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LESSON NO. 2.1 AUTHOR : DR. UPINDERJIT KAUR

PRICE DETERMINATION UNDER PERFECT COMPETITION

Structure

2.1.1 Objectives

In this lesson, you will get to learn about-

- The meaning of perfect competition
- The Features of perfect competition
- Equilibrium of the firm and industry under perfect competition.

2.1.2 Introduction

By the word competition we mean the action of endeavouring to gain what another individual or firm endeavours to gain at the same time. For example, when two or more individuals want to buy the same commodity they are said to compete among themselves. Similarly, when there are two or more sellers of a commodity they will compete with each other in order to sell a large quantity of their commodity. This is the ordinary meaning of competition. Thus, competition would become perfect or pure when all the competing buyers and sellers buy and sell the commodity at the same price and are unable to change that price by their individual actions. This would be possible when the following conditions are satisfied:

(i) Large number of buyers and sellers:
(ii) Homogeneous or identical product.
(iii) Perfect knowledge about price prevailing in the market.
(iv) Freedom of entry into and exit from the industry for firms and for factors of production.
(v) Non-existence of transport costs.

Thus, purely competitive industry comprises a large number of independent firms producing a standardized product. Pure competition assumes that firms and resources are mobile between different industries. No single firm can influence output at that price. It can sell any amount of output at that prevailing price. Price, therefore, equals marginal revenue.

2.1.3 Features of Perfect Competition

We now discuss **main features** of perfectly competitive market, one by one in detail:-

(i) Large Number of Buyers and Sellers : For the competition to be perfect, the number of buyers and sellers must be very large. If the number is small, the buyers and sellers would be able to change price by their individual action. This fact we can illustrate with the help of an example.

Suppose the number of sellers of bread in the market is only ten and each one of them supplies one thousand breads every day. The total supply of all of them taken together is ten thousand breads. Suppose the demand in the market is also for ten thousand units of breads. By this balance between demand and supply of breads a single price would be determined. Now if any one of the sellers of breads decide to double his supply, he can change the price in the market. The additional supply, when the demand for bread is the same, can be sold only at a lower price, thus, individual seller is able to change the price by his individual action.

But this would not be possible when the number of sellers is very large. If number of sellers in the market is one thousand and each of them is selling only ten breads daily then total supply of breads is ten thousand breads. Now if one of the sellers decides to double his supply then the total supply in the market becomes ten thousand ten breads. An increase by ten breads is only an insignificant part of the total supply and so this action of the seller will not make any effect on the price. Hence this is the importance of the large number of sellers in perfect competition. The case of consumers can also be explained similarly.

(ii) Homogeneous Product : Second condition for competition to be perfect is that the product brought and sold is homogeneous or identical. By identical product, we mean that all the units of that product are similar in every respect so that the consumer finds no reason to prefer one to the other product. For example, if the breads produced and sold in the market are of the same quality or size and bear the same label on them they would be sold at the same price. But if there is some difference in quality or size under which they are sold, a single price would not be possible. There will be as many prices as qualities and brands of bread.

(iii) Perfect Knowledge : Perfect knowledge about the price prevailing in various parts of the market on the part of buyers and sellers is another condition of perfect competition. This, in simple words, means that both buyers and sellers have complete knowledge about the price at which the various goods are sold in the market. Absence of this knowledge would mean that some buyers would be buying at higher price, while others would be able to have the commodity at the lower price. So there may be more than one price for the same product in the market. For example, if sellers in one part of the market sell breads at Rs. eight per bread and in another part sell at Rs. ten, the buyers would continue to pay different prices unless they have knowledge about the difference in price. The benefit of the knowledge to the buyers would be that they buy in the cheapest market and to the sellers would be that they sell in the nearest market. The effect of this would be that ultimately one uniform price would be established in the market.

(iv) Free Entry and Exit for Firms : Fourth and equally important condition of perfect competition is the absence of restriction for the individual producer or firms to move to various fields of production in search of higher profits and for the factors of production like labour and capital for higher rewards in the form of wages and interest payments. The importance of this condition lies in the fact that abnormal profits disappear in the long-run with the free entry of new products into the field of production. Conversely, if the number of firms has exceeded the desired number, then firms last to enter the industry would have to undergo losses. For these firms also there is no restriction to move out to the field where they would be saved from these losses.

The condition is also significant for bringing a balance between the total demand and total supply of a commodity. In order to achieve this balance, the free mobility of factors of production like labour and capital also becomes essential between various occupations or fields of production. For example, if the total supply is less than the total demand then the existing firms would expand the scale of their production for which they would also require more of these factors. Thus, the existence of perfect mobility of factors is essential for perfect competition.

(v) Non-existence of Transport Costs : A perfectly competitive market also assumes the non-existence of transport costs. If the cost of transport is there, prices must rise in different sectors of the market. A single uniform price for the same product cannot exist in the market if transport costs are to be incurred.

Having discussed the meaning of perfect competition and the conditions under lying it, we now proceed to discuss the process of determination of prices under such conditions. In other words, we are to discuss now how an individual firm and the industry as a whole attain their equilibrium positions.

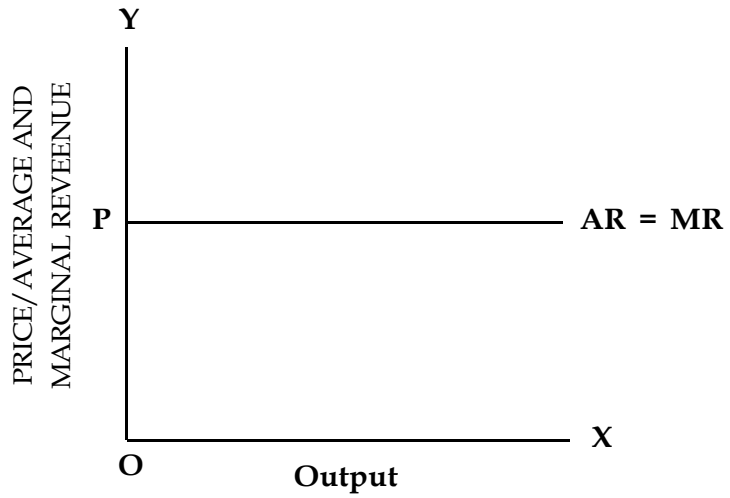


FIG No. 1.1

2.1.4 Equilibrium of the Firm

The aim of every firm is to get the maximum profits. This is possible when the difference between the price and the cost of production per unit is the maximum. We may now examine in some detail as to what can be the best price and output policy for the individual firm.

