B.COM (H) 3rd SEMESTER
MICRO ECONOMICS, PAPER CODE-205

Course content:

Unit I

Perfect Competition: assumptions, price and output decisions; equilibrium of the firm and the industry in the short and the long runs, including industry's long run supply, difference between accounting and economic profits, producer surplus.

Unit II

Monopoly Market Structure: kinds of monopoly, monopolist's decision and equilibrium, shifts in demand curve and the absence of the supply curve; measurement of monopoly power and the rule of thumb for pricing; horizontal and vertical integration of firms; comparison of pure competition and monopoly, social costs of monopoly power, price discrimination, peak-load pricing, pricing of public Utilities.

Unit III

Monopolistic Competition and Oligopoly: price and output decisions in monopolistic competition, monopolistic competition and economic efficiency, price discrimination; oligopoly and interdependence - Cournot's Duopoly Model, Stackelberg Model, Kinked Demand Model, Prisoner's dilemma, Collusive oligopoly - Price-Leadership Model - Dominant firm, Cartels, Sales maximization

Unit IV

Market for Factor Inputs: Determination of factor rewards in perfect input markets in the Short & Long runs under conditions of Perfect and Imperfect Commodity Markets, reward determination of factors under the conditions of monopsony, monopolistic and monopolistic exploitation, Role of trade unions in wage determination, Rental element in factor remuneration; Government intervention in factor market - direct or through regulatory agency.

UNIT-I PERFECT COMPETITION

Meaning

A market can be structured differently depending on the characteristics of competition within that market. At one extreme is perfect competition. In a perfectly competitive market, there are many producers and consumers, no barriers to enter and exit the market, perfectly homogeneous goods, perfect information, and well-defined property rights. This produces a system in which no individual economic actor can affect the price of a good - in other words, producers are price takers that can choose how much to produce, but not the price at which they can sell their output. In reality there are few industries that are truly perfectly competitive, but some come very close. For example, commodity markets (such as coal or copper) typically have many buyers and multiple sellers. There are few differences in quality between providers so goods can be easily substituted, and the goods are simple enough that both buyers and sellers have full information about the transaction. It is unlikely that a copper producer could raise their prices above the market rate and still find a buyer for their product, so sellers are price takers.

Assumptions:

A large number buyers and sellers

A large number of consumers with the willingness and ability to buy the product at a certain price, and a large number of producers with the willingness and ability to supply the product at a certain price.

No barriers of entry and exit

No entry and exit barriers make it extremely easy to enter or exit a perfectly competitive market.

Perfect factor mobility

In the long run factors of production are perfectly mobile, allowing free long term adjustments to changing market conditions.

Perfect information

All consumers and producers are assumed to have perfect knowledge of price, utility, quality and production methods of products.

Zero transaction costs

Buyers and sellers do not incur costs in making an exchange of goods in a perfectly competitive market.

Profit maximization

Firms are assumed to sell where marginal costs meet marginal revenue, where the most profit is generated.

Homogeneous products

The products are perfect substitutes for each other;i.e.-the qualities and characteristics of a market good or service do not vary between different suppliers.

Non-increasing returns to scale

The lack of increasing returns to scale (or economies of scale) ensures that there will always be a sufficient number of firms in the industry.

Property rights

Well defined property rights determine what may be sold, as well as what rights are conferred on the buyer.

Rational buyers

Buyers are capable of making rational purchases based on information given.

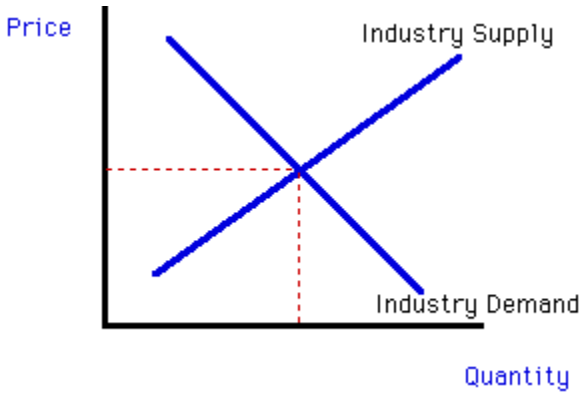
No externalities

Costs or benefits of an activity do not affect third parties

Price and output decisions:

Short-run Analysis As an example, let's return to the tutoring business. We will assume there are a number of tutors all equally productive / effective, and all of the tutors in the industry have the cost structure we saw in our previous unit, and the aggregate of their supply decisions appear in the industry supply curve. The demanders of tutoring services are such that initially the market will produce an equilibrium price at the intersection of the industry supply and demand curves.

The Tutoring Industry: The Short-Run



Once this price is established in the market, the tutors accept the price and set about the task of determining the level of output that will maximize profit. The decision rule is still the same, choose an output level where MR=MC. It sounds familiar, but there is one significant wrinkle. We now find Marginal Revenue (MR) is a bit different from what we have seen in the past. The difference here is the firm can get ONE price for its output regardless of the level of output. If the firm sells 2 hours of tutoring, the price is no different than if the firm sells 6 hours. In this case the additional revenue from selling an additional unit of output will be equal to the price for all levels of output. In a perfectly competitive world, MR = P.

Below you will find the table containing the cost and revenue figures for Tammy's Tutoring. These are the same numbers as we saw in the last unit, with one small change. As you can see in the table, the price column and the average revenue (AR) column are the same with each entry equaling 1. This table is conveying to the reader the information the price is $1 and it does not change as a result of changes in the level of output. Before you leave this section you should be sure to check out the graphical treatment which is what you would expect to find in traditional textbooks.

Short-Run Financials for the Firm

Grade	P=MR =AR	TR	TC	AR	AC	MR	MC	Profit
10	1	10	8	1	0.80		0.00	2
22	1	22	13	1	0.59	1	0.42	9
36	1	36	18	1	0.50	1	0.36	18
46	1	46	23	1	0.50	1	0.50	23
54	1	54	28	1	0.52	1	0.63	26
60	1	60	33	1	0.55	1	0.83	27
64	1	64	39	1	0.61	1	1.50	25

For the firm this means we get the unique result that marginal revenue equals the price (MR=P). This is why we have the same numbers in the Price, AR, and MR columns. When you look at the graphical version of the analysis, you will see that the MR curve is horizontal and equal to the price, something you will not see in any other market structure. The firm will choose the output level (Q*) where the MR and P lines intersect.

[Note: If you follow this logic a bit further you realize the procedure that you follow would be the same for all market prices. You would set MC = Price and then find the point on the MC line to determine the profit maximizing output level for the firm. If you then combined all of the points you would have the firm's supply curve. The firm's supply curve would be the MC curve as long as the revenue covered the variable costs of production. This would be true if the price was above the Average Variable Cost. The industry supply curve would simply be the sum of the firm's supply curves**.]**

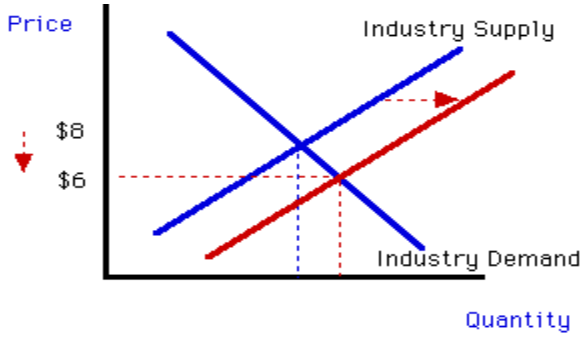
What is the profit being earned by the firms? We can demonstrate profit graphically once we recognize that we can calculate total revenues and costs by multiplying the per-unit revenue (P) and per-unit cost (AC) by the level of output (Q). On the graph, P*Q becomes an area, and if the

revenue area exceeds the cost area, the firm will be making a profit. In this example the optimal output level will be a grade of 54 and the profit will be $26 ($60-$28). That is the end of the story in the short-run.

Long-run Analysis

The profit maximizing solution reached above is not, however, the end of the story. New entrants will appear, having been attracted by the industry's economic profit. In the case of the tutoring business, more people will realize they can earn more as tutors than as work-study help and move into the tutoring business. As we can see in the market diagram, the result of the entrants will be an outward shift in the supply curve. The outward shift in supply will result in a decline in the market price.

The Industry: The Long-Run



When we shift our attention back to the individual firm, we see the decline in the market price will show up as a lower MR line. The firm is still guided by the same rule (MR=MC), but we will find new firms continue to enter as long as profit is being made. The final market situation appears in the table below. In this simple example, firms continued to enter as long as the price was above $.50, but once the price had been driven to $.50, the maximum profit of the firm had been reduced to 0. At that point we are seeing a long-run equilibrium in the market. At that point we still have MC = MR which tells us that it is the optimal level of output and we have

P = AC telling us that the firm is earning zero economic profit. It is these two conditions which define the long-run competitive equilibrium.

Long-run Financials for the Firm

Hours	Grade	P=MR=AR	TR	TC	AR	AC	MR	MC	Profit
1	10	0.5	5	8	0.5	0.80		0.00	-3.00
2	22	0.5	11	13	0.5	0.59	0.5	0.42	-2.00
3	36	0.5	18	18	0.5	0.50	0.5	0.36	0.00
4	46	0.5	23	23	0.5	0.50	0.5	0.50	0.00
5	54	0.5	27	28	0.5	0.52	0.5	0.63	-1.00
6	60	0.5	30	33	0.5	0.55	0.5	0.83	-3.00
7	64	0.5	32	39	0.5	0.61	0.5	1.50	-7.00

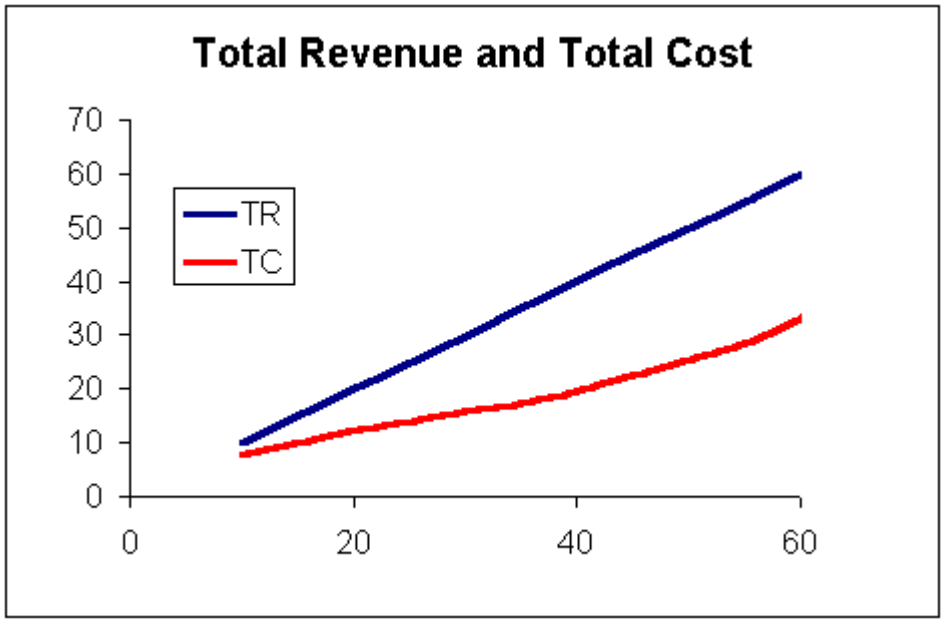
A Graphical Perspective

Short-run Behavior of the Representative Firm

We can now look at the graphical treatment of optimal output choice for the perfectly competitive firm. We will examine the situation using both the total and marginal approaches.

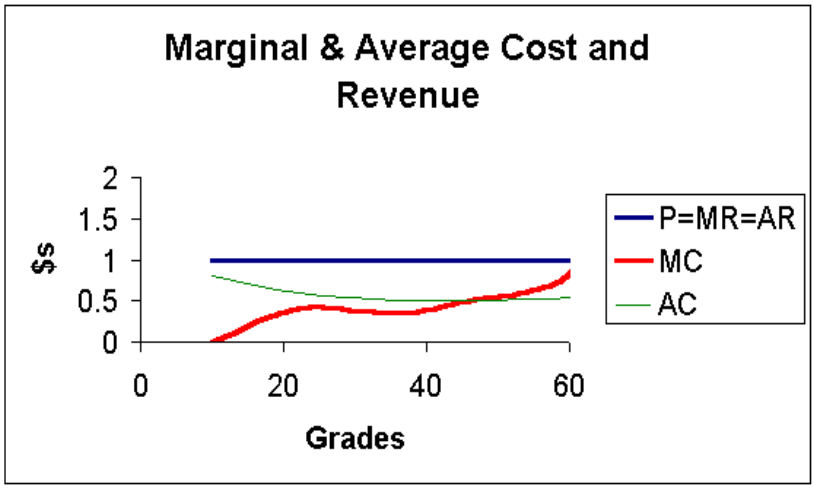
Short-run: Total Relationships

What is distinctive about the graphical representation of the firm in a perfectly competitive environment is the Total Revenue line. The Total Cost line is the same as we saw earlier, but the Total Revenue line is linear. The straight line is the visual representation of the assumption that price will be unaffected by the level of output. Every time the seller increase output by one unit, revenue increases by the price which does not change.



Short-run: Average and Marginal Relationships

We can also look at the situation using the average and marginal curves. The distinctive feature here is the horizontal marginal revenue (MR) curve is the same as the average revenue (AR) curve, which is also equal to the price. The optimal choice of the firm is the level of output where MR = MC which occurs at the intersection of the MC and MR lines. This firm, if it were attempting to maximize profit, would operate at an output level of something above 40 points.

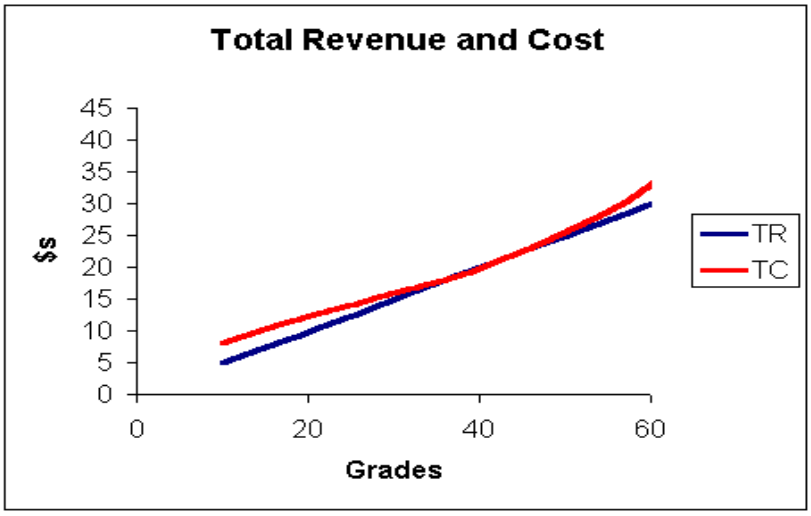


Long-run Behavior of the Representative Firm

At the optimal level of output in the short-run, we find P > AC ($1 > $.5) which means there is a profit being made by the firms in the industry. What happen next in a competitive industry is that new firms move in which increases supply and lowers price. This entry will continue until the price is driven down to the point that economic profit disappears. We can see that in the following diagrams.

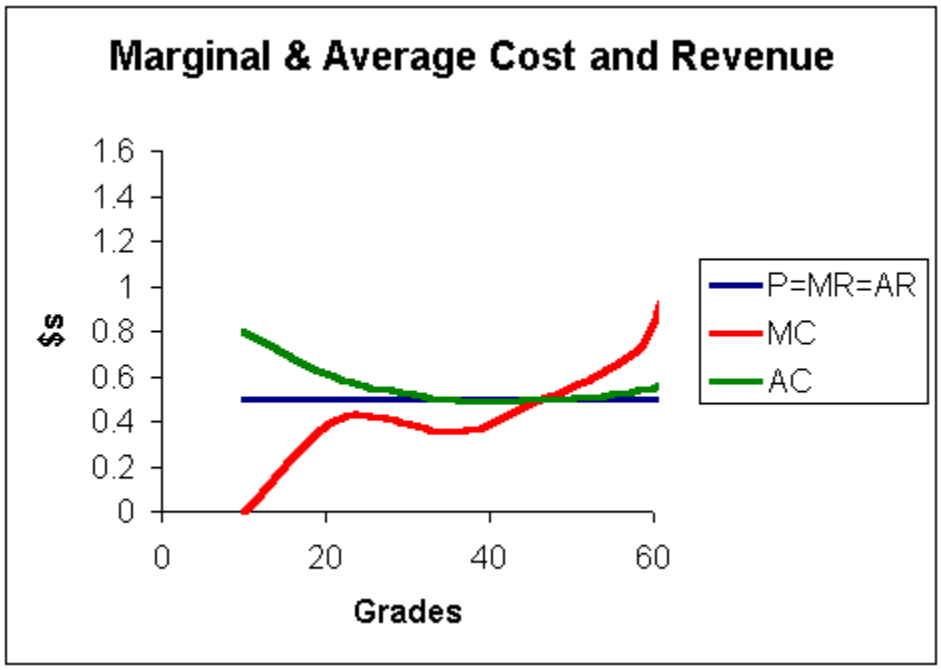
Long-run: Total Relationships

The Total Cost line is the same as we saw earlier, but the Total Revenue line remains linear with a lower slope. The straight line is the visual representation of the assumption that price will be unaffected by the level of output. Every time the seller increase output by one unit, revenue increases by the price which does not change. Here, however, the price is lower so the increase in revenue from selling one more unit of output will be lower. Because MR is just the slope of the TR curve and because MR equals the price which is now lower, then the slope has fallen. What we see here is that the only time where costs do not exceed revenues are where the two curves touch each other.



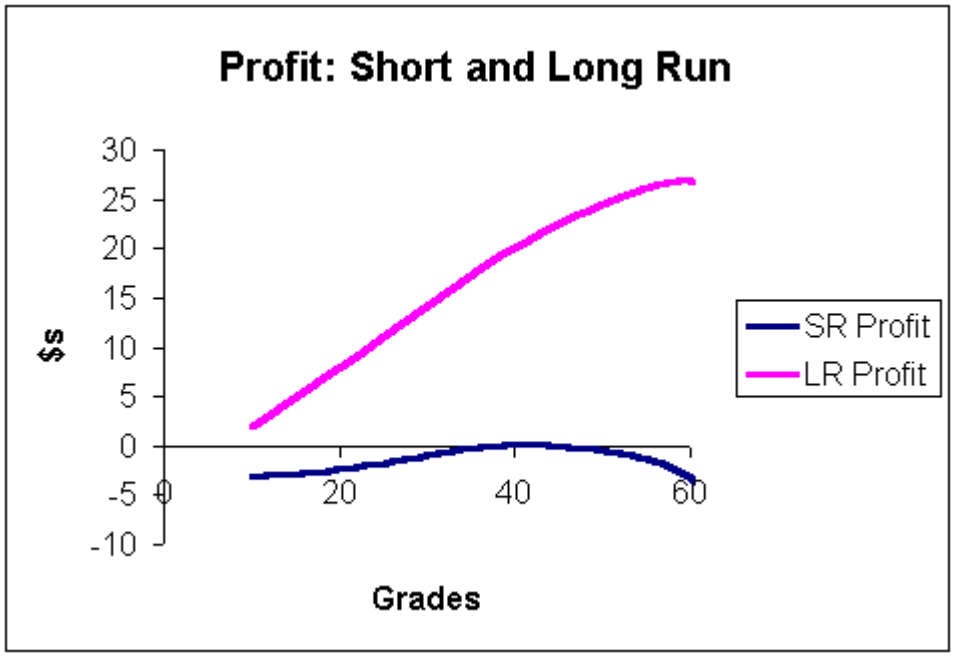
Long-run: Average and Marginal Relationships

We can also look at the situation using the average and marginal curves. Once again the distinctive feature here is the horizontal marginal revenue (MR) curve that is the same as the average revenue (AR) curve and is also equal to the price. The optimal choice of the firm is the level of output where MR = MC which occurs at the intersection of the MC and MR lines. This firm, if it were attempting to maximize profit, would operate at an output level of something above 40 points.



