the production process. The entrepreneur may produce an altogether new product, or may employ new techniques of production, or may trace a new source of factors of production or may discover a new market to sell his product. Any one or a combination of all of them will help the entrepreneur to reduce the cost of production, charge higher prices and earn extra profits. The main motive for introducing innovation is the desire to earn profits. Profit is, therefore, the result of innovations.

Joseph Schumpeter

Joseph Schumpeter was born in Austria in 1883. He studied law at the University of Vienna where he also attended lectures given by the leading economist of the day and acquired a thorough knowledge of Economics. In 1932 he left Austria for Harvard University and became a Professor of Economics.

He thought economic theories paid too little attention to the role of the entrepreneur. Schumpeter in his celebrated book 'Capitalism Socialism and Democracy' viewed competition as an imperative for innovation. He believed that innovation improves the economic condition of society. He regarded the innovative approach as an essential element in the capitalist system. A growing number of modern economists still echo his theory of innovation.

13.3.4 **Risk theory of profit** This theory was propounded by the American economist, Prof. Howley in 1907. According to him, profit is the reward for risk taking in business. Every business involves some risk or the other. Since the entrepreneur undertakes the risk, he is entitled to receive profits. If the entrepreneur does not receive the reward, he will not be prepared to undertake the risk. Thus, the higher the risk the greater is the possible margin of profit.

13.3.5 Uncertainty-bearing theory of profit

Prof. F.H. Knight an American economist developed the uncertainty-bearing theory of profit. According to him, profit accrues to the entrepreneur, because he bears uncertainty in business. As pointed out earlier, Prof. Knight divided risks under two heads: (i) Foreseeable Risk and (ii) Unforeseeable Risk. He calls unforeseeable risk as uncertainty-bearing and it is on account of this uncertainty-bearing that profit accrues to the entrepreneur. Profit, according to him, does not arise on account of foreseeable risk because such a risk can be covered through insurance. Insurable risk, thus, does not give rise to profit. Profit, according to him, is due to non-insurable or unforeseeable risks.

13.3.6 Monopoly theory of profits

We have explained earlier that profits can originate from a special ability, dynamic changes, innovations, and the element of uncertainty. But monopoly is another source of profit. A monopolistic position gives rise to profit because it commands a control over the price of a product. A monopolist raises prices by restricting his level of output and thereby makes profits. The greater the degree of monopoly power the greater the profits made by the entrepreneur. Mrs. Joan Robinson, E.H. Chamberlin and M. Kaleck propounded this monopoly theory of profit.

13.4 Evaluation of profit theories

We have so far considered various possible explanations of profits as the reward of an entrepreneur. None of these explanations is fully satisfactory because all of them have been frequently subjected to heavy criticism. According to a recent theory, at micro level profit is simply the difference between total cost and accounting revenue, or it is a gain from monopolistic practices of producers. Similarly, profits are considered as rent arising out of uncertain situations. Profits can also be related to the ownership of productive resources. Although there is no general agreement on the theory of profit the term profit is used in several senses. Perhaps no term or concept in economic discussions is used with such widely different connotations as profit.

The profit theory lies mid-way between the two extremes; the Marxian concept of it (profit is the exploitation of labour), and the market oriented theory profit is the reward for talented entrepreneurship).

Terms to Remember : Entrepreneur, Entrepreneurship, Intrapreneurs Entrepreneurial ability, New venture, Risk, Uncertainty, Creativity, Explicit and Implicit Cost, Economic Profit and Accounting Profit, Static economy, Economic dynamism, Uninsurable risk.

Review Questions :

1. What do you mean by entrepreneurship?
2. What are the characteristics of entrepreneurs?
3. What are functions of entrepreneur?
4. Why does the entrepreneurs receive profit?
5. What is the difference between entrepreneurs and intrapreneurs?
6. What is the difference between economic profit and accounting profit?
7. Why is the distinction between insurable and uninsurable risk significant for the theory of profit?

Examination-type Questions:

1. Many entrepreneurs say they do little planning. How is it possible for them to succeed?
2. How entrepreneurs are different from other business people?
3. Explain the major economic and social contribution of entrepreneurs.
4. Discuss the nature of profit. Can it be called the Rent of Ability?
5. 'Profits are a reward for risk-taking'. Discuss.
6. Explain and examine Clark's Theory of Profit.
7. "Profit are essential for economic progress". Elucidate.
8. Is the Dynamic Theory of Profit an adequate explanation for entrepreneurial reward?. Examine
9. Explain Schumpeter's Theory of Profit.
10. State briefly the different explanations of profit(s), and state which, you think, is the correct explanation.