1. Nature of Demand Curve for its Product : We have noted above that an individual seller cannot change the price of the commodity by his individual actions. He has to sell his product at a given price in the market. This, in other words, means that the demand for the product of an individual seller or firm is perfectly elastic. So he would continue to sell his product at the given price. This may be explained with the help of a diagram also.

In diagram No. 1.1, we represent the demand for output on X-axis and revenue (Price) on Y-axis. At the same price (OP) any amount of commodity can be sold. When the price per unit remains the same, the average revenue also remains the same. Our knowledge of the average and marginal revenue tells us that, when average revenue is constant, the marginal revenue (revenue of price received by the sale of the until sold last of all) is also constant and both are equal. So that same sale of the unit sold last of all is also constant and both are equal. So that same curve represents both the AR and MR.

2. Size of its output : If the firm cannot change the price of the commodity it must try to minimise costs in order to maximise profits. The cost can be minimised by an appropriate combination of various factors of production like land, labour and capital including raw materials etc. These factors can be broadly

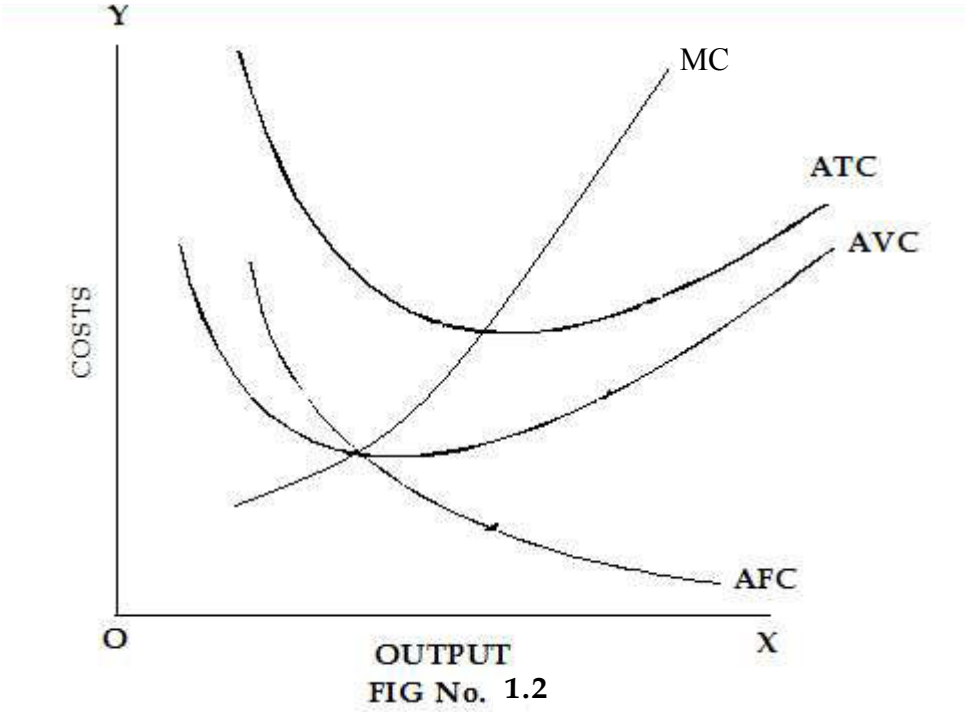


FIG No. 1.2

classified under two categories, fixed and variable factors. For example, land and capital are fixed factors, while labour, raw material etc. are variable factors. Accordingly, we have the fixed costs and the variable costs. By adding these costs we get the total cost of production.

Now the question before us is which cost should be minimised in order to be sure that the firm has attained the optimum scale of output. Certainly it is the average total cost (also known as average cost of production) which, at its minimum point would indicate the ideal scale of output of firms. The actual scale of output of the firm would be determined by the marginal cost of production which means the cost of production of the additional unit of output. It is also defined as the addition made to the total cost when one more unit of output is produced.

In diagram No. 1.2, we have taken four cost curves ; average fixed cost, average variable cost, average total cost and the marginal cost. The behaviour of marginal cost curve shows that its cuts the AVC and ATC at their lowest points and the minimum point on AVC is below the minimum point on ATC. These four cost curves are called short period cost curves because over the long period, we take only two cost curves i.e., ATC and MC.

3. The Equilibrium of the Firm : After an analysis of the nature of demand, and the nature and behaviour of costs, we are in a position to find out the equilibrium of the firm. By the term equilibrium we mean a state of rest or

absence of change. The equilibrium may be short lived or stable for quite some time depending on the time element. Time element means the period at the disposal of a firm. This time period may be short or long and accordingly, we have short period equilibrium and long period equilibrium. We may now turn to the discussion of the conditions of equilibrium and the determination of equilibrium output of a firm in the short and long periods.

Two conditions are necessary for determination of equilibrium : the marginal cost of production must be equal to the marginal revenue and secondly, from point of view of ideal scale of production and maximum profits, marginal cost must cut the marginal revenue curve from below.