The difference between the short- and long-run solutions is that in the long-run the MR = P line has been lowered to reflect the impact of additional suppliers on the market price. The intersection of the MR and the MC curves occurs at the minimum point of the AC curve. This gives us the additional equilibrium condition of P = AC so that profit is zero. You see this in the profit diagram below. At each level of output profit is higher in the short-run and in the long-run maximum profit occurs when profit is zero.

Profit: The Short and Long Run



Equilibrium of the firm and the industry in the short and the long runs including industry's long run supply:

Equilibrium of the Firm and Industry under Perfect Competition

Contents:

1. Meaning of Firm and Industry

2. Equilibrium of the Firm

3. Equilibrium of the Industry under Perfect Competition

Meaning of Firm and Industry:

It is essential to know the meanings of firm and industry before analyzing the two. A firm is an organization which produces and supplies goods that are demanded by the people. According to Prof. S.E. Lands-bury, "Firm is an organization that produces and sells goods with the goal of

maximizing its profits. In the words of Prof. R.L. Miller, "Firm is an organization that buys and hires resources and sells goods and services."

Industry is a group of firms producing homogeneous products in a market. In the words of Prof. Miller, "Industry is a group of firms that produces a homogeneous product." For example, Raymond, Maffatlal, Arvind, etc., are cloth manufacturing firms, whereas a group of such firms is called the textile industry.

Equilibrium of the Firm:

Meaning:

A firm is in equilibrium when it has no tendency to change its level of output. It needs neither expansion nor contraction. It wants to earn maximum profits. In the words of A.W. Stonier and D.C. Hague, "A firm will be in equilibrium when it is earning maximum money profits."

Equilibrium of the firm can be analyzed in both short-run and long-run periods. A firm can earn the maximum profits in the short run or may incur the minimum loss. But in the long run, it can earn only normal profit.

Short-run Equilibrium of the Firm:

The short run is a period of time in which the firm can vary its output by changing the variable factors of production in order to earn maximum profits or to incur minimum losses. The number of firms in the industry is fixed because neither the existing firms can leave nor new firms can enter it.

It's Conditions:

The firm is in equilibrium when it is earning maximum profits as the difference between its total revenue and total cost.

For this, it essential that it must satisfy two conditions:

(1) MC = MR, and (2) the MC curve must cut the MR curve from below at the point of equality and then rise upwards.

The price at which each firm sells its output is set by the market forces of demand and supply. Each firm will be able to sell as much as it chooses at that price. But due to competition, it will not be able to sell at all at a higher price than the market price. Thus the firm's demand curve will be horizontal at that price so that P = AR = MR for the firm.

1. Marginal Revenue and Marginal Cost Approach:

The short-run equilibrium of the firm can be explained with the help of the marginal analysis as well as with total cost-total revenue analysis. We first take the marginal analysis under identical cost conditions.

This analysis is based on the following assumptions:

1. All firms in an industry use homogeneous factors of production.

2. Their costs are equal. Therefore, all cost curves are uniform.

3. They use homogeneous plants so that their SAC curves are equal.

4. All firms are of equal efficiency.

5. All firms sell their products at the same price determined by demand and supply of the industry so that the price of each firm is equal to AR = MR.

Determination of Equilibrium:

Given these assumptions, suppose that price OP in the competitive market for the product of all the firms in the industry is determined by the equality of demand curve D and the supply curve S at point E in Figure 1(A) so that their average revenue curve (AR) coincides with the marginal revenue curve (MR).

At this price, each firm is in equilibrium at point L in Panel (B) of the figure where (i) SMC equals MR and AR, and (ii) the SMC curve cuts the MR curve from below. Each firm would be producing OQ output and earning normal profits at the maximum average total costs QL. A firm earns normal profits when the MR curve is tangent to the SAC curve at its minimum point.

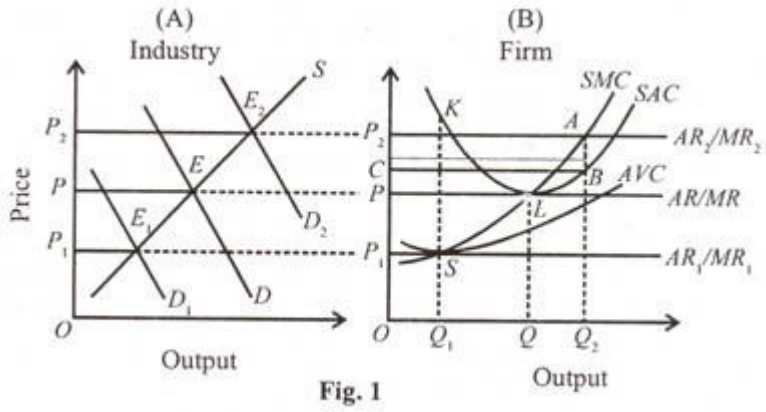


Fig. 1

If the price is higher than these minimum average total costs, each firm will be earning supernormal profits. Suppose the price rises to $0P_r$ where the SMC curve cuts the new marginal revenue curve MR_2 (=AR_2) from below at point A which now becomes the equilibrium point. In this situation, each firm produces OQ_2 output and earns supernormal profits equal to the area of the rectangle P_2 ABC.

If the price falls below $OP_1$the firm would make a loss because the SAC would be higher than the price. In the short-run, it would continue to produce and sell OQ_1 output at OP_1price so long as it covers its AVC. S is thus the shut-down point at which the firm is incurring the maximum

loss equal to SK per unit of output. If the price falls below OP_1 the firm will close down because it would fail to cover even the minimum average variable cost. OP_1 is thus the shut-down price.

We may conclude from the above discussion that in the short-run each firm may be making either supernormal profits, or normal profits or losses depending upon the price of the product.

2. Total Cost Revenue Analysis:

The short-run equilibrium of the firm can also be shown with the help of total cost and total revenue curves. The firm is able to maximize its profits at that level of output where the difference between total revenue and total cost is the maximum. This is shown in Figure 2 where TR is the total revenue curve and TC total cost curve.

The total revenue curve is an upward sloping straight line curve starting from O. This is because the firm sells small or large quantities of its product at a constant price under perfect competition. If the firm produces nothing, total revenue will be zero. The more it produces, the larger is the increase in total revenue. Hence the TR curve is linear and slopes upward.

The firm will maximize its profits at that level of output where the gap between the TR curve and the 1C curve is the maximum. Geometrically, it is that level at which the slope of a tangent drawn to the total cost curve equals the slope of the total revenue curve. In Figure 2, the maximum amount of profit is measured by TP at OQ output. At outputs smaller or larger than OQ between A and B points, the firm's profits shrink. If the firm produces OQ_1 output, its losses are the maximum because the TC curve is i above the TR curve. At Q_1 its profits are zero. Similar situation prevails at Q_2.

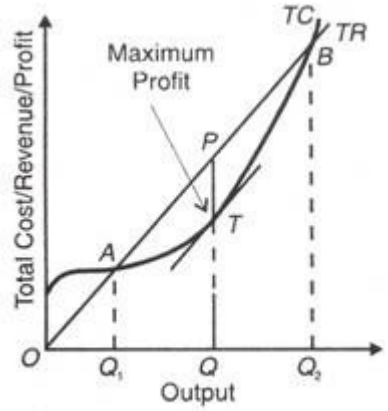


Fig. 2

Since the marginal revenue equals the slope of the total o revenue curve and the marginal cost equals the slope of the tangent to the total cost curve, it follows that where the slopes of the total cost and revenue curves are equal as at P and T, the marginal cost equals the marginal revenue. It should be clear of that the point of maximum profits lies in the region of rising marginal cost (when TC is below TR) and of maximum loss in the falling marginal cost region (where TC is above TR).

The explanation of the equilibrium of the firm by using total cost-revenue curves does not throw more light than is provided by the marginal cost-marginal revenue analysis. It is useful only in the case of certain marginal decisions where the total cost curve is also linear over a certain range of output.

But it makes the equilibrium of the firm a cumbersome and difficult analysis particularly when one has to compare the change in cost and revenue resulting from a change in the volume of output. Further, maximum profits cannot be known at once. For this, a number of tangents are required to be drawn which is a real difficulty.

Long-run Equilibrium of the Firm:

In the long-run, it is possible to make more adjustments than in the short-run. The firm can adjust its plant capacity and scale of operations to the changed circumstances. Therefore, all costs are

variable. Firms must earn only normal profits. In case the price is above the long-run AC curve firms will be earning supernormal profits.

Attracted by them, new firms will enter the industry and supernormal profits will be competed away. If the price is below the LAC curve firms will be incurring losses. As a result, some of the firms will leave the industry so that no firm earns more than normal profits. Thus "in the long-run firms are in equilibrium when they have adjusted their plant so as to produce at the minimum point of their long-run AC curve, which is tangent (at this point) to the demand (AR) curve defined by the market price" so that they earn normal profits.

It's Assumptions:

This analysis is based on the following assumptions:

1. Firms are free to enter into or leave the industry.

2. All firms are of equal efficiency.

3. All factors are homogeneous. They can be obtained at constant and uniform prices.

4. Cost curves of firms are uniform.

5. The plants of firm: are equal having given technology.

6. All firms have perfect knowledge about price and output.

Determination:

Given these assumptions, each firm of the industry will be in the following two conditions.

(1) In equilibrium, its short-run marginal cost (SMC) must equal to its long-run marginal cost (LMC) as well as its short-run average cost (SAC) and its long-run average cost (LAC) and both should be equal to MR=AR=P. Thus the first equilibrium condition is:

SMC = LMC = MR = AR = P = SAC = LAC at its minimum point, and

(2) LMC curve must cut MR curve from below.

Both these conditions of equilibrium are satisfied at point E in Figure 3 where SMC and LMC curves cut from below SAC and LAC curves at their minimum point E and SMC and LMC curves cut AR = MR curve from below. All curves meet at this point E and the firm produces OQ optimum quantity and sell it at OP price.

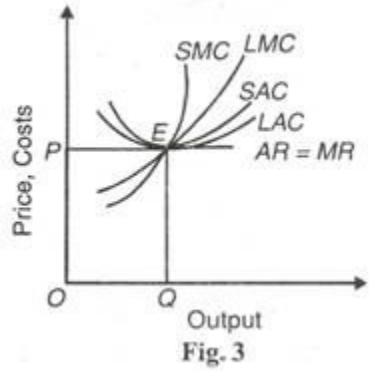


Fig. 3

Since we assume equal costs of all the firms of industry, all firms will be in equilibrium m the long-run. At OP price a firm will have neither a tendency to neither leave nor enter the industry and all firms will earn normal profit.

Equilibrium of the Industry under Perfect Competition:

Conditions of Equilibrium of the Industry:

An industry is in equilibrium:

(i) When there is no tendency for the firms either to leave or enter the industry, and (ii) when each firm is also in equilibrium. The first condition implies that the average cost curves coincide with the average revenue curve of all the firms in the industry. They are earning only normal profits, which are supposed to be included in the average cost curves of the firms. The second condition implies the equality of MC and MR. Under a perfectly competitive industry, these two conditions must be satisfied at the point of equilibrium, i.e.,

SMC = MR

SAC = AR

P = AR = MR

SMC = SAC = AR = P

Such a situation represents full equilibrium of the industry.

Short-Run Equilibrium of the Industry:

An industry is in equilibrium in the short run when its total output remains steady, there being no tendency to expand or contract its output. If all firms are in equilibrium, the industry is also in equilibrium. For full equilibrium of the industry in the short run, all firms must be earning only normal profits. The condition for this is SMC = MR = AR = SAC. But full equilibrium of the industry is by sheer accident because in the short run some firms may be earning supernormal profits and some incurring losses.

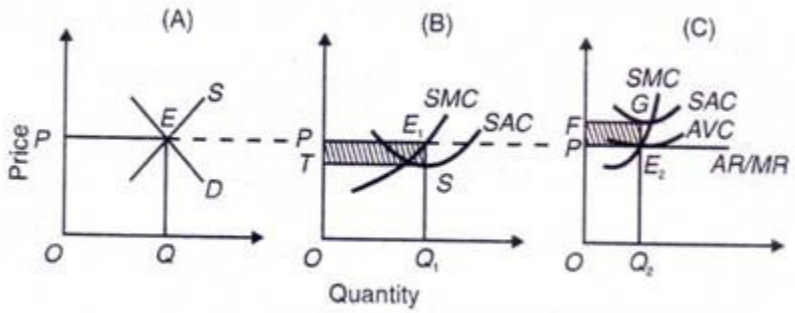


Fig. 4

Even then, the industry is in short- run equilibrium when its quantity demanded and quantity supplied are equal at the price which clears the market. This is illustrated in Figure 4, where in Panel (A), the industry is in equilibrium at point E where its demand curve D and supply curve S intersect which determine OP price at which its total output OQ is cleared. But at the prevailing

price OP some firms are earning supernormal profits PE_1ST as shown in Panel (B), while some other firms are incurring FGE_2P losses as shown in Panel (C) of the figure.

Long-Run Equilibrium of the Industry:

The industry is in equilibrium in the long run when all firms earn normal profits. There is no incentive for firms to leave the industry or for new firms to enter it. With all factors homogeneous and given their prices and the same technology, each firm and industry as a whole are in full equilibrium where LMC = MR =AR(=p) =LAC at its minimum. Such an equilibrium

position is attained when the long-run price for the industry is determined by the equality of total demand and supply of the industry.

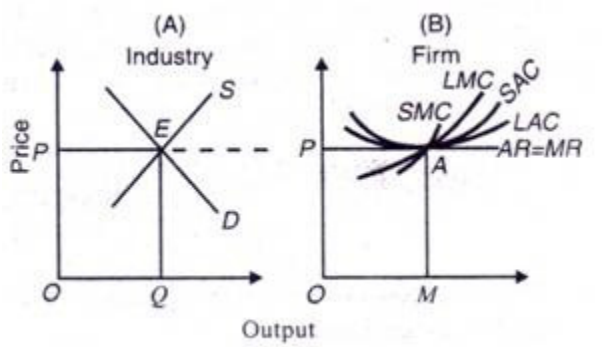


Fig. 5

The long-run equilibrium of the industry is illustrated in Figure 5(A) where the long-run price op and OQ output are determined by the intersection of the demand curve d and the supply curve s at point E. At this price op, the firms are in equilibrium at point A in Panel (B) at OM level of output where LMC =SMC= MR= p (=AR) =SAC= LAC at its minimum. At this level, the firms are earning normal profits and have no incentive to enter or leave the industry. It follows that when the industry is in long-run equilibrium, each firm in the industry is also in long-run equilibrium. If both the industry and the firms are in long-run equilibrium, they are also in short-run equilibrium.

Even though all firms in a perfectly competitive industry in the long run have the same cost curves, the firms can be of different efficiency. Firms using superior resources or inputs such as superior management must pay them higher rewards; otherwise they will shift to new firms which offer them higher prices.

So the forces of competition will force the more efficient firms to pay superior resources higher prices at their opportunity cost. As a result, the lac curve of the more efficient firms will shift upwards and they will benefit in the form of higher output at the higher long-run equilibrium price set by the industry.

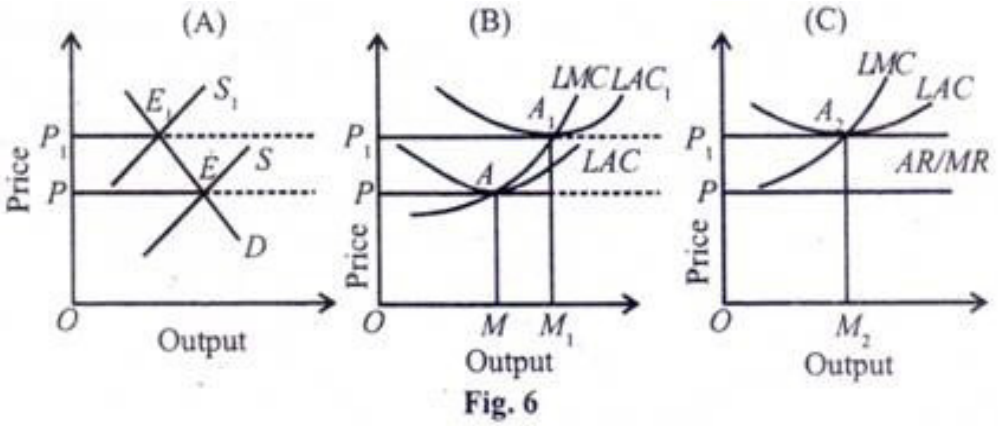


Fig. 6

Unable to pay higher prices to resources or inputs, less efficient firms will be competed away. New firms which are able to pay more and attracted by the new higher market price will enter the industry. But at the new long-run equilibrium price of the industry, all firms will be producing at the minimum LAC.

This is illustrated in Figure 6 where the industry is in initial equilibrium at point E with price OP m Panel (A) and the more efficient firms like all other firms are in equilibrium at point A in Panel (B). As the industry is in equilibrium, the new firms do not exist as they are not in a position to cover their costs at OP price.

When the more efficient firms pay higher prices to resources or inputs, their LAC curve rises to LAC_1 At the new long-run equilibrium price of the industry set at OP $_1$ the more efficient firms are in equilibrium where $P_1 = LAC_1$ at its minimum point A_1 in Panel (B). They are now

producing larger output OM_1 even though they earn normal profits. The new firms also earn normal profits at point A_2, as shown in Panel (C). But they produce less output OM_2 than OM_1 produced by the more efficient firms.

Difference between accounting and economic profits:

Accounting vs. Economic Profit

Many people think that profit is the revenue one gets after the costs have been deducted, but many of us are not aware that there are two kinds of profits ‘“accounting profits and economic profits. Well, the two profits ‘“economic and accounting -have certain differences between them.

Accounting profit is the difference between the total revenue and the total cost, excluding the cost of the opportunity. On the other hand, economic cost is the difference between the total revenue and the total cost, including the cost of the opportunity.

Economic profit is obtained when the revenue exceeds the opportunity’s cost. On the contrary, a firm can be said to have accounting profits if the revenue exceeds the accounting cost of the firm. In other words, accounting profit can be referred to as the revenue obtained by a firm after all the economic costs are met.

One of the differences that can be seen is that the economic profit will always be lesser when compared to accounting profits. When compared to economic profit, the accounting profits are only given during leap years.

When considering accounting profits, it is defined as the revenue deducted from the explicit costs, and economic profits, as the revenue deducted from explicit and implicit costs.

When calculating accounting profits, the things that are considered include leased assets, non-cash adjustments/transactions for depreciation, provisions, allowances, and capitalizing development costs. When calculating economic profits, several things, like opportunity costs,

residual value, inflation level changes, tax rates, and interest rates on cash flow, are taken into account.

When compared to economic profits, accounting profit is calculated for a certain period of time

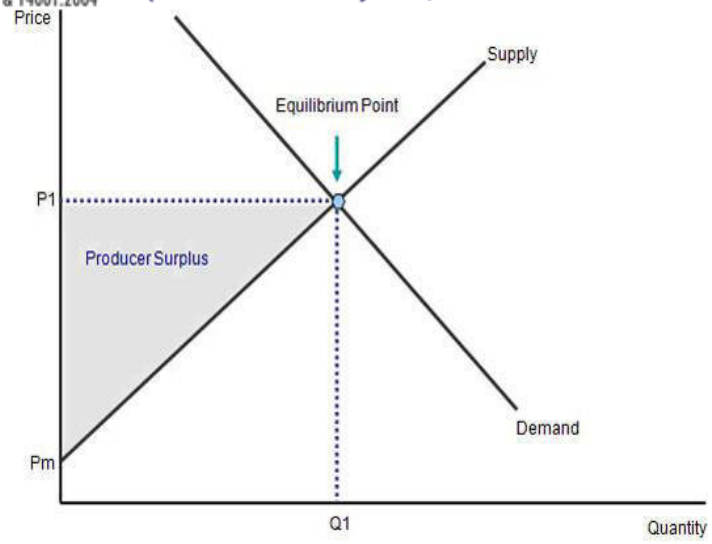
Summary:

1. Accounting profit is the difference between the total revenue and the total cost, excluding the cost of the opportunity. On the contrary, economic cost is the difference between the total revenue and the total cost, including the cost of the opportunity.
2. Accounting profit can be defined as the revenue deducted from the explicit costs, and economic profits, as the revenue deducted from explicit and implicit costs.
3. When compared to economic profits, accounting profit is calculated for a certain period of time.
4. Economic profit will always be lesser when compared to accounting profits. In comparison with economic profit, the accounting profit is only given during leap years.