II(A) Short Period Equilibrium

The short period, from the point of view of an individual producer or firm, is the period during which the firm is unable to change the amount of fixed factors like land and capital (machinery). The producer can, no doubt, increase or decrease the application of the variable factors like labour and raw material. In other words, the firm has limited scope of bringing about a change in its output, by making some minor adjustments in production of the commodity, in which it specialises with the given market conditions. When the firm cannot change the price it would try to adjust its output in such a way that it gets the maximum profits. In case it is not possible for it to make profits it would certainly try to minimise losses. The fact we may elaborate with the help of diagram No. 1.3.

The first thing to be understood in diagram No. 1.3 is that equilibrium would be achieved by the firm where MC=MR and where MC cuts MR from below. When the price is OP, the MC cuts MR at two points Q and E. The equilibrium can take place only at E and not at Q because at the latter point, output is very small and further increase in production leads to reduction in the marginal cost. Besides, profits can be maximised or losses can be minimised at point E rather than at point Q.

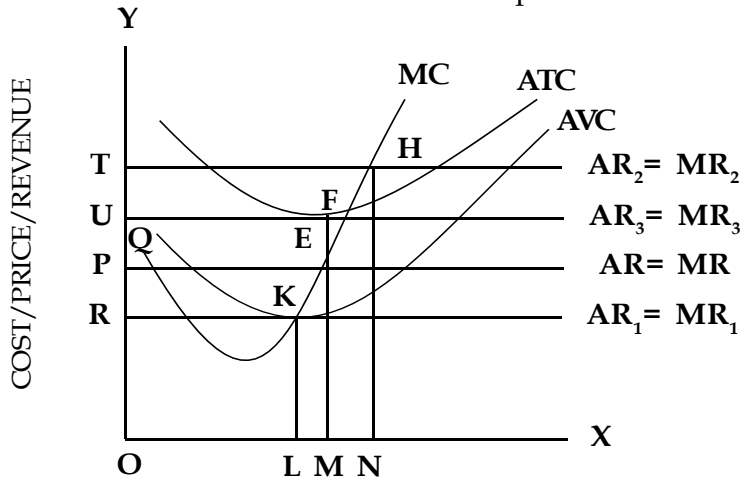


FIG No. 1.3

The second thing to be made clear in the diagram is how much output would be there at a given market price of the commodity and what would be the amount of profits or loss to the firm. To understand this, assume that the price is OP. In other words, AR and MR represent the average (price) and marginal revenue of the firm. The marginal cost (MC) is equal to marginal revenue (MR) at point E. So this point E shows the equilibrium of the firm when the commodity produced and supplied by the firm is OM. The next question is whether the firm is making profits or covering only its cost of production. The method to find out the profits and losses is to know the difference between average revenue (AR) and the average total cost (ATC). If AR is more than ATC, then there would be abnormal profits and if the AR is less than the ATC, there would be losses.

In the above diagram, the ATC is greater than the AR i.e., AR is represented by EM and ATC by FM. The amount FE is accordingly the loss per unit, while total loss would be EF UP. Because of the loss the firm as a rule should leave this industry and go to some other field of production. But as the firm is operating in the short period, it would remain in the same industry because over the long period it hopes not only to cover the losses, but also to make profits. Moreover, during the short period the firm is mainly concerned with covering its variable costs. At Point K the firm covers only variable costs and if price becomes lower then OR, the firm would close down its production. Due to this the point K is known as shutdown point.

Besides the above two possibilities, we may examine a third one also. Suppose the price in market as shown in the above diagram is OT. The equilibrium is

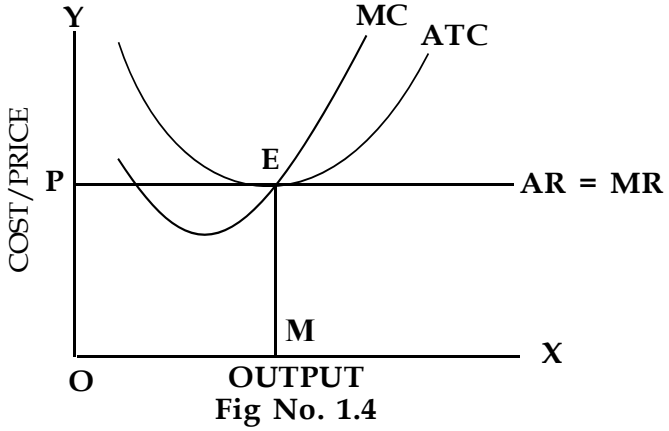


Fig No. 1.4

established at point H, when the output of the firm is ON. What about profits or losses ? The firm under this condition has a profit because its AR (shown by AR_2) is greater than its ATC. This profit is generally called abnormal profit because it is over and above the normal profit (also known as wages of management) included in the ATC. Sometimes by accident alone, in the short period also a firm may attain equilibrium at a point where it gets only normal profit i.e., its AR=ATC.

II(B) Long Period Equilibrium

The long period we may define as the period over which the firm can expand and contract the scale of its output, increasing or decreasing the fixed factors as the need may be. Besides, according to our forth assumption of free entry and exit during the long period, the number of firms in the industry may increase or decrease, in order that a balance between the total demand and the total supply is achieved.

Besides the two conditions of short period equilibrium examined above, a third condition is also required to be fulfilled for the long period equilibrium also known as "Full Equilibrium". This condition is that the price of AR is not only equal to MR and MC, but is also equal to the ATC.