5. Accounting profit can be called as the revenue obtained by a firm after all the economic costs are met. A firm can be said to have accounting profits if the revenue exceeds the accounting cost of the firm.

Producer surplus: Producer surplus is defined as the difference between the amount the producer is willing to supply goods for and the actual amount received by him when he makes the trade. Producer surplus is a measure of producer welfare. It is shown graphically as the area above the supply curve and below the equilibrium price.

Here the producer surplus is shown in gray. As the price increases, the incentive for producing more good increases thereby increases the producer surplus.



Description: A producer always tries to increase his producer surplus by trying to sell more and more at higher prices. However, it is simply not possible to increase the producer surplus indefinitely since at higher prices there might be very little or no demand for goods.

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UNIT II MONOPOLY MARKET STRUCTURE

Introduction

The term monopoly is derived from Greek words '*mono*' which means single and '*poly*' which means seller. So, monopoly is a market structure, where there only a single seller producing a product having no close substitutes.

This single seller may be in the form of an individual owner or a single partnership or a Joint Stock Company. Such a single firm in market is called monopolist. Monopolist is price maker and has a control over the market supply of goods. But it does not mean that he can set both price and output level. A monopolist can do either of the two things i.e. price or output. It means he can fix either price or output but not both at a time.

Characteristics / Features of Monopoly

Following are the features or characteristics of Monopoly:

1. A single seller has complete control over the supply of the commodity.
2. There are no close substitutes for the product.
3. There is no free entry and exit because of some restrictions.
4. There is a complete negation of competition.
5. Monopolist is a price maker.
6. Since there is a single firm, the firm and industry are one and same i.e. firm coincides the industry.
7. Monopoly firm faces downward sloping demand curve. It means he can sell more at lower price and vice versa. Therefore, elasticity of demand factor is very important for him.

Classification / Kinds / Types of Monopoly

1. Perfect Monopoly

It is also called as absolute monopoly. In this case, there is only a single seller of product having no close substitute; not even remote one. There is absolutely zero level of competition. Such monopoly is practically very rare.

2. Imperfect Monopoly

It is also called as relative monopoly or simple or limited monopoly. It refers to a single seller market having no close substitute. It means in this market, a product may have a remote substitute. So, there is fear of competition to some extent e.g. Mobile (Cellphone) telcom industry (e.g. vodaphone) is having competition from fixed landline phone service industry (e.g. BSNL).

3. Private Monopoly

When production is owned, controlled and managed by the individual, or private body or private organization, it is called private monopoly. e.g. Tata, Reliance, Bajaj, etc. groups in India. Such type of monopoly is profit oriented.

4. Public Monopoly

When production is owned, controlled and managed by government, it is called public monopoly. It is welfare and service oriented. So, it is also called as 'Welfare Monopoly' e.g. Railways, Defence, etc.

5. Simple Monopoly

Simple monopoly firm charges a uniform price or single price to all the customers. He operates in a single market.

6. Discriminating Monopoly

Such a monopoly firm charges different price to different customers for the same product. It prevails in more than one market.

7. Legal Monopoly

When monopoly exists on account of trade marks, patents, copy rights, statutory regulation of government etc., it is called legal monopoly. Music industry is an example of legal monopoly.

8. Natural Monopoly

It emerges as a result of natural advantages like good location, abundant mineral resources, etc. e.g. Gulf countries are having monopoly in crude oil exploration activities because of plenty of natural oil resources.

9. Technological Monopoly

It emerges as a result of economies of large scale production, use of capital goods, new production methods, etc. E.g. engineering goods industry, automobile industry, software industry, etc.

10. Joint Monopoly

A number of business firms acquire monopoly position through amalgamation, cartels, syndicates, etc, it becomes joint monopoly. e.g. Actually, pizza making firm and burger making firm are competitors of each other in fast food industry. But when they combine their business, that leads to reduction in competition. So they can enjoy monopoly power in market.

Monopolist's decision and equilibrium:

A. Short-run equilibrium:

The monopolist maximizes his short-run profits if the following two conditions are fulfilled Firstly, the MC is equal to the MR. Secondly, the slope of MC is greater than the slope of the MR at the point of intersection.

In figure 6.2 the equilibrium of the monopolist is defined by point ε, at which the MC intersects the MR curve from below. Thus both conditions for equilibrium are fulfilled. Price is P_M and the quantity is X_M. The monopolist realizes excess profits equal to the shaded area AP_M CB. Note that the price is higher than the MR.

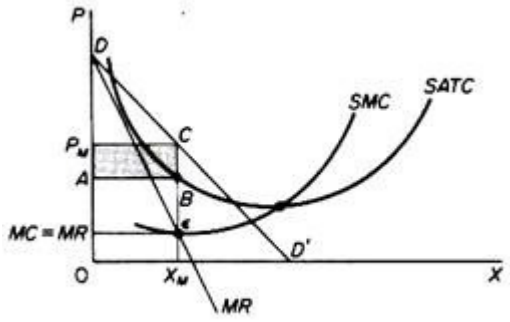

Figure 6.2

In pure competition the firm is a price-taker, so that its only decision is output determination. The monopolist is faced by two decisions: setting his price and his output. However, given the downward-sloping demand curve, the two decisions are interdependent.

The monopolist will either set his price or sell the amount that the market will take at it, or he will produce the output defined by the intersection of MC and MR, which will be sold at the corresponding price, P. The monopolist cannot decide independently both the quantity and the price at which he wants to sell it. The crucial condition for the maximization of the monopolist's profit is the equality of his MC and the MR, provided that the MC cuts the MR from below.

Formal derivation of the equilibrium of the monopolist

Given the demand function

$$X = g(P)$$

which may be solved for P

$$P = f_1(X)$$

and given the cost function

$$C = f_2(X)$$

The monopolist aims at the maximisation of his profit

$$\Pi = R - C$$

(*a*) *The first-order condition for maximum profit* Π

$$\frac{\partial \Pi}{\partial X} = 0$$

$$\frac{\partial \Pi}{\partial X} = \frac{\partial R}{\partial X} - \frac{\partial C}{\partial X} = 0$$

or

$$\frac{\partial R}{\partial X} = \frac{\partial C}{\partial X}$$

that is $MR = MC$

(*b*) *The second-order condition for maximum profit*

$$\frac{\partial^2 \Pi}{\partial X^2} < 0$$

$$\frac{\partial^2 \Pi}{\partial X^2} = \frac{\partial^2 R}{\partial X^2} - \frac{\partial^2 C}{\partial X^2} < 0$$

or

$$\frac{\partial^2 R}{\partial X^2} < \frac{\partial^2 C}{\partial X^2}$$

that is

$$\begin{bmatrix}\text{slope}\\ \text{of } MR\end{bmatrix} < \begin{bmatrix}\text{slope}\\ \text{of } MC\end{bmatrix}$$

A numerical example

Given the demand curve of the monopolist

$$X = 50 - 0{\cdot}5P$$

which may be solved for P

$$P = 100 - 2X$$

Given the cost function of the monopolist

$$C = 50 + 40X$$

The goal of the monopolist is to maximise profit

$$\Pi = R - C$$

(i) We first find the MR

$$R = XP = X(100 - 2X)$$

$$R = 100X - 2X^2$$

$$MR = \frac{\partial R}{\partial X} = 100 - 4X$$

(ii) We next find the MC

$$C = 50 + 40X$$

$$MC = \frac{\partial C}{\partial X} = 40$$

(iii) We equate MR and MC

$$MR = MC$$

$$100 - 4X = 40$$

$$X = 15$$

(iv) The monopolist's price is found by substituting $X = 15$ into the demand-price equation

$$P = 100 - 2X = 70$$

(v) The profit is

$$\Pi = R - C = 1050 - 650 = 400$$

This profit is the maximum possible, since the second-order condition is satisfied:
(*a*) from

$$\frac{\partial C}{\partial X} = 40$$

we have

$$\frac{\partial^2 C}{\partial X^2} = 0$$

(b) from

$$\frac{\partial R}{\partial X} = 100 - 4X \quad \text{we have} \quad \frac{\partial^2 R}{\partial X^2} = -4$$

Clearly $-4 < 0$.

We may now re-examine the statement that there is no unique supply curve for the monopolist derived from his MC. Given his MC, the same quantity may be offered at different prices depending on the price elasticity of demand. Graphically this is shown in figure 6.3. The quantity X will be sold at price P_1 if demand is D_1, while the same quantity X will be sold at price P_2 if demand is D_2.

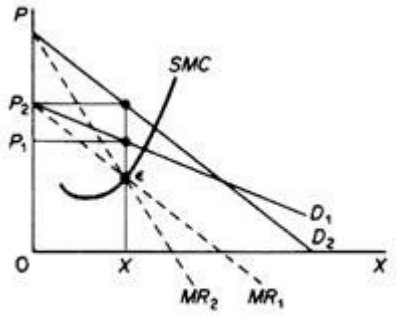

Figure 6.3

Thus there is no unique relationship between price and quantity. Similarly, given the MC of the monopolist, various quantities may be supplied at any one price, depending on the market demand and the corresponding MR curve. In figure 6.4 we depict such a situation. The cost conditions are represented by the MC curve. Given the costs of the monopolist, he would supply $0X_1$, if the market demand is D_1, while at the same price, P, he would supply only $0X_2$ if the market demand is D_2.

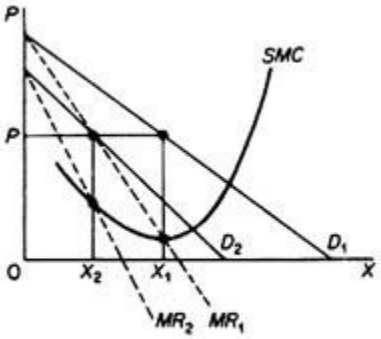

Figure 6.4

B. long-run equilibrium:

In the long run the monopolist has the time to expand his plant, or to use his existing plant at any level which will maximize his profit. With entry blocked, however, it is not necessary for the monopolist to reach an optimal scale (that is, to build up his plant until he reaches the minimum point of the LAC). Neither is there any guarantee that he will use his existing plant at optimum capacity. What is certain is that the monopolist will not stay in business if he makes losses in the long run.

He will most probably continue to earn supernormal profits even in the long run, given that entry is barred. However, the size of his plant and the degree of utilization of any given plant size depend entirely on the market demand. He may reach the optimal scale (minimum point of LAC) or remain at suboptimal scale (falling part of his LAC) or surpass the optimal scale (expand beyond the minimum LAC) depending on the market conditions.

In figure 6.5 we depict the case in which the market size does not permit the monopolist to expand to the minimum point of LAC. In this case not only is his plant of suboptimal size (in the sense that the full economies of scale are not exhausted) but also the existing plant is underutilized. This is because to the left of the minimum point of the LAC the SRAC is tangent to the LAC at its falling part, and also because the short-run MC must be equal to the LRMC. This occurs at e, while the minimum LAC is at b and the optimal use of the existing plant is at a. Since it is utilized at the level e', there is excess capacity.

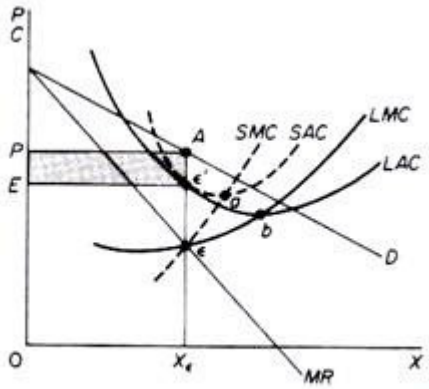

Figure 6.5 Monopolist with suboptimal plant and excess capacity

In figure 6.6 we depict the case where the size of the market is so large that the monopolist, in order to maximize his output, must build a plant larger than the optimal and overutilise it. This is

because to the right of the minimum point of the LAC the SRAC and the LAC are tangent at a point of their positive slope, and also because the SRMC must be equal to the LAC. Thus the plant that maximizes the monopolist's profits leads to higher costs for two reasons firstly because it is larger than the optimal size, and secondly because it is overutilised. This is often the case with public utility companies operating at national level.

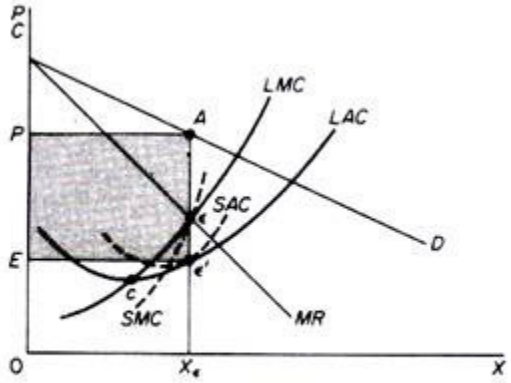

Figure 6.6 Monopolist operating in a large market: his plant is larger than the optimal (e) and it is being overutilised (at ε').

Finally in figure 6.7 we show the case in which the market size is just large enough to permit the monopolist to build the optimal plant and use it at full capacity.

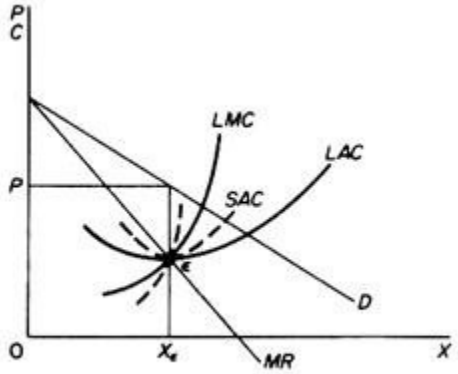

Figure 6.7

It should be clear that which of the above situations will emerge in any particular case depends on the size of the market (given the technology of the monopolist). There is no certainty that in the long run the monopolist will reach the optimal scale, as is the case in a purely competitive

market. In monopoly there are no market forces similar to those in pure competition which lead the firms to operate at optimum plant size (and utilize it at its full capacity) in the long run.

Shifts in demand curve:

A demand curve is a line or a curve showing the relationship between the quantity purchased and their respective prices. A normal demand curve will slope from the left to the right. This is said to be the demand curve for normal goods. There are exceptional like the demand curve for inferior goods or giffen goods that does not follow this principle. The demand curve for inferior goods for example will have a zero gradient since the changes in prices will not affect the quantity demanded from the market. The demand curve whether it is normal or abnormal has certain unique features. For example the demand curve can make some movements on the Cartesian planes when the various factors that influence the quantity demanded are varied. The movement can either be along the demand curve or movement away fro the original demand curve. Movement along the demand curve is referred to by economists as either expansion or contraction. The upwards movement along the demand curve is called contraction and the downwards movement along the demand curve is called expansion. Movement along the demand curve is caused only by changes in commodities prices.

Our main interest on the movement of demand curves is the shift in the demand curve. The shift in demand curve is caused by the other factors that influence demand apart from the price changes. For the shift in demand curve to occur all the other factors must be changing but the prices has to remain the same. The shift in the demand is referred to as a change in consumers demand. The major factors that result to the shift in demand curve are; changes in the consumer's income, changes in consumer's expectation or speculation, changes in the prices or related goods related goods can be grouped as either complimentary goods or substitute's goods. Complimentary goods are goods that are consumed together. One good cannot be used on its own. An example is car and fuel. Substitute goods are goods that are used to satisfy the same need or want. The last major factor that results to a shift in demand curve is the changes in consumer's tastes and preference.

An increase in consumer's income will cause two types of changes depending of the type of goods being purchased by the consumers. When an increase in the consumers income results in an upwards shift on the demand curve that type of good is referred to as a normal goods. It means that increase in consumer's purchasing power increases the demand for that commodity. The second type of good is an inferior good. An increase in consumer's wealth will reduce the quantity demanded from that commodity. It means that consumers will only purchase that product under budget constraints. Taste and preference is another factor that results to a shift in demand curve. Loss in consumers taste and preference for ac certain commodity will result to a downward movement of demand curve. Fashion is an example that result to either loss or increase in preference for a commodity. The demand curve for a good that is in fashion will shift upwards provide prices are kept constant

Absence of the supply curve:

The supply curve of a product by a firm traces out the unique price-output relationship, that is, against a given price there is a particular amount of output which the firm will produce and sell in the market. The concept of supply curve is relevant only when the firm exercises no control over the price of the product. As price changes due to the shift in demand, the competitive firm equates the new higher price (i.e. new MR) with its marginal cost at higher level of output. In this way under perfect competition, marginal cost curve becomes the supply curve of the firm.

Measurement of monopoly power and the rule of thumb for pricing:

Monopoly Power

- Monopoly is rare.
- However, a market with several firms, each facing a downward sloping demand curve will produce so that price exceeds marginal cost.

• Measuring Monopoly Power

- Perfect competition: $P = MR = MC$
- Monopoly power: $P > MC$
- Lerner's Index of Monopoly Power : $L = (P - MC)/P$
- The larger the value of L ($0 < L < 1$), the greater the monopoly power.

- L is expressed in terms of E_d : $L = (P - MC)/P = -1/E_d$

- E_d is elasticity of demand for a firm, not the market.

Thumb Rule:

A Rule of Thumb for Pricing in Monopoly

1. $MR = \frac{\Delta R}{\Delta Q} = \frac{\Delta(PQ)}{\Delta Q}$
2. $MR = P + Q\frac{\Delta P}{\Delta Q} = P + P\left(\frac{Q}{P}\right)\left(\frac{\Delta P}{\Delta Q}\right)$

3. The markup (inverse of E) over MC as a percentage of price (P-MC)/P

4. Associate this with Lerner's Index.

Horizontal and vertical integration of firms:

Vertical integration is the process in which several steps in the production and/or distribution of a product or service are controlled by a single company or entity, in order to increase that company's or entity's power in the marketplace.

Simply said, every single product that you can think of has a big life cycle. While you might recognize the product with the Brand name printed on it, many companies are involved in developing that product. These companies are necessarily not part of the brand you see.

Example of vertical integration: while you are relaxing on the beach sipping chilled cold drink, the brand that you see on the bottle is the producer of the drink but not necessarily the maker of the bottles that carry these drinks. This task of creating bottles is outsourced to someone who can do it better and at a cheaper cost. But once the company achieves significant scale it might plan to produce the bottles itself as it might have its own advantages (discussed below). This is what

we call vertical integration. The company tries to get more things under their reign to gain more control over the profits the product / service delivers.

Types of Vertical Integrations:

There are basically 3 classifications of Vertical Integration namely:

1. **Backward integration** – The example discussed above where in the company tries to own an input product company. Like a car company owning a company which makes tires.
2. **Forward integration** – Where the business tries to control the post production areas, namely the distribution network. Like a mobile company opening its own Mobile retail chain.
3. **Balanced integration** – You guessed it right, a mix of the above two. A balanced strategy to take advantages of both the worlds.

Horizontal Integration

Much more common and simpler than vertical integration, Horizontal integration (also known as lateral integration) simply means a strategy to increase your market share by taking over a similar company. This takes over / merger / buyout can be done in the same geography or probably in other countries to increase your reach.

Examples of Horizontal Integration are many and available in plenty. Especially in case of the technology industry, where mergers and acquisitions happen in order to increase the reach of an entity.

Comparison of pure competition and monopoly:

- In a perfectly competitive market, there are many producers and consumers, no barriers to exit and entry into the market, perfectly homogenous goods, perfect information, and well-defined property rights.

- Perfectly competitive producers are price takers that can choose how much to produce, but not the price at which they can sell their output.
- A monopoly exists when there is only one producer and many consumers.