In diagram No. 1.4, we find that all the above conditions of equilibrium are met at the point E. So E is the point of stable and full equilibrium. The equilibrium output is OM and equilibrium price OP or what is the something, EM. There are no abnormal profits. The firm earns only normal profits which are included in the ATC. Thus, over the long period the price charged by the firm is equal to both the MC, (=MR) and the AC i.e.,

Price = MR = MC = AC = AR

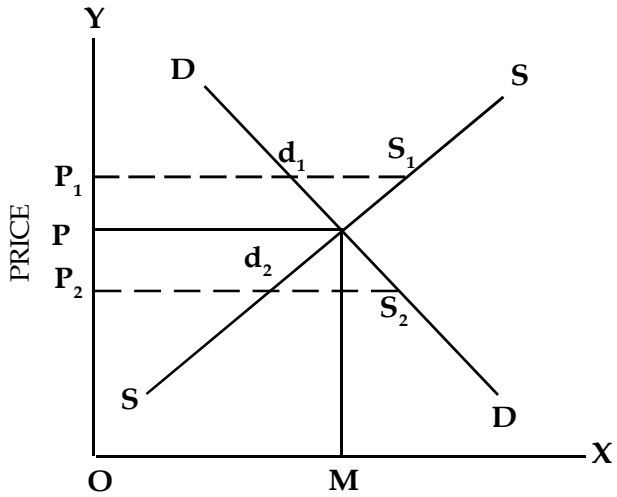
Secondly, the firm attains the optimum scale of its output as it produces OM output at the minimum ATC shown by EM in the diagram. At this point, by coincidence, the industry (all these firms taken together) also attains equilibrium because the total demand for product is fully met by the total supply of product made available by all firms taken together. This is called "Full Equilibrium", because the supply of the product in the market exactly balances the demand for it.

Imagine for a moment that the supply is either less or more than the demand. "Full Equilibrium" would be achieved in this case. If the supply is less than the demand, some of the firms would get abnormal profits which would make them expand the size or scale of their output or attract new firms to enter that industry. This tendency would continue till supply becomes equal to the demand for the commodity. Conversely, if the supply exceeds the demand the marginal firms will undergo losses and they will leave that industry and go to some other field or industry. This tendency would also continue till the balance between demand and supply is achieved.

2.1.5 Case of Industry

So far, it has been explained that the price of the commodity is constant in the market and the individual firms adjust their output by combining the fixed and variable factors in such a way that they attain a minimum cost combination. Now we may go a step further and examine as to how the price gets determined in a perfectly competitive market. The price at any time is determined by the interaction between the forces of demand and supply. The demand here means the total amount demanded by the larger number of buyers in the market and total supply means the total quantity supplied by all the firms or producers which are also in large number.

The general nature of demand is that individual buyers would demand more only at the lower prices than at the high prices. This means that a demand curve could have a negative slope i.e., it would slope downwards, from left to right. The supply curve, on the other hand, has to be considered under two different situations. Firstly, in the short period when the number of firms and the size of firms cannot be changed, secondly, in the long period, when size and the number can both be changed. Thirdly, in the period the supply curve would slope upwards to the right , but in the long period it could be sloping upwards or downwards to the right or could be a horizontal straight line depending upon the operation of laws of returns.



Quantity demanded and Quantity Supplied

FIG No. 1.5

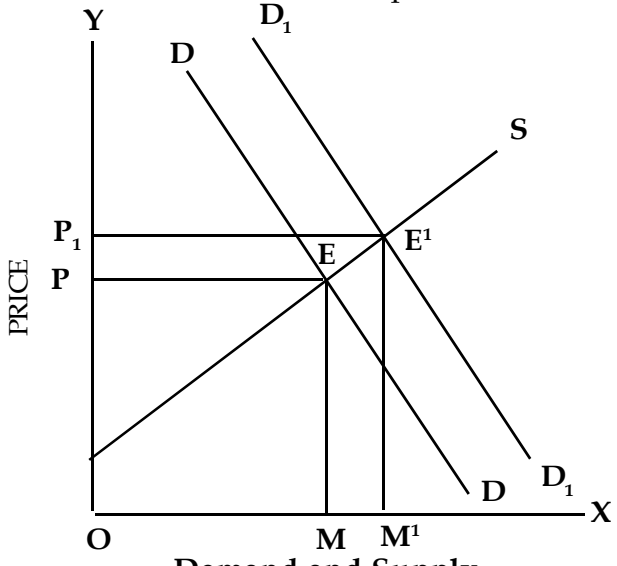
Thus, in a perfectly competitive market, price be determined at a point where quantity demanded and quantity supplied are equal to each other. This is known as equilibrium price. Demand and supply are the two contracting forces which move in opposite directions. Price settles at a point where these two forces are equal.

Thus, price finally settled down at OP level and OM is the equilibrium quantity. At price OP_1, supply exceeds demand so price is pushed downwards. On the other hand, at OP_2 price, demand exceeds supply, so price is pushed downwards. On the other hand, at OP_2 price, demand exceeds supply, so price is pushed upwards. Ultimately, equilibrium is established at the point where demand and supply are equal to each other. Whenever there is deviation from this level it will be restored by the automatic forces of demand and supply. Both are equally important in the determination of price. But there is one difference between these two forces. Supply takes time to change. Thus, we are to recognise and give due importance to time element. Generally, the shorter the time period, greater will be the influence of demand on pricing and the longer the time period the greater will be the influence of supply on the determination of prices of commodities.

Equilibrium in the Short Period

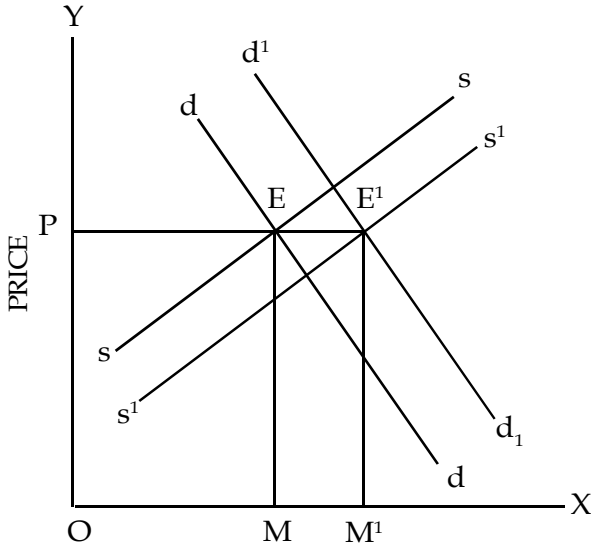
In the short period supply can be increased only with the increased use of variable factors. Number of firms and scale of production are given during the short period. As supply is relatively fixed in the short period, generally the short period price would be fixed at a higher level.

Besides every increase in demand would lead to a rise in the price because the supply cannot be adequately increased. The DD and SS curve in the diagram 1.6 represent demand and supply curves of the industry. As supply is somewhat inelastic, the price is fixed at a high level i.e., at E. Now a rise in a demand leads to rise in price from OP to OP^1 because a similar rise in supply is not possible because in the short period neither the number of firms in the industry can be increased not the size of firms in the industry can undergo a major change. The change would happen when the demand falls from D^1D^1 to DD. In this case, the supply is given and with fall in demand the price would fall from OP^1 to OP.



Demand and Supply

FIG No. 1.6



Demand and Supply
FIG No. 1.7

Long Period Equilibrium

Over the long period, the supply becomes elastic meaning thereby that the output can be increased by the existing firms or supplemented by the new firms entering the industry. With the supply becoming elastic and the demand not showing much change over the long period, the price might be fixed at a lower level. This can also be shown with diagram No. 1.7

dd and ss are original demand and supply curves intersecting at point E. Equilibrium price is OP and equilibrium output OM. Now with the increase in demand by d^1d^1 the supply can also be increased from ss to s^1s^1. The price may remain at the same level, if increase in supply is equal to increase in demand. But if increase in supply is more than the increase in demand, the price may fall below OP also. The law of returns will affect the position of the new supply curve.

The long run supply curve slopes upward to the right in increasing cost industry, is horizontal straight line in constant cost industry and slopes downward to the right in decreasing cost industry. Long-run normal price is determined by the equilibrium between a demand curve and long-run supply curve i.e., when supply is fully adjusted to a given demand. Long-run price is equal to the minimum long-run average cost. Then all the firms within the industry earn only normal profits and industry is also in equilibrium. Whether long-run price rises or remains constant or falls depends upon whether the industry is experiencing law of increasing cost, constant or cost decreasing cost. However, price is always determined at the level where demand and supply forces counter balance each other.

2.1.6 Summary

In this lesson, you have learnt about the market situation under perfect competition in which there are large number of buyers and sellers of homogeneous products.In this market, the number of firms selling the particular good is so large that any change in the supply of individual firms has no significant effect on the total demand for the good, there is perfect mobility of buyers and sellers as well as of all the factors of production. It has also made clear that an individual firm does not fix its price. It is not a price maker but quantity adjuster.It has also been specified thatthere are two conditions for a firm to be in equilibrium, which are its marginal cost must equal its marginal revenue and to the right of the point of equality between the MC and MR, the MC must be greater than the MR.

2.1.7 Technical Terms

Perfect Competition: This is an ideal situation of market where there are large number of buyers and sellers selling homogeneous products and all producers are price takes.

Shut down price: A firm will produce till the price is equal to average variable cost (AR=AVC) in the short run and an industry need at least normal profit in the long run.

2.1.8 Long Questions

1. Define perfect competition. Give its assumptions. How it is different from pure competition ?
2. Illustrate with the help of diagrams the equilibrium of a firm in short run and long run under conditions of perfect competition.
3. Describe the effect of a change in demand on the price of product in short -run and long run under perfect competition.

2.1.9 Short Questions

1. Market forms.
2. AR And MR under perfect competition.
3. Assumptions of perfect competition.

2.1.10 Suggested Readings

1. Koutsoyiannis : Modern Microeconomics
2. H.L. Ahuja : Principles of Microeconomics

PRICE DETERMINATION UNDER MONOPOLY
I. Simple or Pure Monopoly

Structure

2.2.1 Objectives

After having gone through this lesson, you would be able to:

- Understand the meaning and main features of monopoly.
- Examine the conditions of equilibrium under monopoly and price discriminating monopoly.
- to examine whether price discrimination is beneficial to the customers and to the society as a whole or not.

2.2.2 Introduction

Monopoly means absence of competition. In theory, monopoly is said to exist when the supply of a commodity is in the hands of a single producer and there is no other firm producing the commodity or even a close substitute for the commodity. This is what is called pure or simple monopoly. Under perfect competition an individual producer or firm cannot change the price in the market because of the presence of a large number of producers and keen competition among all of them. Again, the monopoly is a one firm industry and it does have the power to influence the price in the market by increasing or decreasing the supply. We will now examine the price and output policy that a monopolist would generally adopt.

2.2.3 Monopoly Equilibrium

Like any other producer a monopolist also aims at maximization of his profits. In order to achieve this objective he would so adjust the scale of his production that

not only produces a required output at the minimum possible cost, but he also sells that output at the maximum possible price. To understand the price and output policy of a monopolist, we must analyse the forces underlying the demand for and supply of the commodity produced by the monopolist.

Nature of Demand

The demand curve for the product of a seller under perfect competition is perfectly elastic and so it is a horizontal straight line. But under monopoly the demand curve would slope downwards from left to right, implying that more of a commodity is sold at lower price than at a higher price. In other words, a monopolist can charge a higher price only by selling a smaller output. The demand curve has a negative slope or slopes downwards to the right, the marginal revenue curve also slopes downwards and lies below the average revenue curve. If we assume for the sake of simplicity, that AR curve is a downward sloping straight line then the corresponding MR curve would also be downward scoping straight line and the latter would lie halfway between AR and Y-axis. This we may show with the help of a diagram.

In the diagram No. 2.1 we take AR as a downward sloping straight line. Its behaviour shows that more output can be sold only when the price is reduced. The MR curve also has a similar shape and behaviour, but it would always lie halfway between the AR and Y-axis. This we may prove by giving an example.