- Monopolies are characterized by a lack of economic competition to produce the good or service and a lack of viable substitute goods.

- perfect competition

  A type of market with many consumers and producers, all of whom are price takers

- network externality

  The effect that one user of a good or service has on the value of that product to other people

- perfect information

  The assumption that all consumers know all things, about all products, at all times, and therefore always makes the best decision regarding purchase

Monopoly vs. Perfect Competition

Monopoly and perfect competition mark the two extremes of market structures, but there are some similarities between firms in a perfectly competitive market and monopoly firms. Both face the same cost and production functions, and both seek to maximize profit. The shutdown decisions are the same, and both are assumed to have perfectly competitive factors markets.

However, there are several key distinctions. In a perfectly competitive market, price equals marginal cost and firms earn an economic profit of zero. In a monopoly, the price is set above marginal cost and the firm earns a positive economic profit. Perfect competition produces an equilibrium in which the price and quantity of a good is economically efficient. Monopolies produce an equilibrium at which the price of a good is higher, and the quantity lower, than is

economically efficient. For this reason, governments often seek to regulate monopolies and encourage increased competition.

Social costs of monopoly power:

The Social Costs of Monopoly Power

Monopoly power results in higher prices and lower quantities.However, does monopoly power make consumers and producers in the aggregate better or Worse off?

Rent Seeking

Firms may spend to gain monopoly power

· Lobbying

· Advertising

· Building excess capacity

The incentive to engage in monopoly practices is determined by the profit to be gained.The larger the transfer from consumers to the firm, the larger the social cost of monopoly.

Price Regulation

Recall that in competitive markets, price regulation created a deadweight loss

Price discrimination:

In monopoly, there is a single seller of a product called monopolist. The monopolist has control over pricing, demand, and supply decisions, thus, sets prices in a way, so that maximum profit can be earned. The monopolist often charges different prices from different consumers for the same product. This practice of charging different prices for identical product is called price discrimination.

According to Robinson, “Price discrimination is charging different prices for the same product or same price for the differentiated product.”

According to Stigler, “Price discrimination is the sale of various products at prices which are not proportional to their marginal costs.”

In the words of Dooley, “Discriminatory monopoly means charging different rates from different customers for the same good or service.”

According to J.S. Bains, "Price discrimination refers strictly to the practice by a seller to charging different prices from different buyers for the same good."

Let us learn different types of price discrimination.

Types of Price Discrimination:

Price discrimination is a common pricing strategy' used by a monopolist having discretionary pricing power. This strategy is practiced by the monopolist to gain market advantage or to capture market position.

There are three types of price discrimination, which are shown in Figure-13:

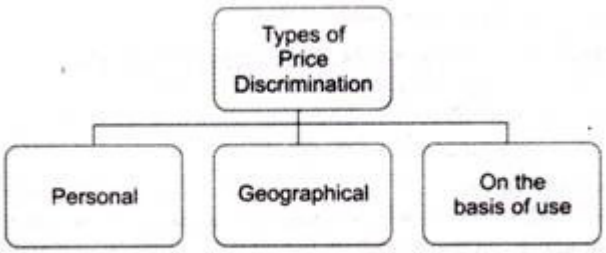

Figure-13: Price Discrimination

The different types of price discrimination (as shown in Figure-13) are explained as follows:

i. Personal:

Refers to price discrimination when different prices are charged from different individuals. The different prices are charged according to the level of income of consumers as well as their willingness to purchase a product. For example, a doctor charges different fees from poor and rich patients.

ii. Geographical:

Refers to price discrimination when the monopolist charges different prices at different places for the same product. This type of discrimination is also called dumping.

iii. On the basis of use:

Occurs when different prices are charged according to the use of a product. For instance, an electricity supply board charges lower rates for domestic consumption of electricity and higher rates for commercial consumption.

Degrees of Price Discrimination:

Price discrimination has become widespread in almost every market. In economic jargon, price discrimination is also called monopoly price discrimination or yield management. The degree of price discrimination vanes in different markets.

Figure-14 shows the degrees of price discrimination:

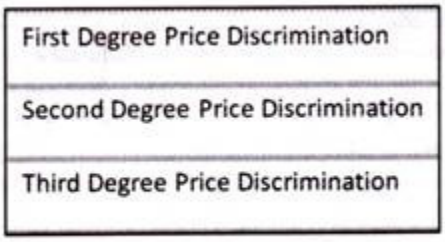

Figure-14: Degrees of Price Discrimination

These three degrees of price discrimination (as shown in Figure-14) are explained as follows:

i. First-degree Price Discrimination:

Refers to a price discrimination in which a monopolist charges the maximum price that each buyer is willing to pay. This is also known as perfect price discrimination as it involves maximum exploitation of consumers. In this, consumers fail to enjoy any consumer surplus. First degree is practiced by lawyers and doctors.

ii. Second-degree Price Discrimination:

Refers to a price discrimination in which buyers are divided into different groups and different prices are charged from these groups depending upon what they are willing to pay. Railways and airlines practice this type of price discrimination.

iii. Third-degree Price Discrimination:

Refers to a price discrimination in which the monopolist divides the entire market into submarkets and different prices are charged in each submarket. Therefore, third-degree price discrimination is also termed as market segmentation.

In this type of price discrimination, the monopolist is required to segment market in a manner, so that products sold in one market cannot be resold in another market. Moreover, he/she should identify the price elasticity of demand of different submarkets. The groups are divided according

to age, sex, and location. For instance, railways charge lower fares from senior citizens. Students get discount in cinemas, museums, and historical monuments.

Necessary Conditions for Price Discrimination:

Price discrimination implies charging different prices for identical goods.

It is possible under the following conditions:

i. Existence of Monopoly:

This implies that a supplier can discriminate prices only when there is monopoly. The degree of the price discrimination depends upon the degree of monopoly in the market.

ii. Separate Market:

This implies that there must be two or more markets that can be easily separated for discriminating prices. The buyer of one market cannot move to another market and goods sold in one market cannot be resold in another market.

iii. No Contact between Buyers:

This refers to one of the most important conditions for price discrimination. A supplier can discriminate prices if there is no contact between buyers of different markets. If buyers in one market come to know that prices charged in another market are lower, they will prefer to buy it in other market and sell in own market. The monopolists should be able to separate markets and avoid reselling in these markets.

iv. Different Elasticity of Demand:

This implies that the elasticity of demand in the markets should differ from each other. In markets with high elasticity of demand, low price will be charged, whereas in markets with low elasticity of demand, high prices will be charged. Price discrimination fails in case of markets having same elasticity- of demand.

Advantages and Disadvantages of Price Discrimination:

A monopolist practices price discrimination to gain profits. However, it acts as a loss for the consumers.

Following are some of the advantages of price discrimination:

i. Helps organizations to earn revenue and stabilize the business

ii. Facilitates the expansion plans of organizations as more revenue is generated

iii. Benefits customers, such as senior citizens and students, by providing them discounts

In spite of advantages, there are certain disadvantages of price discrimination.

Some of the disadvantages of price discrimination as follow:

i. Leads to losses as some consumers end up paying higher prices

ii. Involves administration costs for separating markets.

Price discrimination:

Price discrimination refers to the practice of a seller of selling the same good at different prices to different buyers. A seller makes price discrimination between different buyers when it is both possible and profitable for him to do so. Price discrimination is not a very common phenomenon. It is very difficult to charge different prices for the identical good from different customers. Frequently, the product is slightly differentiated to successfully practice price discrimination.

In the words of Mrs. John Robinson “The act of selling the same article, produced under single control at different prices to different buyers is known as price discrimination”. Also Prof. Stigler defines Price discrimination as “the sales of technically similar products at prices which are not proportional to marginal cost” As per this definition, a seller is indulging in price discrimination when is charging different prices from different buyers for the different varieties of the same good if the differences in prices are not the same as or proportional to the differences in the cost of producing them. For Example, If the manufacturer of a mobile of a given variety sells at Rs. 10.000/- to one buyer and at Rs. 11,000/- to another buyer, (Specific Model) he is practicing price discrimination.

Price discrimination is not possible under perfect competition, even if the two markets could be kept separate. Since market demand in each market is perfectly elastic, every seller would try to sell in that market in which could get the highest price. Competition would make the price equal

in both the markets. However, price discrimination is possible and profitable only when markets are imperfect.

Types:

Price discrimination is of various types. Some of them are as follows:

1. Personal price discrimination: It may be personal based on the income of the customer. For example, Doctors and Lawyers charge different fees from different customers on the basis of their income. Higher fees are charged to rich persons and lower to the poor.
2. Geographical or Local discrimination: There is geographical price discrimination when a monopolist sells in one market at a higher price than in the other market. For example, in a posh locality, a beauty parlor may be charging more while charging lower rate for the same service in a common locality.
3. Discrimination on the basis of Nature of the Product: Different prices are charged when there is a difference in the quality of the product. For example, Unbranded products, like open tea, are sold at lower prices than branded tea like Brooke Bond or Tata tea.
4. Discrimination on the basis of Age, Sex and Status: Here different prices are charged on the basis of age, sex and status of consumers. For example, railways fare for children and senior citizens are different, various states in India there is no fees for girls in schools and in case of Toll tax all MLAs, MPs and Ministers are exempted.
5. Discrimination on the basis of Time: Different rates may be charged for a service depending upon time. For example, Telephone STD call rates at day time and night. Besides, advertising rates on TV based on prime time and non –prime time.

6. Discrimination on the basis of Use of product / Service: Prices differ according to the use to which the product is utilized. For example, electricity per Unit rates are different for users as domestic use, Farm use and industrial use.

Degree of Price discrimination:

i. First-degree Price Discrimination:

Refers to a price discrimination in which a monopolist charges the maximum price that each buyer is willing to pay. This is also known as perfect price discrimination as it involves maximum exploitation of consumers. In this, consumers fail to enjoy any consumer surplus. First degree is practiced by lawyers and doctors.

ii. Second-degree Price Discrimination:

Refers to a price discrimination in which buyers are divided into different groups and different prices are charged from these groups depending upon what they are willing to pay. Railways and airlines practice this type of price discrimination.

iii. Third-degree Price Discrimination:

Refers to a price discrimination in which the monopolist divides the entire market into submarkets and different prices are charged in each submarket. Therefore, third-degree price discrimination is also termed as market segmentation.

In this type of price discrimination, the monopolist is required to segment market in a manner, so that products sold in one market cannot be resold in another market. Moreover, he/she should identify the price elasticity of demand of different submarkets. The groups are divided according to age, sex, and location. For instance, railways charge lower fares from senior citizens. Students get discount in cinemas, museums, and historical monuments.

Peak-load pricing:

Charging the highest possible prices in accordance with the rising demand for a service with few competitive peers. Often used by electricity companies during the summer, to capture the highest load of demand at the highest prices for the highest profit.

It is an efficient means of pricing in which at the time of peak demand prices rise to balance to demand and supply. Most of our goods or services are limited in nature but its demand may vary depending upon various factors like season, income, price, etc.

During peak time demand for the goods or service would exceed available capacity. To rationalize this demand constraint in the form of increased price are imposed to streamline the demand supply gap. Also the pricing is lowered when limited capacity becomes plentiful which helps in avoiding under utilization when demand is low.

Thus peak load pricing helps to maximize capacity utilization where resources are scarce. When demand is low price is charged in such a way that at least one can recover his marginal cost. And when the demand is high, price is equal to marginal cost plus additional premium charged to bring down the demand equal to supply. eg: Electricity distribution companies use peak load pricing to maximize its revenue. During the day time when available electricity is more than the demand, the pricing is at its lowest point which will be enough to cover its marginal cost. At peak demand which is mostly at night, separate tariff is charged such that it will limit the excess demand for electricity.

Pricing of public Utilities:

In the 1930's and 1940's, the view came to be held that the right policy was to make public utility prices everywhere equal to marginal cost, even where marginal cost was less than average cost and a government subsidy was required to maintain production. This policy proposal had serious weaknesses. It did not take into account the stimulus to correct forecasting of having a subsequent market test whether consumers were willing to pay the total cost; it ignored the probably effects on the administrative structure, with state enterprise and centralized operations superceding decentralized operations; it involved a redistribution of income in favor of consumers of products produced in conditions of decreasing costs; it failed to take into account the misallocation of resources resulting from the additional taxation necessitated by the subsidies.

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UNIT-III MONOPOLISTIC COMPETITION AND OLIGOPOLY:

Introduction

Monopolistic competition suggests the industry shares characteristics of both a perfectly competitive industry and a monopoly. Like perfect competition, a monopolistic competitive industry has many firms, or if there are not many firms, there are at least many competing products that are almost identical in nature. Consider the breakfast cereal industry. There are several major producers of breakfast cereal (e.g. Kellogg's, General Mills, Post) and each produces corn flakes, raisin bran, and many other variations that can fill the breakfast bowl of the sleepy eater. In addition, there are a good number of smaller specialty brands that produce items such as organic corn flakes.

The characteristics of a good produced by a monopolistically competitive firm include:

- The consumer has many alternatives to choose from - there are many firms producing a similar product or a few firms producing multiple variations of the same product. As a result, the consumer has many close substitutes to choose from.
- Each firm faces a downward-sloping demand curve since their product is slightly differentiated from their competitors. Product differences may either be real or perceived, the differences emphasized by advertising. Since the firm faces a downward sloping demand curve, it can raise price and demand will not drop to zero or it can lower price to increase sales.
- There are minimal barriers to entry. The goods and services produced are easy to replicate by other firms that represent potential competition. If economic profits are present, new firms will enter into the industry.
- The majority of products that we find in retail stores are produced in a monopolistically competitive environment.

An oligopoly is an industry that is dominated by a few firms that display highly coordinated behavior. Examples of oligopoly include the auto and oil industries, and many commodity producers such as coffee, copper and other minerals. Characteristics of an oligopoly include:

- Firms produce in an industry dominated by a few firms whose output and pricing decisions are closely linked. The good produced by these firms is relatively homogenous and they control the majority of output produced in the industry.
- There are significant barriers to entry such as high start up costs or limited resources. For example, it is very expensive to set up a new auto firm. As a result, the majority of output is controlled by companies that already exist in the industry.
- The behavior of the firm is closely related to that of its competitors. Firms are interdependent in that they are aware of competitor pricing, output and products. There are ways to monitor member compliance and discourage cheating.
- There is little price competition and the competition present usually takes place through advertising.
- The technology involved in production is relatively stable. In contrast, rapid changes in technology will encourage new entrants and price competition as firms with a cost advantage will try to drive rivals out of business by lowering prices.
- The demand curve for the good produced by the oligopoly is relatively inelastic.

Firms in an oligopoly often exhibit significant economies of scale in production.

Price and output decisions in monopolistic competition:

The Firm's Short-Run Output and Price Decision

A firm that has decided the quality of its product and its marketing program produces the profit-maximizing quantity at which its marginal revenue equals its marginal cost ($MR = MC$).

Price is determined from the demand curve for the firm's product and is the highest price that the firm can charge for the profit-maximizing quantity. The firm in monopolistic competition operates like a single-price monopoly.

The firm produces the quantity at which *MR* equals *MC* and sells that quantity for the highest possible price. It earns an economic profit.

Long Run: Zero Economic Profit

In the long run, economic profit induces entry.and entry continues as long as firms in the industry earn an economic profit—as long as ($P > ATC$).

In the long run, a firm in monopolistic competition maximizes its profit by producing the quantity at which its marginal revenue equals its marginal cost, $MR = MC$.

As firms enter the industry, each existing firm loses some of its market share. The demand for its product decreases and the demand curve for its product shifts leftward.

The decrease in demand decreases the quantity at which $MR = MC$ and lowers the maximum price that the firm can charge to sell this quantity.

Price and quantity fall with firm entry until $P = ATC$ and firms earn zero economic profit.

Short Run Pricing and Output for the Monopolistically Competitive Firm

The monopolistically competitive firm generates brand loyalty and thus faces a downward sloping demand curve. Due to the wide availability of substitutes, the demand curve tends to be relatively elastic

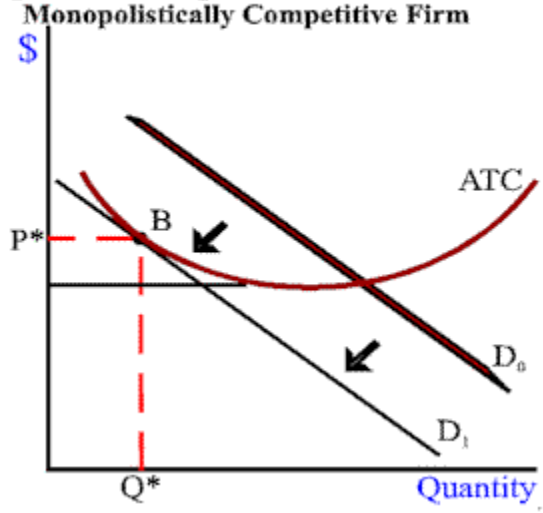
As with a perfectly competitive firm or a monopoly, the monopolistically competitive firm produces at a profit maximizing level of output where marginal cost equals marginal revenue (Point A). The firm finds the price it will charge customers at the profit maximizing level of output (Q*) from the demand curve at Point B, and sets price to P*. The firm is earning economic profits since price exceeds average total cost at the profit maximizing level of output.

Long Run Pricing and Output for the Monopolistically Competitive Firm

Unlike a monopoly industry, new firms can enter the monopolistically competitive industry. And like a perfectly competitive industry, economic profits attract new firms seeking a share of those profits into the industry. For example, assume that after a well crafted marketing campaign

featuring a happy hippie wearing tied-died overalls, a national pizza chain (e.g. Dominoes) introduces fire roasted tofu pizza. It is a instant hit throughout America as eager consumers eat them up. A domino is soon reaping a whirlwind of profits - both accounting and economic as pizza sales soar. Although initially bewildered, other national pizza chains, local pizza companies and restaurants respond by rolling out their own versions of fire roasted tofu pizzas. The long run impact is a reduction in market share for Dominoes as customers find many substitutes available. The long run outcome for the monopolistically competitive firm is zero economic profits.

Figure 11-2 **Long Run Outcome for a Monopolistically Competitive Firm**



With new entrants in the market for fire roasted tofu pizza, the market share of Dominoes falls and its demand curve shifts inward. More firms share the existing market and individual market share falls. As long as economic profits remain, new firms enter until all economic profits disappear. In the long run, the typical monopolistically competitive firm makes zero economic profits. This is shown in the graph above. Demand shrinks from D_0 to D_1 eventually settling at a

point where the demand curve is tangent to the average total cost curve, resulting in zero economic profits (Point B).

As we can see from the above graph, unlike a perfectly competitive firm that produces at the minimum point of its average total cost curve and where price equals marginal cost, the monopolistically competitive firm does not produce at an economically efficient point in the long run. This does not mean to say that monopolistic competition is undesirable in comparison to perfect competition. Consumer's value choice and monopolistic competition offers variety in good or service. In contrast, perfectly competitive firms produce a generic, homogenous product offers consumers no product differences.

Monopolistic competition also encourages continuous product innovation. Innovative firms that introduce new or better products gain an edge, increase market share and can realize extra profits while their competitors attempt to catch up. A key to success for many firms in monopolistically competitive industries, especially in the information technology area, is constant innovation to maintain and expand market share.

Monopolistic competition and economic efficiency:

Price discrimination:

Price discrimination refers to the practice of a seller of selling the same good at different prices to different buyers. A seller makes price discrimination between different buyers when it is both possible and profitable for him to do so. Price discrimination is not a very common phenomenon. It is very difficult to charge different prices for the identical good from different customers. Frequently, the product is slightly differentiated to successfully practice price discrimination.

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good if the differences in prices are not the same as or proportional to the differences in the cost of producing them. For Example, If the manufacturer of a mobile of a given variety sells at Rs. 10.000/- to one buyer and at Rs. 11,000/- to another buyer, (Specific Model) he is practicing price discrimination.