Draw a perpendicular from point P on Y-axis meeting at a point R. Now bisect the line PR. The point Q lies in middle of P and R. The marginal revenue curve would pass through this point.

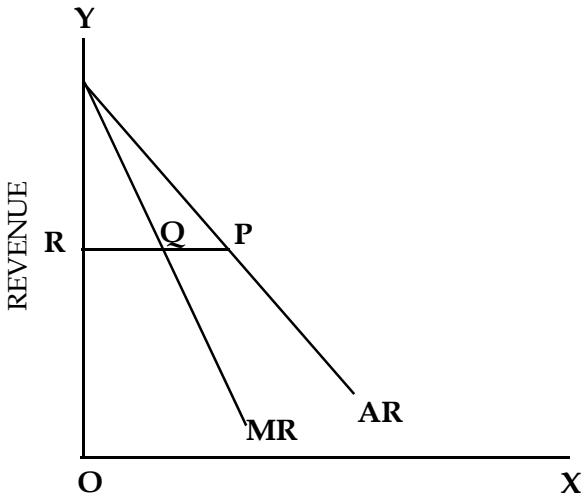


FIG No. 2.1

Another point to be noted here is that the demand or AR curve may be more or less elastic. If it is more elastic then its slope shall be steep, but if is less elastic it shall have a more steep slope. When the demand is elastic then the monopolist would generally find it difficult to charge a high price. Conversely, when demand for his product is somewhat inelastic, he can charge a high price by restricting his output. In order words, the power of a monopolistic or what is the same thing as degree of monopoly depends on the elasticity of demand. The lower the elasticity of demand, the greater the degree of monopoly profits.

Nature of Costs

The cost curves of a monopoly firm are similar to those of a competition firm. This is so because the same principles are involved in the case of cost of a firm producing under monopoly or competitive conditions. There is no difference, however, between the two. We generally do not take the average variable cost of monopoly firm. Instead we take the ATC and MC into consideration. This is a so because the monopolist being the only producer can fix the price of his product at a level higher than even the ATC. In this sense, the time element would not have much effect on the price and output policy of the monopolist.

The Equilibrium

Under monopoly also the main condition of equilibrium is the equality between the MR and the MC at which point the profits of the monopolist are maximized. This we may see with the help of diagram No. 2.2.

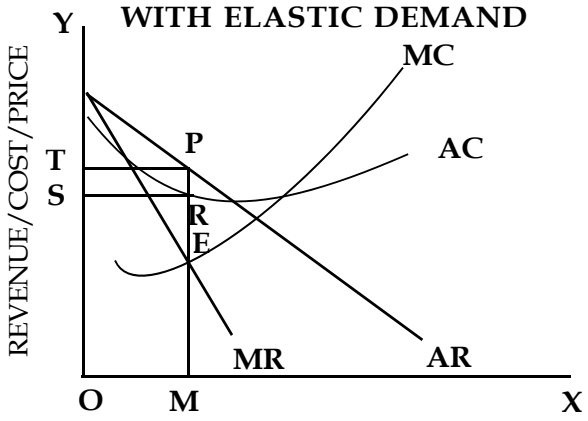


FIG NO. 2.2

The firm attains equilibrium at the point E where the MR and the MC curves cut each other. The output is OM, while equilibrium price is PM. The monopoly profit, i.e., the difference between AR and AC, per unit of output is PR, while the total profit is shown by rectangle PRST.

This is the situation when the demand for the product of the monopolist is some what elastic. But if the demand is relatively inelastic, then the monopoly power and profit would be greater. This can also be shown with the help of diagram No. 2.3.

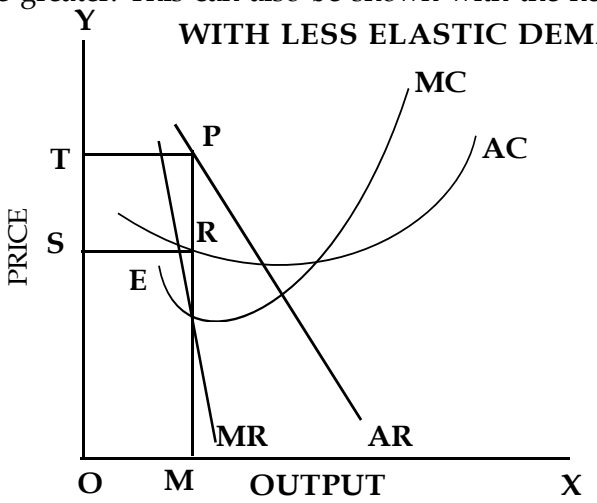


FIG No. 2.3

In this diagram the AR curve has more steep slope showing an inelastic demand. The MR curve also has line wise a steeper slope. The equilibrium is established at point E with OM as equilibrium output and PM as the equilibrium price. The profit per unit PR in this diagram is greater than the same previous diagram. Similarly, the total profit in this case is more than that in the previous case.

We have general idea about the adoption of a price and output policy by a monopolist when he faces an elastic demand for his product. We may now pass on to the discussion of this equilibrium under varying conditions. We know that in the process of production of any commodity there are three main stages. In the first phase, the costs both average and marginal, decline because of the economies of large scale of production. The second stage begins where the economies of scale get exhausted and the production costs begin to rise because of the diseconomies of expansion beyond the optimum scale. The rise and fall in the case of marginal cost is much steeper than the same in the case of average cost (refer to the average and marginal cost relationship). We are now in the position to discuss the equilibrium of the monopoly firm under the cost conditions mentioned above. The monopolist reaches his equilibrium when MR=MC. Equilibrium under monopoly is possible with rising, constant as well as falling MC and AR. But this is not so under perfect competition. Under perfect competition, two conditions are required for stable equilibrium.

(i) MR=MC

(ii) MC and AC must be rising at the point of equilibrium.

The equilibrium of the monopolist under different cost conditions is shown in the diagram given below.

Equilibrium under Decreasing Cost Conditions

In the diagram No. 2.4 the AR, MR, MC curves are all taken as dowanward sloping straight lines for the sake of simplicity. The equilibrium point is E where the MC=MR. The equilibrium output is OM. The equilibrium price is OP. Profit per unit of output is TS. Total monopoly profit is PTRS.

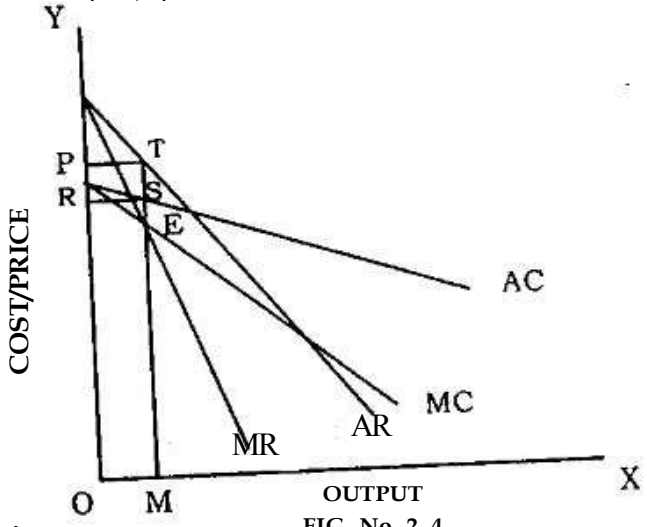


FIG. No. 2..4

Constant Cost Conditions

Under the constant cost conditions, both the average and marginal cost are equal and, thus, the same horizontal line represents both of them as shown in diagram no. 2.5 given below. With the AR and MR curves also given, we can find out the equilibrium position.

In this case also, equilibrium is established at the point R where MC=MR. The equilibrium output is OM and equilibrium price PM. Per unit profits is PR, while the total profit is PR

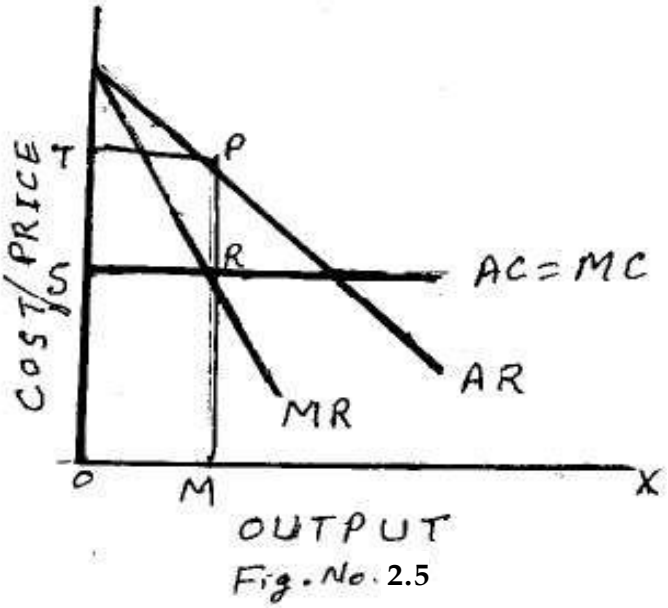
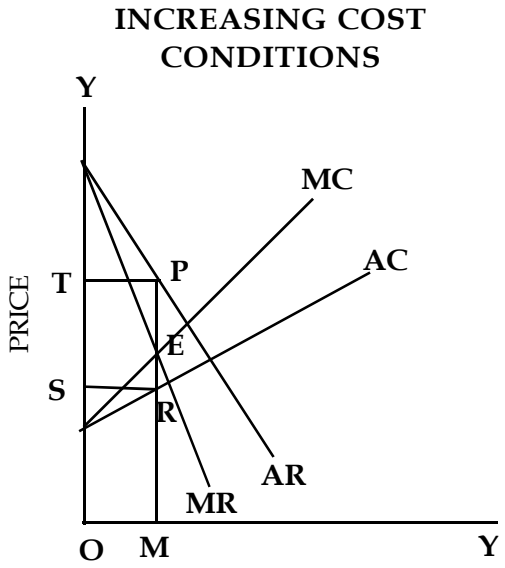


Fig. No. **2.5**

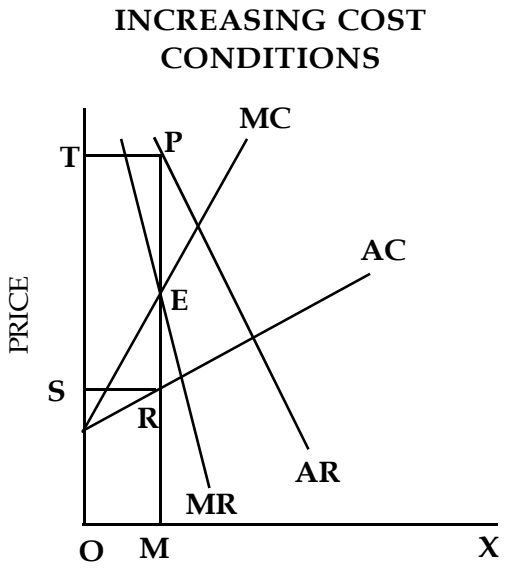
Increasing Cost Conditions

Under this condition the average and marginal costs rise. We already know that when the average cost rises, the marginal cost rises faster than the average cost and, thus, it is more than the ATC. In the diagram No. 2.6 we find that when the average cost curve is rising the marginal cost curve increases at a faster rate and it is above the average cost. The equilibrium is established at point E. The equilibrium output is OM and equilibrium price PM. In this case the profits are more than those in the previous two cases as clearly indicated by rectangle PRST. The per unit profit is also more than the same under decreasing and constant cost conditions. So the monopolist would prefer this situation as his profit is more in this case. He would benefit more if the demand for this product is inelastic because in this case his profit would be still higher. This may be shown with the help of diagram no. 2.7.