Oligopoly and Interdependence - Cournot's Duopoly Model:

The earliest duopoly model was developed in 1838 by the French economist Augustin Cournot. The model may be presented in many ways. The original version is quite limited in that it makes the assumption that the duopolists have identical products and identical costs. Actually Cournot illustrated his model with the example of two firms each owning a spring of mineral water, which is produced at zero costs. We will present briefly this version, and then we will generalize its presentation by using the reaction curves approach.

Cournot assumed that there are two firms each owning a mineral well, and operating with zero costs. They sell their output in a market with a straight-line demand curve. Each firm acts on the assumption that its competitor will not change its output, and decides its own output so as to maximize profit.

Assume that firm A is the first to start producing and selling mineral water. It will produce quantity A, at price P where profits are at a maximum because at this point MC — MR = 0. The elasticity of market demand at this level of output is equal to unity and the total revenue of the firm is a maximum. With zero costs, maximum R implies maximum profits, Π. Now firm B assumes that A will keep its output fixed (at 0/1), and hence considers that its own demand curve is CD'.

Clearly firm B will produce half the quantity AD', because (under the Cournot assumption of fixed output of the rival) at this level (AB) of output (and at price F) its revenue and profit is at a maximum. B produces half of the market which has not been supplied by A, that is, B's output is ¼ (= ½. ½) of the total market.

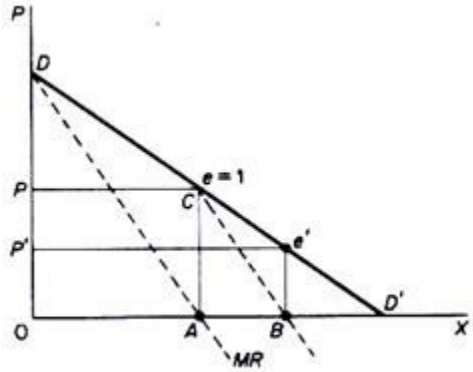


Figure 9.1

Firm A, faced with this situation, assumes that B will retain his quantity constant in the next period. So he will produce one-half of the market which is not supplied by B. Since B covers one-quarter of the market, A will, in the next period, produce ½(1 – ¼) = ½. ¾ = ⅜ of the total market.

Firm B reacts on the Cournot assumption, and will produce one-half of the unsupplied section of the market, i.e. ½ (1 – ⅜) = 5/16.

In the third period firm A will continue to assume that B will not change its quantity, and thus will produce one-half of the remainder of the market, i.e. ½ (1 – 5/16).

This action-reaction pattern continues, since firms have the naive behaviour of never learning from past patterns of reaction of their rival. However, eventually an equilibrium will be reached in which each firm produces one-third of the total market. Together they cover two-thirds of the total market. Each firm maximises its profit in each period, but the industry profits are not maximised.

That is, the firms would have higher joint profits if they recognised their interdependence, after their failure in forecasting the correct reaction of their rival. Recognition of their interdependence (or open collusion) would lead them to act as ‘a monopolist,’ producing one-half of the total market output, selling it at the profit-maximising price P, and sharing the market equally, that is, each producing one-quarter of the total market (instead of one-third).

Stackel berg Model:

Few firms serving many consumers.

_ Firms produce differentiated or homogeneous products.

_ Barriers to entry.

_ Firm one is the leader.

– The leader commits to an output before all other firms.

_ Remaining firms are followers.

– They choose their outputs so as to maximize profits, given the leader's output.

Stackelberg model explainshow commitment can enhance profits in strategic environments.

_ Leader produces *more* than the Cournot equilibrium output.

– Larger market share, higher profits.

– First-mover advantage.

_ Follower produces *less* than the Cournot equilibrium output.

– Smaller market share, lower profits.

Kinked Demand Model:

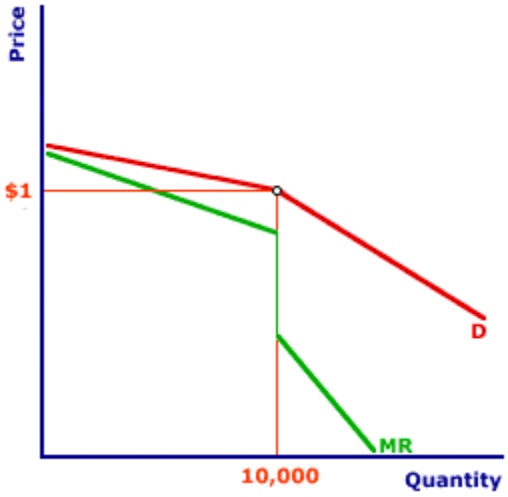
An analysis using the kinked-demand curve to explain rigid prices often found with oligopoly. The kinked-demand curve contains two distinct segments--one for higher prices that is more elastic and one for lower prices that is less elastic. Key to this analysis is that the corresponding marginal revenue curve contains three segments--one associated with the more elastic segment, one associated with the less elastic segment, and one associated with the kink. A profit-maximizing firm can then equate marginal cost to a wide range of marginal revenue values along the vertical segment of the marginal revenue curve. This suggests that marginal cost must change significantly before an oligopolistic firm is inclined to change price.

The kinked-demand curve analysis of oligopoly builds on the notion of interdependent decision-making to explain why prices tend to be relative stable or rigid. The key to this analysis is that competing firms do not respond in the same way when one firm increases or decreases its price. Competing firms match price decreases, but not price increases. This means a firm is likely to

lose market share for price increases, but does not gain market share for price decreases. A firm has little to gain from reducing prices and much to lose form raising prices. As such, the firm is inclined to keep prices stable.

A Kinked-Demand:

The exhibit the right presents a typical kinked-demand curve, and corresponding marginal revenue curve, facing an oligopolistic firm. This particular curve is that for the hypothetical Shady Valley soft drink supplier, OmniCola.



- Existing Price and Quantity: The initial price is $1 per can and the initial quantity sold is 10,000 cans. The "kink" in the demand curve occurs at this price and quantity. Note that this analysis does not explain how the existing price and quantity came to be $1 per can and 10,000 cans. It only indicates how the firm reacts given this is the starting price and quantity.
- Demand Curve: The demand curve facing OmniCola contains two segments. For prices above $1 and quantities less that 10,000 cans, the demand curve is more elastic. If OmniColan increases its price, other firms do not. As such, OmniCola loses market share and sees a significant decrease in quantity demanded. For prices below $1 and quantities greater that 10,000 cans, the demand curve is less elastic. If OmniCola decreases its price, so too do other firms. As such, OmniCola does not gain market share and sees only a minimal increase in quantity demanded.
- Marginal Revenue Curve: The marginal revenue curve facing OmniCola contains three segments. For quantities less that 10,000 cans, the marginal revenue curve is relatively flat. This segment is derived from the more elastic demand curve segment associated with higher prices and lesser quantities. For quantities greater that 10,000 cans, the marginal revenue curve is relatively steep. This segment is derived from the less elastic demand curve segment associated with lower prices and greater quantities. At exactly 10,000
-

- cans, the marginal revenue curve is vertical. This segment is associated with the kink of the demand curve that connects the more elastic segment with the less elastic segment.

Prisoner's dilemma:

The prisoner's dilemma is a specific type of game in game theory that illustrates why cooperation may be difficult to maintain for oligopolists even when it is mutually beneficial. In the game, two members of a criminal gang are arrested and imprisoned. The prisoners are separated and left to contemplate their option. If both prisoners confess, each will serve a two-year prison term. If one confesses, but the other denies the crime, the one that confessed will walk free, while the one that denied the crime would get a three-year sentence. If both deny the crime, they will both serve only a one year sentence. Betraying the partner by confessing is the dominant strategy; it is the better strategy for each player regardless of how the other plays. This is known as a Nash equilibrium. The result of the game is that both prisoners pursue individual logic and betray when they would have collectively gotten a better outcome if they had both cooperated.

Collusive oligopoly:

In order to avoid uncertainty arising out of interdependence and to avoid price wars and cut throat competition, firms working under oligopolistic conditions often enter into agreement regarding a uniform price-output policy to be pursued by them.

The agreement may be either formal (open) or tacit (secret). But since formal or open agreements to form monopolies are illegal in most countries, agreements reached between oligopolists are generally tacit or secret. When the firms enter into such collusive agreements formally or secretly, collusive oligopoly prevails.

But collusions are of two main types:

(a) Cartels and

(b) Price leadership.

In a cartel type of collusive oligopoly, firms jointly fix a price and output policy through agreements. But under price leadership one firm sets the price and others follow it. The one which sets the price is a price leader and the others who follow it are its followers.

The follower firms adopt the price of the leader, even though they have to depart from their profit-maximizing position, as they think that it is to their advantage not to compete with their leader and between themselves.

Originally, the term 'cartel' was used for the agreement in which there existed a common sales agency which alone undertook the selling operations of all the firms that were party to the agreement. But now-a-days all types of formal or informal and tacit agreements reached among the oligopolistic firms of an industry are known as cartels.

Since these cartels restrain competition among the member firms, their formations have been made illegal in some countries by the Governments passing laws against them. For instance, the formation of a cartel is illegal in U.S.A. under the Anti-Trust Laws passed there. However, in spite of the illegality of cartels they are still formed in U.S.A. through secret devices and by adopting some means or the other shrewd businessmen are able to evade the anti-monopoly laws.

Formal collusion or agreement among the oligopolists may itself take various forms. An extreme form of collusion is found when the member firms agree to surrender completely their rights of price and output determination to a 'Central Administrative Agency' so to secure maximum joint profits for them.

Formation of such a formal collusion is generally designated as perfect cartel. Thus under perfect cartel type of collusive oligopoly, the price and output determination of the whole industry as well as of each member firm is determined by the common administrative authority so as to achieve maximum joint profits for the member firms.

The total profits are distributed among the member firms in a way already agreed between them. The share from total profits of each member firm is not necessarily in proportion to the output quota it has to supply and the cost it incurs on it.

Price-Leadership Model - Dominant firm:

A company has price leadership when it sets the price of products in its industry and other companies, often much smaller than the leader, all follow suit. This usually happens when the products are not highly differentiated and there is enough demand for each of the competitors to remain profitable after the price change. Economists have identified three types of price leadership.

Dominant Firm

A dominant firm is the proverbial 800-pound gorilla, often surrounded by a cluster of tiny companies that offer similar products within their own niche. It sets its prices according to market forces of supply and demand, and other companies must scramble to match the new prices because they cannot compete directly with the dominant firm. Starbucks is a dominant-firm price leader, with smaller chains and independent cafes forced to price accordingly or else lose business. When a company aggressively lowers prices specifically because it knows the smaller companies cannot sustain a lower price point, this is called predatory pricing

Cartels:

A **cartel** is an organization through which members jointly make decisions about prices and production. One of the better-known cartels is OPEC (the Organization of Petroleum Exporting

Countries), who are members, attempt to limit production in order to support oil prices. International cartels are found for many other commodities such as coffee and many minerals. In the United States, antitrust laws prevent firms from obvious collusion and from forming a cartel. However, there are legally sanctioned cartels in the United States. The NCAA is one example. Even though you may be a great quarterback and have some friends that are excellent football players, you are not allowed to form a team and play in the NCAA. Participation is restricted to member colleges. Other legal cartels in the U.S. include the American Medical Association (AMA). You may have a great remedy for colds, but you are not allowed to open a medical practice until you meet the requirements of the AMA for membership.

When a legal cartel is prohibited, firms in an oligopoly often act through **price leadership**. When price leadership is present, a firm within the oligopolistic industry will change prices, leading the other firms to immediately follow with their own price moves. Price leadership can readily be observed in the airline and retail gasoline industry. When a major airline announces a fare cut, the other airlines rapidly follow with their own price cuts to prevent a loss of market share. With less fanfare, prices are raised, with the major airlines moving close to lockstep. Local gasoline prices rarely diverge. It is not uncommon to see several gas stations on the same block with identical prices even though they appear to be in a very competitive environment. If one station cuts the price per gallon, the others must quickly follow or they will rapidly lose market share as consumers switch to the lower priced station.

In the gas station and airline examples, direct collusion in setting prices is legally prohibited. To avoid detrimental government antitrust action, price leadership is a way to avoid price competition without direct negotiations and collusion. In general, the firms leave prices alone;

each offers the same price, even in the face of direct competition. Uniform pricing behavior seldom breaks down due to competitive price cuts. The firm that tries to gain market share by reducing prices realizes that the competitors will so respond and only the consumer will gain. With price leadership, prices move up or down in response to changes in costs or demand. If crude oil prices fall, gas stations will slowly bring down their retail prices. Airlines offer specials during times when demand is weak, but seldom during major holidays or weekday hours that attract the business traveler.

Sales maximization:

Sales maximization is another possible goal and occurs when the firm sells as much as possible without making a loss. Not-for-profit organizations may choose to operate at this level of output, as may profit making firms faced with certain situations, or employing certain strategies. An example of this would be predatory pricing where, so long as costs are covered, a firm may reduce price to drive rivals out of the market.

Sales maximization means achieving the highest possible sales volume, without making a loss. To the right of Q, the firm will make a loss, and to the left of Q sales are not maximized where AC=AR. Managers are more interested in firm size than profits. Size leads to greater monetary and non-monetary rewards. For example; managers usually have sales related bonuses. As well, the size of the firm they are managing gives them a greater sense of worth; rather than just making their boss richer.

Assumptions:

1.Higher advertisement expenditure would certainly increase sales revenue of a firm.

2. Market price remains constant.

3. Demand and cost curves of the firm are conventional in nature.

Generally under competitive conditions, a firm in order to increase its volume of sales and sales revenue would go for aggressive advertisements. This leads to a shift in the demand curve to the right. Forward shift in demand curve implies increased advertisement expenditure resulting in higher sales and sales revenue. A price cut may increase sales in general. But increase in sales mainly depends on whether the demand for a product is elastic or inelastic.

A price reduction policy may increase its sales only when the demand is elastic and if the demand is inelastic; such a policy would have adverse effects on sales. Hence, to promote sales, advertisements become an effective instrument today.

UNIT 4 Market for Factor Inputs

Marginal productivity theory of distribution

Introduction

Early economists had divided economic theory into two parts:

Theory of Value- It deals with pricing of commodities.

Theory of Distribution-It deals with pricing of factors of production

It further divided in two sub-divided

2(a) Micro theory - Price of each factor of production.

2(b) Macro theory- Division of national income among different factors of production.

This chapter deals will the micro theory of distribution and studies indepth the marginal productivity theory of distribution.

The price paid for and received by the services of factor of productions (labour, capital, land, and entrepreneurship) when exchange through factor markets. Like prices in other markets, factor price adjusts to balance the forces of demand and supply. For factor demand and the factor demand curve, the factor price is negatively related to the quantity of factor services demanded. For factor supply and the factor supply curve, factor price is positively related to the quantity of factor services supplied.

Demands for Factors of Production

(1) **Derived Demand**

Derived demand occurs when there is a demand for a good or factor of production resulting from demand for an intermediate good or service.Example of Labour as Derived Demand

The demand for economic tutors depends on the demand for students wishing to study economics. If students sign up to an economics course, then the college will demand tutors to be able to teach the students.

The demand for steel workers, is highly dependent upon the demand for steel. As the demand for British coal fell in the 1980s, demand for coal miners declined.

Marginal Revenue Product Theory states that demand for labour depends upon productivity of a worker and the marginal revenue of the goods sold.

MRP = MPP * MR

- MPP = Marginal physical product
- MR = Marginal Revenue of goods sold

If demand for the good increase, the price and MR will increase leading to higher demand.T ransport as Derived Demand .Demand for transport tends to be determined by demand for another service / activity. If people need to get to work, they will demand more bus journeys. Few people take a bus for the intrinsic pleasure of a bus journey.

2.Joint Demand / Complementary Demand

This occurs when two goods are needed together. For example,mp4 downloads and an iPod player.

Supply of Factors of Production

1. There is no definite positive correlation between change in price and reaction of supply of factor like relationship of price of commodity and its supply.

2. Price of a factor does not depend upon its cost of production

Marginal Productivity theory

A theory used to analyze the profit-maximizing quantity of inputs (that is, the services of factor of productions) purchased by a firm in the production of output. Marginal-productivity theory indicates that the demand for a factor of production is based on the marginal product of the factor. In particular, a firm is generally willing to pay a higher price for an input that is more productive and contributes more to output. The demand for an input is thus best termed a derived demand.

Marginal productivity theory is a cornerstone in the analysis of factor markets and the input side of short-run production. It provides insight into the demand for factors of production based on

the notion that a profit-maximizing firm hires inputs based on a comparison between the productivity of the input and the cost of the input.

The Law of Diminishing Marginal Returns

The central principle underlying marginal-productivity theory is the law of diminishing marginal returns. This law states that as additional units of avariable input are added to a fixed input, eventually the marginal product of the variable input decreases.

This principle is an essential component of short-run production analysis, which offers insight into the positively-sloped marginal cost curve and thelaw of supply.

The law of diminishing marginal returns also plays a key role in the demand for an input. It works like this: As more of an input is employed, marginal productivity declines. Because each unit is less productive and generates less revenue, the firm is inclined to pay less to use the input. As such, an inverse relation exists between the price of the input and the quantity of the input demanded, which traces out a negatively-sloped factor demand curve.

The focus of marginal productivity theory and the law of diminishing marginal returns is on marginal product. There are, however, three related "marginals" that need to be noted:

Marginal Product: This is the change in total product resulting from an incremental change in the quantity of the variable factor input used.

Marginal Physical Product: This is another term for marginal product which serves to emphasize that production is measured in physical units rather than monetary units.

Marginal Revenue: This is the change in total revenue resulting from an incremental change in the quantity of the output produced.

Marginal Revenue Product: This is the change in total revenue resulting from an incremental change in the quantity of the variable factor input used.

Marginal revenue product is marginal product stated in monetary units rather than physical units. Rather than stating productivity of an input in terms of the physical quantity of production, marginal revenue product states productivity in terms of the revenue generated.

Suppose, for example, that Edgar Millbottom contributes 5 tacos per hour of production when hired by Waldo's TexMex Taco World. Edgar's marginal (physical) product is thus 5 tacos per

hour. However, because each taco sells for $2 each (marginal revenue), Edgar contributes $10 per hour of revenue to Waldo's TexMex Taco World.

Waldo, the owner of Taco World, is more interested in the amount of revenue Edgar generates when it comes to making out a paycheck, than just the number of tacos produced.

This connection between marginal product, marginal revenue, and marginal revenue product is summarized in by the following equation:

$$\text{marginal revenue product} = \text{marginal product} \times \text{marginal revenue}$$

Assumptions of the theory,

1. Prevalence of perfect competition in factor as well as product market.
2. All factors are identical.
3. Factors are perfect substitute for each other.
4. Factors are perfectly mobile.
5. Perfect divisibility of factors.
6. The theory operates in the long-run.
7. The theory is based on full employment.

Derivation of Demand Curve

Perfect Competition in the product market

The price of a factor of production is determined when there prevails perfect competition both in the product and factor markets. Before the theories of imperfect competition and monopolistic

competition were introduced in economic theory no distinction was made between value of marginal product (VMP) and marginal revenue product (MRP).

That when there is imperfect competition (i.e. monopoly, oligopoly or monopolistic competition) in the product market, marginal revenue differs from the price of the product. As a result, under conditions of imperfect competition in the product market, marginal revenue product (MRP) of the factor differs from value of the marginal product (VMP).

This affects the demand for a factor and the price it will get under conditions of imperfect competition Determination of Factor Price when there exists Monopoly (or Imperfect Competition in the Product Market but Perfect Competition in the Factor Market or monopoly in the product.

Determination of Factor Price when there is Imperfect Competition (or Monopoly) in the Product Market and Perfect Competition in Factor Market:

The determination of prices and employment of factors under imperfect competition in the product and factor markets in general.

We will explain below the employment of a factor by a firm and the price it will pay to a factor when the firm is working under conditions of imperfect competition or monopoly in the product market. However we assume in this section that as far as factor market is concerned perfect competition prevails in it.

Since perfect competition is assumed to be prevailing in the factor market, price of the factor will be determined by demand for and supply of the factor of production, as explained above. But now the demand for the factor of production is determined not by the value of the marginal product (VMP) but by the marginal revenue product (MRP) of the factor.

As we will see below, in this case price of the factor, which is determined by demand for and supply of the factor, will be equal to the marginal revenue product, but will be less than the value of the marginal product (VMP) of the factor.

The conditions of firm's equilibrium in factor market developed above will also apply in the present case. The firm working under perfect competition in factor market but monopoly or imperfect competition in the product marsket would also be in equilibrium position where MRP = MFC, and MRP curve cuts MFC curve from above. But there are some differences between this case and the case explained above.

Since in this case, as in the previous, the firm is working under perfect competition in the factor market it will not be able to affect the price of the factor and factor-cost line will be a horizontal straight line. Therefore, the firm will be in equilibrium, that is, will be maximising profits when MRP = MFC = Price of the factor.

But because the firm in the present case is working under conditions of monopoly or imperfect competition in the product market, it will be able to exercise some influence or control over the price of the product.

AR curve for it will slope downward and MR curve will be below it. Consequently, MRP which is equal to MPP x MR will not be equal to VMP which is equal to MPP x price of the product. Since MR is less than the price of the product under monopoly or imperfect competition, MRP would be less than VMP.

In symbolic terms:

MRP = MPP x MR

VMP = MPP x Price of the product

Since, under imperfect competition or monopoly in the product market, MR < Price of the product. therefore

MRP < VMP

In equilibrium in the factor market, the firm will make

PF =MRP

Therefore, PF = MRP < VMP

It is, therefore, concluded that under conditions of monopoly or imperfect competition in the product market, assuming perfect competition in the factor market, the factor will get price less than the value of its marginal product.

The equilibrium of the firm when it is working under conditions of perfect competition in the factor market and monopoly or imperfect competition in the product market is shown in Fig. 32.16. Since VMP is greater than MRP when there is imperfect competition in the product

market, VMP curve will be above MRP curve (for the sake of convenience, we have drawn only the downward-sloping portions of MRP and VMP curves).

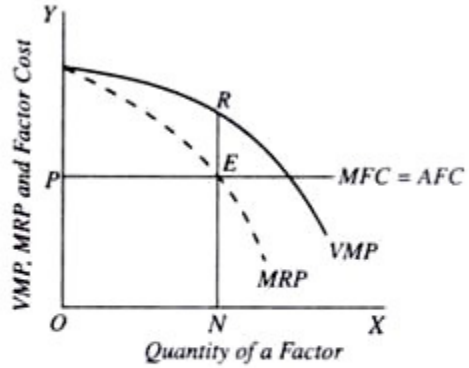


Fig. 32.16. *Employment of a Factor by a Firm under Conditions of Perfect Competition in the Factor Market and Monopoly or Imperfect Competition in the Product Market*

The firm will be in equilibrium at E, where MRP = P. The equilibrium employment of the factor is ON. It will be noticed from the figure that the price of the factor OP is, in equilibrium, equal to marginal revenue product EN but is less than its value of marginal product which is equal to RN. Therefore, factor gets RE less than the value of its marginal product.

Derivation of Supply Curve

There are three type of variable factor, Raw material that's supply curve derive like supply curve of any commodity as positively sloped, another factor is Intermediate goods that generally produced and sold to another producer who used it in production process that's supply curve positively sloped third factor is labour that's supply curve derived differently as shown below

The Supply Curve of Labour!

It is important to know how many hours a worker will be willing to work at different wage rates. When the real wage rate increases, the individual will be pulled in two opposite directions. The real wage rate is the relative price of leisure which has to be given up for doing work to earn income.

As real wage rate rises, leisure becomes relatively more expensive (in terms of income foregone) and this induces the individual to substitute work (or income) for leisure. This is called substitution effect of the rise in real wage and induces the individual to work more hours (i.e. supply more labour) to earn more income.

But the increase in the real wage rate also makes the individual richer, that is, his income increases. This increase in income tends to make the individual to consume more of all commodities including leisure. This is called income effect of the rise in wage rate which tends to increase leisure and reduce number of work hours (i.e. reduce labour supply. The economists generally believe that substitution effect of a rise in real wage is larger than its income effect and therefore individuals work for more hours (that is, supply more labour) at a higher wage rate.

However, beyond a certain higher real wage and number of hours worked, leisure becomes more desirable and income effect outweighs substitution effect, and as a result supply of labour decreases beyond a certain higher wage rate.

In what follows we shall explain how we derive a supply curve of labour of an individual and of the economy as a whole in all these circumstances. Thus, whether an individual will supply more work- effort or less as a result of the rise in the wage rate depends upon the relative strengths of the income and substitution effects.

The changes in the work-effort or labour supplied by an individual worker due to the changes in the wage rate is illustrated in Fig. 33.1(a) To begin with, the wage line is AW1 the slope of the wage line indicates the wage rate per hour.
With wage line AW1, the individual is in equilibrium at point Q on indifference curve I1 and is working AL1 hours in a week. Suppose the wage rate rises so that the new wage line is AW2 with wage line AW2, the individual is in equilibrium at point R on the indifference curve I2, and is now working AL2 hours which are more than before.

If the wage rate further rises so that the new wage line is AW3, the individual moves to the point S on indifference curve I3 and works AL3hours which are more than AL1 or AL2. Suppose the wage rate further rises so that the wage line is AW4. With wage line AW4, the individual is in equilibrium at point T and works AL4 hours.
If points Q, R, S and Tare connected, we get what is called wage offer curve which shows the number of hours that an individual offers to work at various wage rates. It though it provides the same information as the supply curve of labour.

The supply curve of labour is obtained when the wage rate is directly represented on the Y-axis and labour (i.e. work effort) supplied at various w age rates on the X-axis reading from left to right. In Fig. 33.2 the supply curve of labour has been drawn from the information gained from Fig. 33.1. Let the wage line AW1 represent the wage rate equal to P1, wage line AW2 represents wage rate P2, wage line AW3 represents wage rate P3 and

wage line AW4 represent wage rate P4. It will be seen that as the wage rate rises from P1 to P4 and as a result the wage line shifts from AW1 to AW4 the number of hours worked, that is, the amount of labour supplied increases from AL1 to AL4.

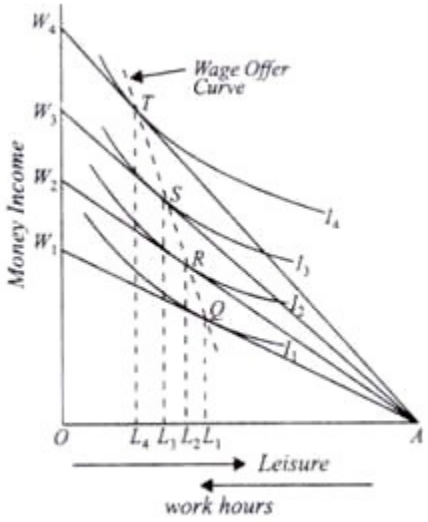


Fig. 33.1. Wage Offer Curve

As a result, the supply curve of labour in Fig. 33.2 is upward sloping. The indifference map depicted in Fig. 33.1 is such that the substitution effect of the rise in the wage rate is stronger than the income effect of the rise in the wage rate so that the work- effort supplied increases as the wage rate rises.

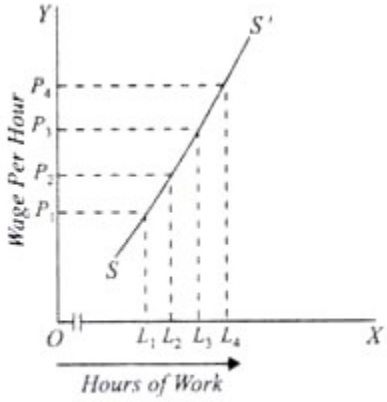


Fig. 33.2. *Upward Sloping Supply Curve of Labour*

Backward-Sloping Supply Curve of Labour:

But the supply curve of labour is not always upward sloping. When an individual prefers leisure to income, then the supply of labour (number of hours worked) by an individual will decrease as the wage rate rises. This is because in such a case income effect which tends to reduce the work effort outweighs the substitution effect which tends to increase the work effort.

In Fig. 33.3 such an indifference map is shown which yields a backward sloping supply curve of labour which indicates that the number of hours worked per week decreases as the wage rate rises. AW1, AW2, AW3 and AW4 are the wage lines when the wages rates are P1, P2, P3 and P4respectively.

Q, R, S and Tare the equilibrium points with the wage lines AW1, AW2, AW3 and AW4 respectively. It will be noticed from Fig. 33.3(a) that when the wage rate rises and as a consequence the wage line shifts from AW1 to AW4 the number of hours worked per week decreases from AL1 to AL4.

In Fig. 33.3(b) supply curve of labour is drawn with K-axis representing the hourly wage rate and X-axis representing number of hours worked per week at various wage rates. It will be seen from Fig. 33.3(b) as the wage rate rises from P1 to P4 the supply of labour (i.e., number of hours worked per week) decreases from OL1 to OL4. In other words, the supply curve of labour slopes backward, that is, slopes upward from right to left. It should be noted that it is the nature or pattern of indifference curves between income and leisure that yields backward sloping supply curve.

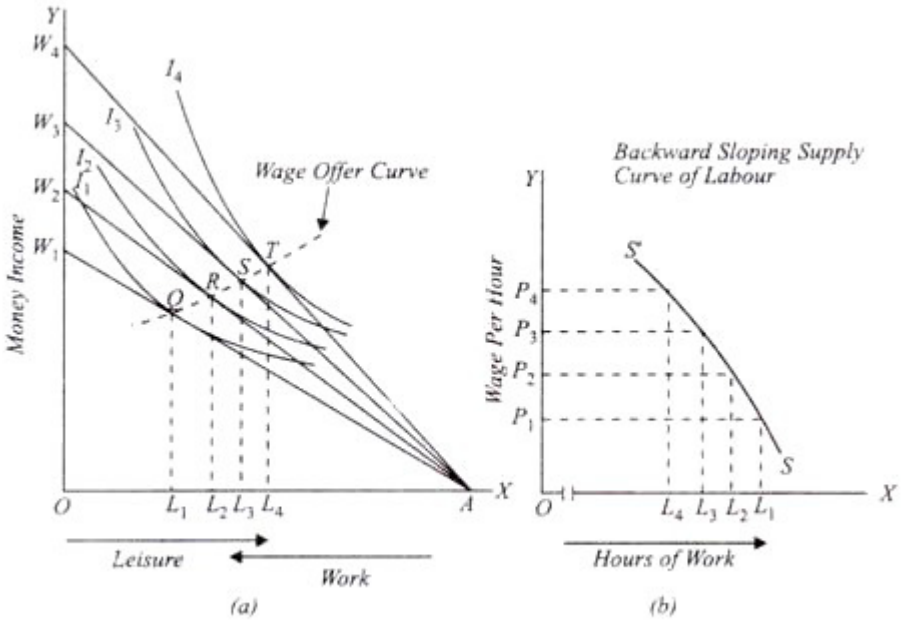


Fig. 33.3. *Backward Bending Supply Curve of Labour*

A glance at Fig. 33.3(a) and Fig. 33.3(b) will reveal that the nature of indifference curves in the two is different. As said above, the nature of indifference curves depend upon the relative preference between income and leisure.

In Fig. 33.3(a) indifference curves between income and leisure are such that the individual's preference for leisure is relatively greater than for income. In this case, when the wage rate rises the individual enjoys more leisure and accordingly reduces the number of hours worked per week.

But it sometimes happens that as the hourly wage rate rises from a very low level to a reasonably good level, the number of hours worked per week rises and as the hourly wage rate rises further, the number of hours worked per week decreases.

This may be the case of an individual who has some more or less fixed minimum wants for goods and services which he can satisfy with a certain money income. When the wage rate is so low that he is not earning sufficient money income, then to satisfy his more or less fixed minimum wants for goods and services, his preference for income will be relatively greater than that for leisure and, therefore, when the wage rate rises the individual will work more hours per week.

When the wage rate has risen to a level which is sufficient to yield a sufficient money income for satisfying his fixed minimum wants, then for further increases in wage rate the number of hours worked per week will decrease because now the individual can afford to have more leisure and also earn an income sufficient to meet his minimum wants for goods and services.

It follows from above that up to a certain wage rate the supply curve will slope upward from left to right and then for further increases in the wage rate the supply curve of labour will slope back-ward.

In Fig. 33.4(a) an indifference map along with a set of wage lines AW1, AW2, AW3 and AW4 (showing wage rates P1, P2, P3, P4 respectively) are shown. As the wage rate rises to P2 and hence the wage line shifts to AW2the number of hours worked by the individual per week increases but when the wage rate further rises to P3 and P4 and hence the wage line shifts to AW3 and AW4, the number of hours worked by the individual decreases. From Fig. 33.4(b) it will be explicitly seen that the supply curve of labour slopes upward to the wage rate P2 (that is, point K) and beyond that it slopes backward.

Supply Curve of Labour for the Economy as a Whole:

The supply curve of labour of a group of individuals or of the whole working force in the economy can be derived by summing up horizontally the supply curves of individuals. It may be noted that the supply curve of labour for the economy as a whole will be upward sloping or backward sloping depending upon whether the relative number of individuals having upward sloping supply curves is greater or less than those having backward sloping supply curves of labour. Further, different individuals will have backward sloping portion in their supply curve at different wage ranges, which creates difficulties in finding the nature of supply curve of the whole work force.

It is generally found that when the wage rate rises from the initially low level to a sufficiently good level, the total supply of labour to the economy as a whole increases (that is, supply curve

for the economy as a whole slopes upward to a certain wage rate) and for further increases in the wage rate, the total supply of labour to the economy as a whole decreases (that is, beyond a certain wage rate the total supply curve of labour slopes backward). Thus, the total supply curve of labour for the economy as a whole is generally believed to be the shape depicted in Fig. 33.3(b).

Determination of a Factor Price:

According to Marshall-Hicks version of marginal productivity theory of distribution, price of a factor is determined by demand and supply of a factor. Marshall and Hicks held that the price of a factor of production is determined by both the demand for and supply of the factor, but is be equal to the marginal revenue product of the factor.

Thus, in their view, price of the factor is not determined by the marginal revenue product but is, in equilibrium, equal to the marginal revenue product of the factor. We will discuss below the various determinants of the demand for a factor of production.

Further, we have seen above how the demand for a factor of production depends upon its marginal revenue product. We have also derived the demand curve for a factor of production of an industry. The supply curve of a productive factor is given by the curve showing the amounts of factor offered by the owners of the factor at various factor prices and it slopes upward to the right.

The supply curve of a factor for an industry depends upon the transfer earnings of the various units of the factor. The price of a factor is determined by the intersection of these demand and supply curves of the factor.

In other words, given the demand and supply curves of a factor, the price of the factor will adjust to the level at which the amount of the factor supplied is equal to the amount demanded. This is shown in fig. 32.12, where DD is the demand curve and SS is the supply curve of the factor. Only at price OP, quantity demanded is equal to the quantity supplied.

The price OP is thus determined. The price of a factor cannot be determined at a level higher than or lower than price OP, i.e., other than the price where amount demanded is equal to the amount supplied. For example, the price cannot be established at the level OP', since at price OP' the quantity offered to supply (P' H) of the factor is greater than the quantity demanded (P'S) of it.

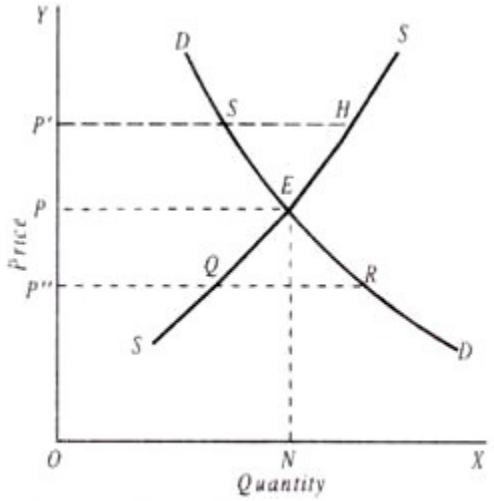


Fig. 32.12. *Equilibrium between demand for and supply of a factor determines its price.*

As a result, the competition between the owners of the factor will force down the price to the level OP where the quantity supplied is equal to the quantity demanded. Likewise, the price of the factor cannot be determined at the level OP", since at price OP" the quantity demanded of the factor is greater than the quantity offered to supply of it. Consequently, the competition among the producers or entrepreneurs demanding the factor of production will push up the price to the level OP.

Theories of wages and rent

Wage Determination under Perfect Competition in the Labour Market!

The analysis of wage determination under conditions of perfect competition is exactly the same as given there. In the case of wage determination, it should be remembered that average factor cost (AFC) becomes average wage (AW) and marginal factor cost becomes marginal wage (MW).

When there prevails perfect competition in the labour market, wage rate is determined by the equilibrium between the demand for and supply of labour. Demand for labour is governed by marginal revenue product of labour (MRP).

Wage rate determined by demand for and supply of labour is equal to the marginal revenue product of labour. Thus, under perfect competition in labour market, a firm will employ the amount of labour at which wage rate = MRP of labour.

As regards the supply of labour, it may be pointed out that supply of labour to the whole economy depends upon the size of population, the number of workers available for work out of a given population, the number of hours worked, the intensity of work, the skills of workers and their willingness to work.

The size of population depends upon a great variety of social, cultural, religious and economic factors among which wage rate the size of population rises or falls with a rise or fall respectively in the wage rate, and from this they had deduced a law called “Iron Law of Wages”. But the history has shown that rise in the wage rate may have just the opposite effect on the size of population from what the subsistence theory of wages conceives.

Moreover, the historical experiences have revealed that the size of population is dependent upon the great variety of social, cultural, religious and economic factors among which wage rate plays only a minor determining role. However, the willingness to work may be influenced greatly by the changes in the wage rate.

On the one hand, as wages rise, some persons will do not work at lower wages may now be willing to supply their labour. But, on the other hand, as wages rise, some persons may be willing to work fewer hours and others like women may withdraw themselves from labour force, since the wages of their husbands have increased.

Thus there are two conflicting responses to the rise in wages and therefore the exact nature of supply curve of labour is difficult to ascertain. It is, however, generally held that the total supply curve of labour rises up to a certain wage level and after that it slopes backward. This is shown in Fig. 33.5. As wage rate rises up to OW, the total quantity supplied of labour rises, but beyond OW, the quantity supplied of labour decreases as the wage rate is increased.

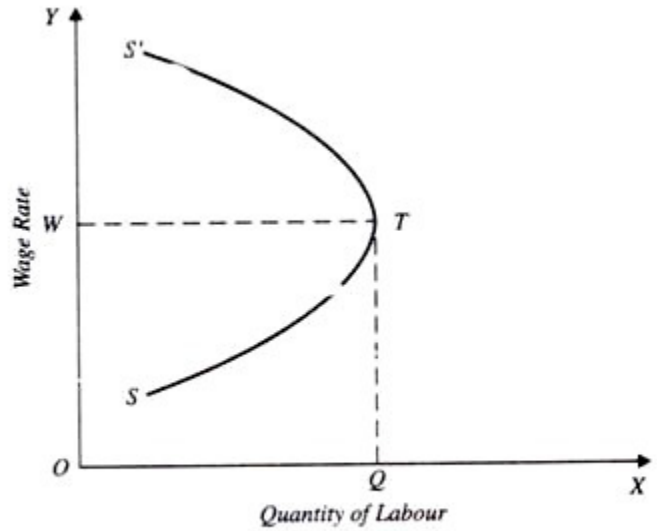


Fig. 33.5. *Beyond a certain wage rate, supply curve of labour is backward sloping.*

But so far as supply of labour to a particular industry is concerned it slopes upward. As the wages in an industry are increased labourers from other industries will shift to this industry. The elasticity of the supply curve of labour to an industry will also depend upon the transfer earnings of labourers.

Similar is the case of supply of workers to a particular occupation. If wages in one occupation go up, some persons from other similar occupations would be attracted to it and thus the supply of labour to that occupation will increase.

Thus because of occupational shifts, the supply curve of labour to a particular occupation is elastic and rises upwards. The long-run supply curve of labour is more elastic than the short-run supply curve since, in the long-run, besides the occupational shift in the labour force, new entrants in the labour market (who are now children) can also adopt the occupation by getting training for it in the very first instance.

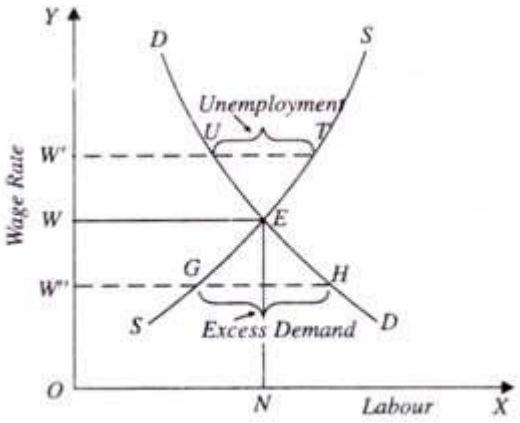


Fig. 33.6. *Determination of Wages*

How the wage rate is determined by demand for and supply of labour is shown in Figure 33.6 where DD represents the demand curve for labour and SS represents its supply curve. The two curves intersect at point E. This means that at wage rate OW, quantity demanded of labour is equal to quantity supplied of it.

Thus, given the demand for and supply of labour wage rate OW is determined and at this wage rate labour market is cleared. All those who are willing to work at the wage rate OW get employment. This implies that there is no involuntary unemployment and full employment of labour prevails.

It is important to note that there will be no equilibrium at any wage rate higher or lower than OW. For example, at a higher wage OW c supply of labour exceeds quantity demanded of it and as a result involuntary unemployment equal to UT emerges. Given the competition among labourers, this unemployment would push down the wage rate to OW.

On the other hand, at a lower wage rate OWC the demand for labour exceeds the amount of labour which people are willing to supply. In view of the excess demand for labour, the wage rate will go up to OW where the demand for labour equals the amount supplied of it. Thus wage rate OW will finally settle in the labour market.

Though wage rate is determined by demand for and supply of labour, it is equal to the value of marginal product of labour. This is so because in order to maximise its profits, a firm will equalise the wage rate with the value of the marginal product (VMP) of labour.

If the firm stops short of this equality, the value of the marginal product (VMP) will be greater than the wage rate which would imply that there was still scope for earning more profits by increasing the employment of labour. On the other hand, if the firm goes beyond and employs more labour than the equality point, the value of the marginal product of labour will become smaller than the wage rate.

As a result, the firm will incur losses on workers employed beyond the equality point and it will therefore be to the advantage of the firm to reduce the employment of labour. Thus in order to maximise profits and be in equilibrium the firm working under conditions of perfect competition in the factor and product markets will employ so much labour that the wage rate is equal to the value of marginal product (or marginal revenue product) of labour.

It will be seen from Fig. 33.6 that the firm working in perfect competition in the labour market will take the wage rate OW as given and equates it with value of marginal product (VMP) and employs OM labour. To sum up, the wage rate is determined by demand for and supply of labour, but is equal to the value of marginal product (or marginal revenue product) of labour.

It is worth mentioning that when the firms are in equilibrium by equating value of marginal product of labour to the wage rate, they may be making profits or losses in the short run. Consider Figure 33.7 which depicts the equilibrium position of the firm in the short run.

It will be seen from Fig. 33.7 that at the wage rate OW, the firm is in equilibrium when it is employing OM amount of labour. It will be further seen that the firm is making super-normal profits since in equilibrium employment OM, average revenue product of labour (ARP) which is equal to RM is greater than the wage rate OW (=ME).

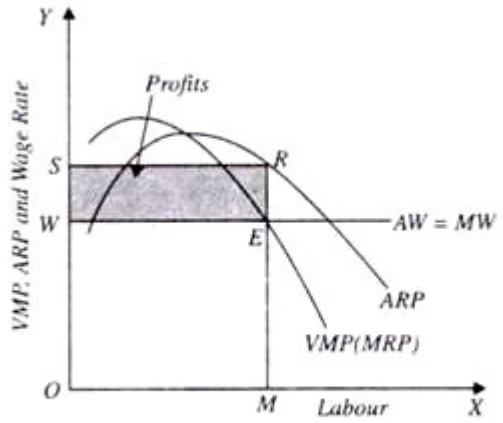


Fig. 33.7. *Equilibrium of the Firm with Super-Normal Profits*

This can happen in the short run, but not in the long run. When firms are earning super-normal profits in the short run more entrepreneurs will enter the market in the long run to purchase labour to produce the products made by it.

Entry of more entrepreneurs to the labour market will compete away the super-normal profits. As a result, the demand for labour will rise and the demand curve for labour will shift outward to the right, which will raise the wage rate and will eliminate the profits.

It should be carefully noted that a firm will not employ labour if wage rate exceeds average product of labour. Unlike machines labour is a variable factor and if its employment is not sufficient to recover its wages, it will be laid off even in the short run.

Consider Fig. 33.8 at wage rate OW_1, a firm will be incurring losses if it employs ON_1 amount of labour at which wage rate OW_1 = VMP = MRP. Therefore, at wage rate OW_1, the firm will not employ labour.

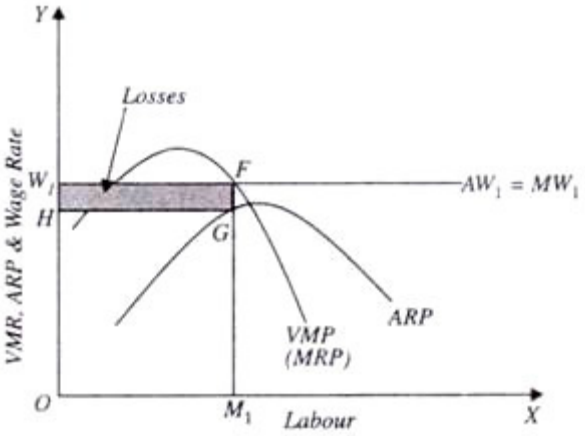


Fig. 33.8. *A firm will not employ labour at wage rate* OW_1

To sum up, in the long run, the equilibrium between demand for and supply of labour is established at the level where the wage rate of labour is equal to both the VMP (MRP) and ARP of labour and thus the firms earn only normal profits. The long-run equilibrium position of the firm working under perfect competition is depicted in Fig. 33.9 where it will be seen that the firm is in equilibrium at ON level of employment (i.e., at point T) at which wage rate is not only equal to value of marginal product but also average revenue product of labour.

Given the ARP and v MP curves, if the wage rate is lower than OW (= N.T.), the number of firms employing labour will change causing changes in demand for labour. As a result of this, the wage rate will ultimately settle at the level OW or NT.

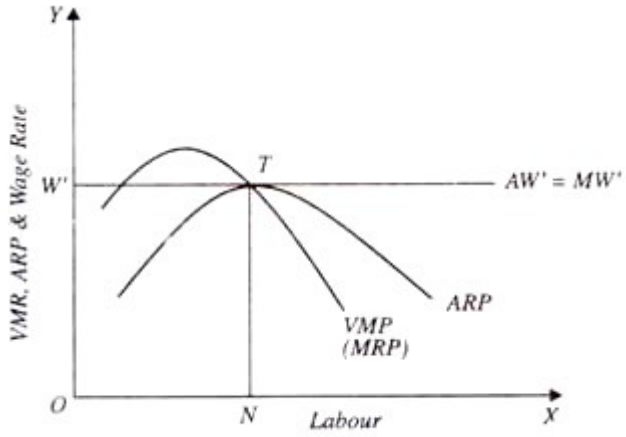


Fig. 33.9. *Long-Run Equilibrium of the Firm*

Changes in Equilibrium Wage Rate:

We have explained above how through interaction of demand for and supply of labour determines the market wage rate. Now, if any of the factors causes a shift either in demand curve or in supply curve of

labour, the equilibrium will be disturbed causing a change in the wage rate. Both demand for and supply of labour can shift.

Shift in Demand Curve for Labour:

Demand for labour increases if its productivity increases, say through technological improvement. This will cause a rightward shift in the demand curve for labour and as shall be seen from Fig. 33.10 this will bring about a rise in the wage rate.

Similarly, if the demand for a product, say of a textile cloth, increases, the demand for textile workers being a derived demand will also go up. This too will cause an upward shift in the demand for textile workers causing a rise in their wage rate.

Further, if the price of a textile cloth rises, it will increase the value of marginal product, (VMP = Price x MPP) of textile workers. With this higher value of marginal product, it will become profitable for the producer to hire more workers. As a result, demand for textile workers will increase causing a rise in their wage rate.

Conversely, if the demand for a product decreases or its price falls, it will induce a reduction in the demand for labour. Given the supply curve, decrease in demand for labour will bring about reduction in wage rate.

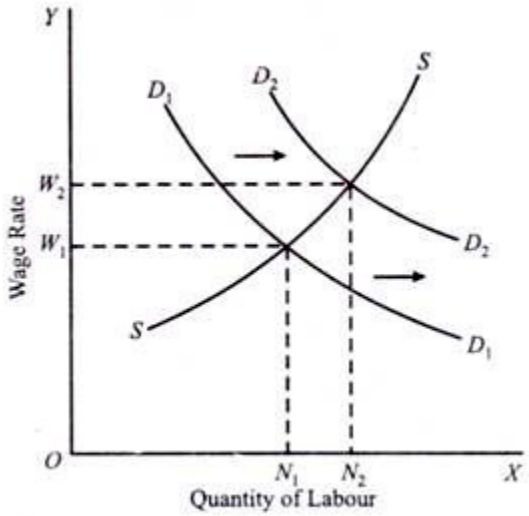


Fig. 33.10. *Effect of Increase in Labour Demand on the Wage Rate*

Shift in Labour Supply Curve:

If the factors determining labour supply undergo a change, the supply curve of labour will shift causing a change in the equilibrium wage rate. The supply of labour to a given occupation or industry will decrease if the wages in alternative occupations or industries go up.

In this case at every wage rate less labour will be offered to a given occupation or industry. This will cause a shift in the supply curve of labour to the left and, given the demand curve for labour, result in rise in the wage rate. This is shown in Figure 33.11.

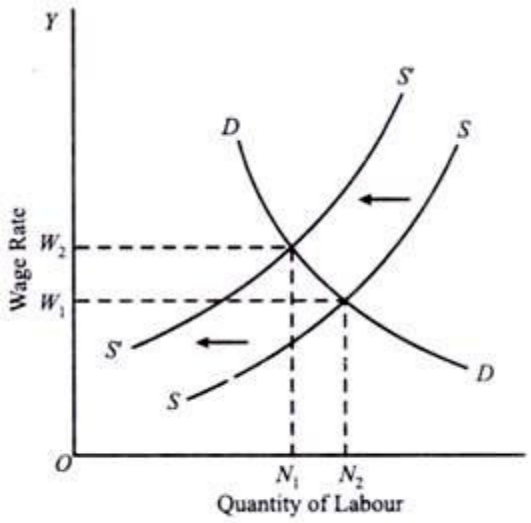


Fig. 33.11. *Effect of Decrease in Labour Supply on Wage Rate*

Similarly, if workers valuation of their leisure time changes, the supply curve of labour will shift. If most workers start attaching a higher value to their leisure time spent with their families, the less labour will be supplied to an occupation or industry. This will cause a shift in the labour supply curve to the left resulting in higher wage rate as is illustrated in Fig. 33.11.

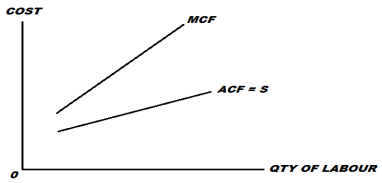
Conversely, if for any reason, the wage rate in alternative occupation fall or workers' preferences for leisure declines, supply of labour to a given occupation or industry will increase at every wage rate. This will cause a shift in the supply curve of labour to the right and result in-fall in the wage rate.

Wage determination imperfect labour market

In the real world, markets are not perfect and therefore demand and supply forces are not the only determinant of Wage Rates. Market imperfections exist which divert the market outcome away from competitive equilibrium. First of all assuming that all labours are homogenous is wrong , in real life labours are different with each other due to innate factors, training and experience factors. Due to the differences mentioned their productivity levels differ with each other and so is their bargaining power. Supply of labours due to existence of barriers in the form of occupational and geographical immobility and imperfect knowledge remains limited as compared to demand. Existence of trade unions and government also play an important role and in most of the cases make labour's say strong. Number of firms to employ these workers is relatively smaller but their size large. Monopsonies (single large buyer)

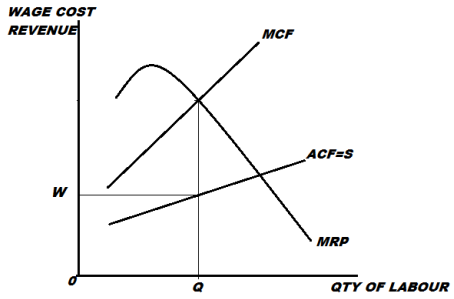
and oligopsonies (few large buyers) may exist which are in great bargaining position. Together as a result both the labours and firms have influence on the wage rate they are wage makers.

Since labour is also a wage maker therefore in order to employ an additional labour or to attract a new one, firm will have to offer a higher wage rate. It means every time an additional labour is hired additional cost will be greater than average. In other words Marginal cost of factor (MCF) will be greater than Average cost of factor (ACF). Lets suppose initially 10 labours are employed at Rs 500, total factor cost (TCF) therefore is (500 x 10), Rs 5000. Now to employ an additional labour firm increases wage rate to Rs 600. TCF now is (600 x 11) Rs 6600, ACF is Rs 600 and MCF is RS 1600. Firm again increases wage rate to Rs 700. TCF now is (700 x 12) Rs 8400, ACF is Rs 700 and MCF is Rs 1800. So we can see that as number of labours will increase MCF will increase at a greater rate than ACF. Note ACF = TCF/ Total No. of labours while MCF = Change in TCF/ Change in no. of labours. These simple calculations show that unlike a perfect labour market where ACF = MCF always, in an imperfect labour market MCF > ACF throughout. Both ACF curve (supply curve of labour) and MCF curve are upward sloping.



A monopsony employer:

When there is a single large buyer of labour in a specific labour market, it is a wage maker. This wage maker therefore is in a position to pay a lower wage rate than what could have been when labour market was relatively competitive. Monopsony being a monopoly would maximize its profits by employing factors of production till the quantity where MRP = MCF.

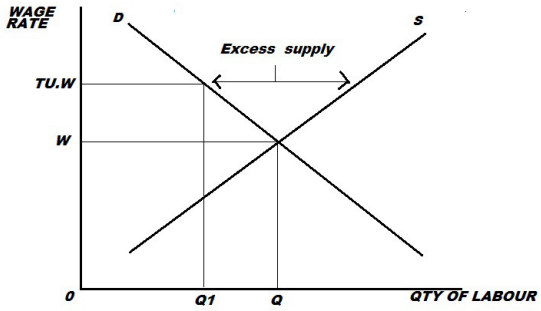


A monopsony employer will employ Q1 quantity of labours because its profits are maximized (MRP = MCF) at Q1. At this quantity firm will pay a wage rate W1 which is below W2 a wage rate which will be paid by an individual firm in perfect labour market. For a firm in perfect labour market ACF = MCF at every unit of worker employed therefore profit maximizing quantity of labours would be Q2 and wage rate will be W2. So we can say that monopsony employer has the power to influence wage rate down below the market wage rate.

Trade union impact:

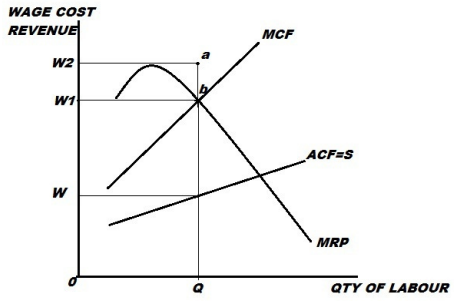
Trade unions play an important role in setting quantity of workers employed and the wage rate. Trade union is empowered by weapons strikes, picketing, work to rule (no co operation with management) and government. On the backup of this power trade union negotiates for higher wage rate with their employers. Their success in raising wage rate depends on their bargaining power. In general conditions a trade union faces a trade-off between higher wage rate and quantity of workers employed. If trade union

will demand higher wage rate cost of production of the firm will increase and firms demand for workers may contract.



It can be seen from the diagram that for the firm in imperfect market equilibrium wage rate is W at quantity Q . If TU will demand a wage rate W1, firm's demand for workers would contract and firm would only employ Q1 quantity of workers. As a result sooner or later some workers (Q1 to Q) would be made redundant.

When the TU is a monopoly (single and strong) situation is different. When a monopoly TU is faced by a monopsony employer it is called a Bilateral Monopoly. Strong TU can force its employers to pay higher wage rate together with same quantity of workers employed. In such a case we can find out the maximum (the highest) wage rate which the firm can pay maintaining the same quantity of workers.



A monopsony firm will employ Q quantity of workers at wage rate W, where its MCF = MRP. If a strong trade union asks for a higher wage rate forcing the firm to maintain same quantity of workers, the highest wage rate which the firm can afford to pay is W1. Any wage rate above W1 can not be given because at a higher wage rate MCF would exceed MRP, firm will move away from its profit maximizing stance. We can see that at point a , if firm pays wage rate W2, wage paid to each worker will exceed its MRP as a result firm will be incurring a loss equal to ab. So it can be concluded that maintaining a quantity Q , the wage rate would settle somewhere between W and W1 in the case of Bilateral Monopoly.

Modern theory of Rent by Joan Robinson

Definition of 'economic rent'

An excess payment made to or for a factor of production over and above the amount expected by its owner. Economic rent is the positive difference between the actual payment made for a factor of production (such as land, labor or capital) to its owner and the payment level expected by the owner, due to its exclusivity or scarcity. Economic rent arises due to market imperfections; it would not exist if markets were perfect, since competitive pressures would drive down prices. Economic rent should not be confused with the more commonly used “rent,” which simply refers to a payment made for temporary use of an asset or property.

Relation between rent and price

Rent is depend on the price of the product not price depend on the rent. As Recordo puts it,”price is high not because rent is high but rent is high because price is high”.

Sec A: Perfectly Inelastic Supply

The simplest example is that of a person with a unique talent, like a famous show business megastar, such as Dame Edna Everage (see Figure 2). The quantity of Dame Ednas is fixed. There is only one: she is unique. As a result, her income is determined entirely by demand, and is entirely economic rent. The more popular she is, the higher the demand for her performances and the higher the income she can command. Thus megastars can earn very high incomes.

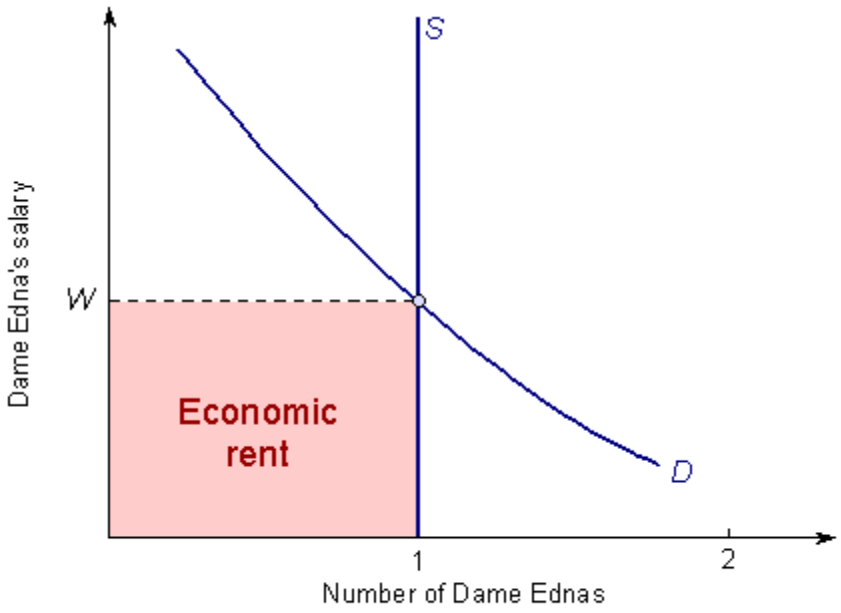
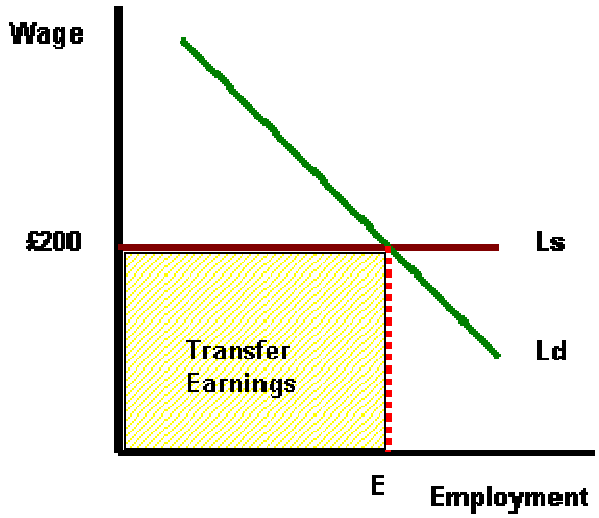


Figure 2 The market for Dame Edna Everage

Section B –Perfectly Elastic Supply

Transfer earnings are defined as the minimum reward required to keep labour in its present occupation. This is shown by the area under the labour supply curve.



In the diagram above there is a perfectly elastic supply curve to a particular labour market. The ruling equilibrium wage is at £200 per week. The wage that workers receive is equal to the minimum they are prepared to supply their labour at. Thus the entire factor earnings (shaded in yellow) are transfer earnings.

Section C- Elastic Supply

transfer earnings are what a factor must earn to prevent it from moving to an alternative use. In the case of labour, it is what people must be paid to persuade them to stay in their present job. Economic rent is anything over and above transfer earnings.

For example, take the case of Mary Jones. She is the manager of a high street store and earns $80 000 per year. She could earn $60 000 in another job and would indeed transfer to that other job if her salary were cut below $60 000. Thus her transfer earnings are $60 000. The remaining $20 000 is her economic rent. Economic rent equals total earnings minus transfer earnings.

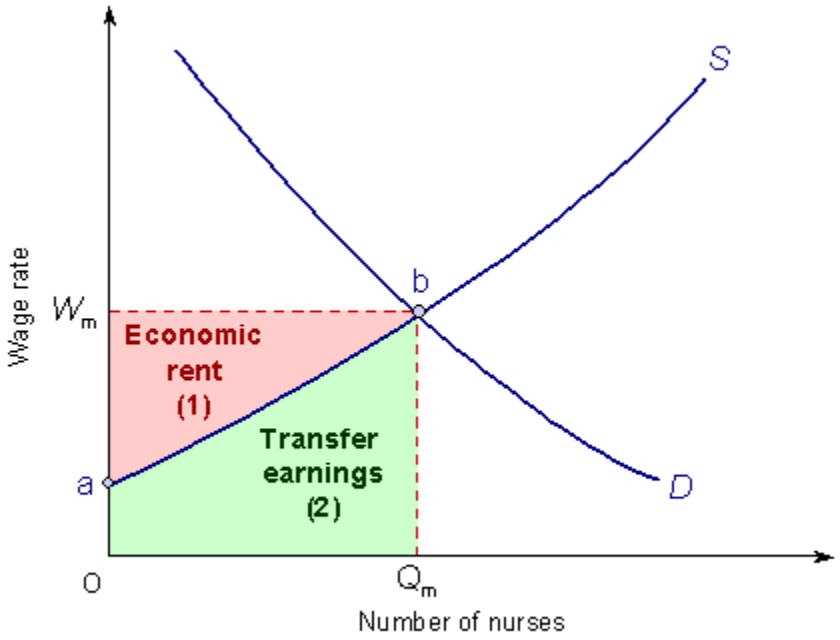


Figure 1 The market for nurses

Now take the case of a market supply curve – say, the market for nurses. This is illustrated in Figure 1. Starting at point a and moving towards point b , as the wage rate is raised so more nurses are attracted to the profession. At each higher wage, the new nurses attracted are getting just enough to persuade them to transfer into the profession: the wage for them is entirely transfer earnings. But nurses already in the profession will get economic rent; after all, they are now getting more than the minimum necessary to keep them in the profession.

Workers' economic rent is thus the difference between the actual wage rate and the point on the supply curve at which they entered the market.

Thus at the market wage rate W m in Figure 1, the total economic rent of all those employed is shown by area 1 – the area above the supply curve. Area 2 shows transfer earnings.

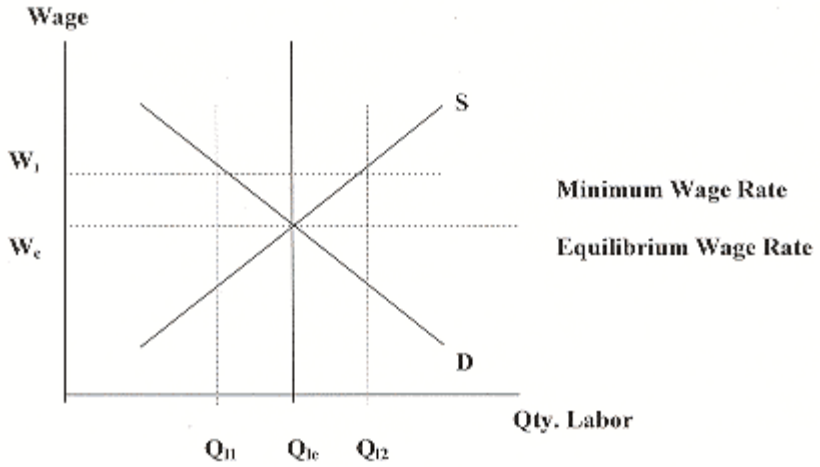
The less elastic the supply curve, the greater will be the proportion that is economic rent. Why? The bigger the wage increase necessary to attract extra workers, the more economic rent existing workers will gain.

Government Intervention in factor Market

Minimum Wage Laws:

The Minimum Wages Act 1948 is an Act of Parliament concerning Indian labour law that sets the minimum wages that must be paid to skilled and unskilled labours. The Indian Constitution has defined a 'living wage' that is the level of income for a worker

which will ensure a basic standard of living including good health, dignity, comfort, education and provide for any contingency. However, to keep in mind an industry's capacity to pay the constitution has defined a 'fair wage'.[1] Fair wage is that level of wage that not just maintains a level of employment, but seeks to increase it keeping in perspective the industry's capacity to pay. To achieve this in its first session during November 1948, the Central Advisory Council appointed a Tripartite Committee of Fair Wage. This committee came up with the concept of Minimum Wages. A minimum wage is such a wage that it not only guarantees bare subsistence and preserves efficiency but also provides for education, medical requirements and some level of comfort.[1] India introduced the Minimum Wages Act in 1948,[2] giving both the Central government and State government jurisdiction in fixing wages. The act is legally non-binding, but statutory. Payment of wages below the minimum wage rate amounts to forced labour. Wage Boards are set up to review the industry's capacity to pay and fix minimum wages such that they at least cover a family of four's requirements of calories, shelter, clothing, education, medical assistance, and entertainment. Under the law, wage rates in scheduled employments differ across states, sectors, skills, regions and occupations owing to difference in costs of living, regional industries' capacity to pay, consumption patterns, etc.



The law sets up a flooring price for wages.
The resulting unemployment will be short term.

Land Market

Urban land value and land tax

A land value tax (or site valuation tax) is a levy on the unimproved value of land only. It is an ad valorem tax on land that disregards the value of buildings, personal property and other improvements. A land value tax (LVT) is

different from other property taxes, which are taxes on the whole value of real estate: the combination of land, buildings, and improvements to the site.

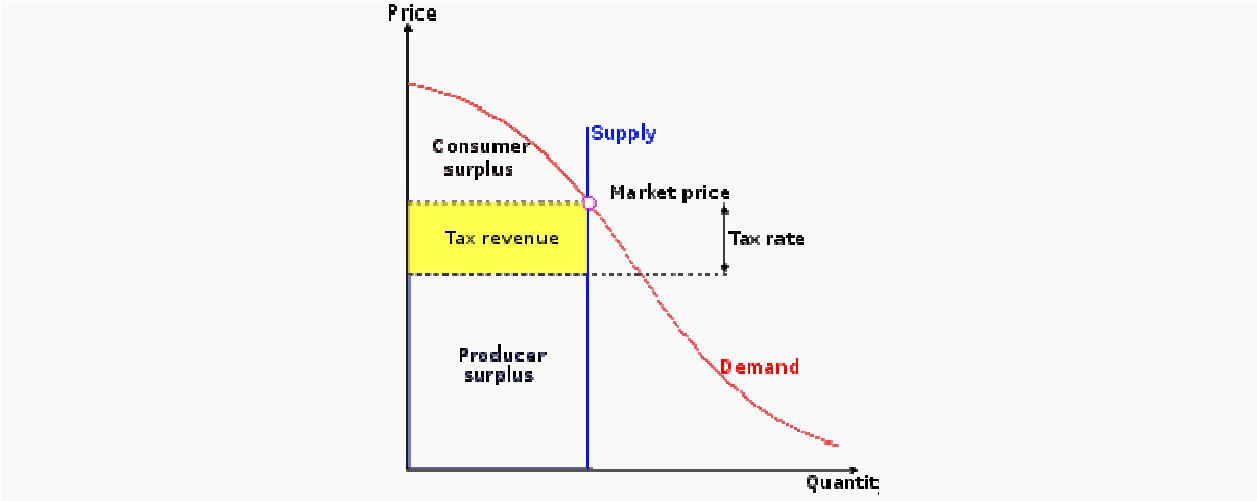
Although the economic efficiency of a land value tax has been established knowledge since Adam Smith,[1] it was perhaps most famously promoted by Henry George. In his best selling work Progress and Poverty (1879), George argued that when the site or location value of land was improved by public works, its economic rent was the most logical source of public revenue.[2] A land value tax is also a progressive tax, in that it would be paid primarily by the wealthy, and would reduce economic inequality.[3] The philosophy that land rents extracted from nature should be captured by society and used to replace taxes is often now known asGeorgism.

Land value taxation is currently implemented throughout Denmark,[4] Estonia, Russia, Hong Kong, Singapore, and Taiwan. The tax has been applied in subregions of Australia (New South Wales), Mexico (Mexicali), and the United States (Pennsylvania). Land value taxation is known as site-value tax, LVT, split rate tax, and site-value rating.

The value of the land (and many other macro-economic quantities too) can be expressed using two independent concepts:

- The value, or, strictly speaking, the price, of a particular site of land is what a fair exchange brings in terms of money during an agreed trade or transaction between two parties, one of whom is the landowner. (This definition is conditional on no LVT being applied, because when it does apply, the exchange value is affected.)

- The land value of the site is also directly related to its demandable ground-rent, which is its potential for use in either production or residential capacities. The capitalization of this rent gives the land value too. Land which is not useful has no value and is called marginal land, as explained by British economist David Ricardo in 1816.



A supply and demand diagram showing the effects of land value taxation. If the supply of land is fixed, the burden of the tax will fall entirely on the land owner, with nodeadweight loss.

Most taxes distort economic decisions. If labor, buildings or machinery and plants (factories) are taxed, people are dissuaded from constructive and beneficial activities, and enterprise and efficiency are penalized due to the excess burden of taxation. This does not apply to LVT, which is payable regardless of whether or how well the land is actually used. Because the supply of land is inelastic, land rents depend on what tenants are prepared to pay, rather than on the expenses of landlords, and so LVT cannot be directlypassed on to tenants. The direct beneficiaries of incremental improvements to the surrounding neighborhood by others would be the land's occupants, and absentee landlords would benefit only by virtue of price competition amongst present and prospective tenants for those incremental benefits; the only direct effect of LVT on prices in this case is to lower the unearned increment (reduce the amount of the socially generated benefit that is privately captured as an increase in the market price of the land). Put another way, LVT is often said to be justified for economic reasons because if it is implemented properly, it will not deter production, distort market mechanisms or otherwise create deadweight losses the way other taxes do. Nobel Prize winner William Vickrey believed that "removing almost all business taxes, including property taxes on improvements, excepting only taxes reflecting the marginal social cost of public services rendered to specific activities, and replacing them with taxes on site values, would substantially improve the economic efficiency of the jurisdiction." A correlation between the use of LVT at the expense of traditional property taxes and greater market efficiency is predicted by economic theory, and has been observed in practice.

Proponents, such as Fred Foldvary, state that the necessity to pay the tax encourages landowners to develop vacant and underused land properly or to make way for others who will. They state that because LVT deters speculative land holding, dilapidated inner cityareas are returned to productive use, reducing the pressure to build on undeveloped sites and so reducing urban sprawl. For example Harrisburg, Pennsylvania in the United States has taxed land at a rate six times that on improvements since 1975, and this policy has been credited by its long-time

mayor, Stephen R. Reed with reducing the number of vacant structures in downtown Harrisburg from around 4,200 in 1982 to fewer than 500. LVT is an ecotax because it ostensibly discourages the waste of locations, which are a finite natural resource.

LVT is an efficient tax to collect due to its immobility. Unlike labour and capital, land cannot move to escape tax. Many urban planners claim that a land value tax is an effective method .

Rent Control:

Rent controls are another example of maximum price that Government fixes on the rental price of housing units. Under rent control, the Government fixes the rent per month per housing unit of a standard size which is below the aquarium rent that would otherwise prevail in the market.

The maximum rent fixed by the Government helps the tenants, who generally belong to lower and middle income groups and intend to prevent their exploitation by rich landlords who would charge a very high market determined rates of rent. Market determined equilibrium rent rate happens to be high because demand for rental housing tends to be relatively greater than supply of it.

In several important cities such a New York, London, Mumbai, Delhi. Government has imposed rent control to help the lower and middle income people by ensuring rental houses at fair rents. In Delhi under Delhi Rent Control Act, 1958 which has now been amended by the recently passed New Rent Control Act 1995.

This law specifies some monthly rental rates of housing units of some standard sizes above which the landlord cannot charge rent. Besides, the landlord cannot evict the tenants easily except under some conditions laid down in the law. It is however important to understand both the short-run and long-run effects of rent control.

Economists often point out the adverse effects of rent control and hold the view that it is highly inefficient way of helping the poor and lower middle class people. The adverse effects of rent control are evident only in the long run because it always takes time to construct new housing units/ apartments and also for the tenants to adjust to the rent and housing accommodation available on rent.

So the long-run effect of rent control is different from the short run. In the short run the landlords have almost a fixed number of housing units/apartments to give on rent. Therefore, the supply curve of rental units is inelastic in the short-run.

On the other hand, people searching for rental- housing units are also not very responsive in the short run as it always takes time for them to adjust their housing arrangements. Thus, even demand for rental housing in relatively inelastic in the short-run.

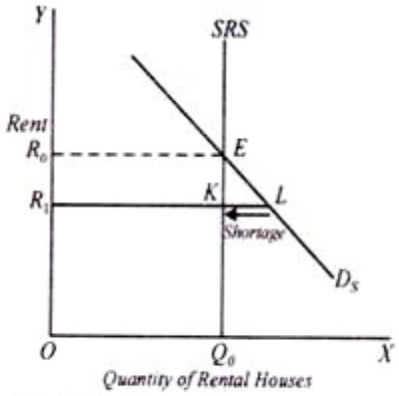


Fig. 25.3. *Effect of Rent Control in the Short Run*

Therefore, short-run supply curve of housing units is perfectly inelastic at Q_0 number of housing units available for renting. D_s is the short-run demand curve which is also relatively inelastic. If left free to the market force, rent equal to R_0 will be determined at which there is equilibrium between demand and supply.

Suppose R_0 is too high for the poor and middle class people to pay. To help them, government fixes ceiling on rent at R_1 It will seen from Figure 25.3 that at R_1 people demand R_XL housing units whereas supply of them remains at R_1K or OQ_1. Thus KL shortage of housing units has emerged since the demand and supply of housing units in the short run is inelastic, shortage caused by rent control is small. The main effect of rent control in the short-run is to reduce rents. Although in the short run, landlords cannot do much to the lowering of rent through control, further investment in constructing houses and apartments by them will be reduced causing reduction in the supply of rental houses in the long run.

In addition to this, the landlords will not spend any money one pairs and maintenance of rental houses when rents are lowered. These steps will ultimately lead to the poor quality of rental houses and apartments.

Thus, in the long run, rent control has an important effect on the availability or supply of rental houses and their quantity. It will be seen from Fig. 25.4 that at the lower controlled rent OR_1 the

quantity demanded of rental housing increases to OQ_2 and the quantity supplied of rental housing units falls to OQ_1.

Thus, fixation of lower controlled rent OR_1 results in increase in the quantity demanded and decrease in the quantity supplied of rental houses and thereby leads to the emergence of the large

shortage of rental houses equal to Q_1Q_2 or KL as will be see from Fig. 25.4. The greater the elasticity of supply and demand for rental housing in the long run, the greater will be the shortage of rental housing units as a result of imposition of rent control act.

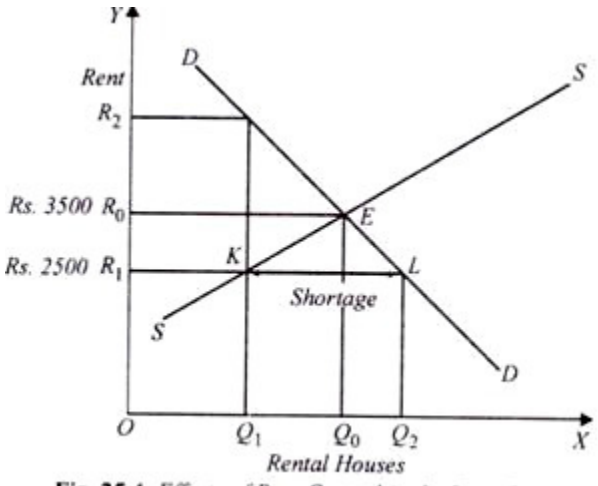


Fig. 25.4. *Effect of Rent Control in the Long Run*

It may be noted that this shortage of rental housing represents the conditions of excess demand for rental housing. An important question is whether fixation of maximum rent which is lower than the equilibrium rent can be effectively enforced when conditions of excess demand or shortage of rental housing units emerges.

Of course, no one can openly or explicitly charge a rent higher than the controlled rate. However, the emergence of the conditions of excess demand or shortage of rental housing will tend to put upward pressure on the actual rents received.

Due to the excess demand conditions landlords have devised various ways to circumvent the rent control act and charge higher actual rents. Consider Fig. 25.4 where it will be seen that at the controlled rent OR_1 of rental housing the quantity supplied of rental housing is OQ_1. Further, for OQ rental housing units tenants are willing to pay rent equal to OR_2.

Under these conditions of excess demand and shortage of rental housing units, landlords tend to extract side payments from tenants, though explicitly they charge controlled rent. For example, in Delhi and New York, two of the important world cities where rent control law operates,

landlords require tenants to make a large non-refundable pay deposits or a large advance payments adjustable against monthly rents.

Further, landlords may also require from tenants to make costly fittings or get expensive wood work done in the rental houses as a condition for rent and further also requiring them to pay for

the repairs and maintenance of the rental housing units. All these ways of evading the rent control act have been observed.

Unless the law explicitly prohibits such practices, they will be operating and will have the effect of nullifying the rent control policy. That is tenants will pay controlled rent OR, explicitly but extra expenditure and payments they are required to incur may add up to R^R_0 per month so that the actual effective monthly rent may amount to the equilibrium rent OR_0.
It is evident from above that the consequence of rent control, like that of any other price control, is the emergence of shortage. However, in case of shortage of rental housing units those who are unable to get them will make efforts to make other living arrangements.

They may decide to live in other cities or satellite towns which are not covered by rent controls. Further, the disappointed seekers of rental housing may turn to the construction of their own self-occupied houses. But this requires a lot of finance which have to be arranged by them.

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