OUTPUT

FIG NO. 2.6



OUTPUT

(LESS ELASTIC DEMAND)

FIG NO. 2.7

The equilibrium is at point E where MR = MC, equilibrium output is OM and equilibrium price is PM. Profit per unit is PR (i.e. the difference between average revenue and average total cost). And the total profits are PRST. This rectangle is certainly bigger than the one in the previous diagram. Hence more profits are earned when the demands is inelastic and production is done under increasing cost conditions.

2.2.4 Discriminating Monopoly

Discriminating monopoly is a special case of pricing under Monopoly. Whenever the monopolist tries to charge different prices from the different buyers or customers

he is said to discriminate between them. The main difference between simple or pure monopoly and the discriminating monopoly is that, in the case of former uniform price is charged by the monopolist from all the customers while under the latter, he charges different price from them. Now the question arises as to how he is able to practice price discriminating. For the price discriminating to succeed, certain conditions must be fulfilled :

1. The first condition for discriminating is that the market should be divisible into sub markets. As the buyers generally try to buy at the lowest prices, the monopolist can charge different price only if the succeeds in dividing the market into two or more sub-markets for example, doctor may charge more from a rich patient than from a poor patient for the same type of medical treatment. Similarly an electricity company may charge different rates for the electricity used for the lighting and for cooking purpose. In this way the monopolist has many markets as the number of prices he is able to charge.
2. Second condition of price discrimination is that the elasticity of demand in the different markets is considerably different. Discrimination would not at all be profitable if the elasticity of demand is the same, because the monopolist would receive the same marginal revenue or price in each market. He can maximise his profit only when he is able to charge differently a lower price where the demand is more elastic and a higher price where the demand is less elastic.
3. In the third place, price discriminating is possible only if the goods and services sold in the cheaper market cannot be transferred to the dearer markets. Because if such a transfer is possible, then the buyer buying in the cheaper market would be able to resell that good in the dearer market. For example, if the price of the good sold in the foreign market is very much lower than in the home market, the foreign buyers would find it profitable to resell that commodity in the country of origin of that commodity even after meeting the transport cost.

Discriminatory Pricing

As under simple monopoly the aim of the monopolist under price discrimination is also to get the maximum possible profits. He will be able to receive the maximum profits only when he is able to get some marginal revenue from each market. His total output would be decided by the equality between the aggregate marginal revenue and the marginal cost.

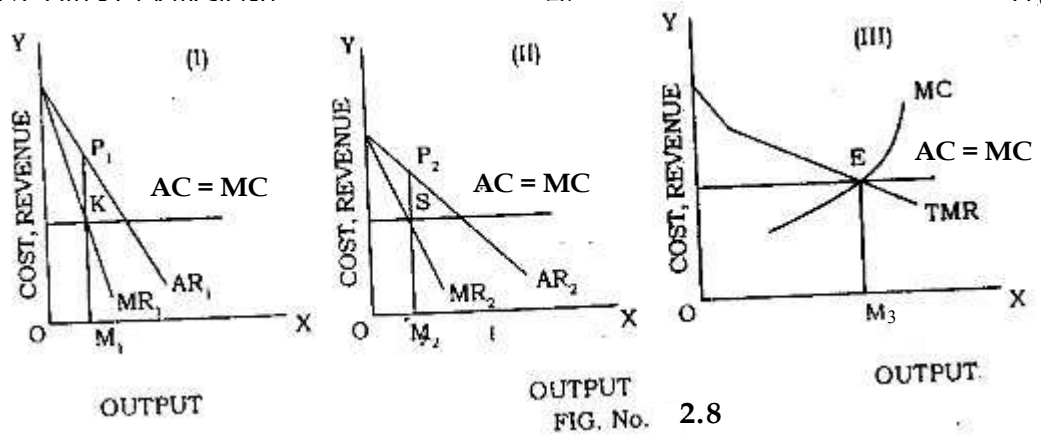


FIG. No. **2.8**

In diagram No. 2.8 we find that the demand in the sub market A is less elastic more elastic in the sub=market B. In order to find out equilibrium for India while it is monopoly f=t we combine the MR_1, and MR_2 and get TMR. The MC and TMR are equal at point E, so this shows the equilibrium of the firm. The equilibrium output is OM_3 for purpose of the profit maximisation the monopolist would equal the marginal revenue in both the sub-markets. In order to find that's we draw a straight line from equilibrium point E, parallel to the X-axis and passing through M_2 and M_1 at points S and K in diagrams (11) and (I) respectively. From these points we get the indication about the prices to be charged and the output to be sold in the sub-market. The price charged in the sub-market B is P_2M_2, while in sub-market A it is P_1M_1. The outputs sold in sub market. A and B are OM_1 and OM_2 respectively.

Discrimination and the World Market

We have discussed above the case of two sub-markets of a main market of the country as a whole. But sometimes a monopolist, besides selling in the home markets, exports his product to the foreign countries as well. In the home market he, being the sole producer, enjoys a monopoly position while in the other world market he has to meet competition from the producers of other countries. This, is other words, means that the demand for his product in the home market is relatively inelastic but in the world market it is perfectly elastic. Now the question is with this situation how he attains equilibrium and how much output he producers and sells in the two markets.

As perfect competition prevails in the market, so the AR and MR are equal and represented by a horizontal straight line. In the home market, on the other hand, AR and MR slope downwards as shown in diagram No. 2.9. The equilibrium for the discriminating monopoly firm is attained at point E where marginal cost is equal to aggregate marginal revenue, aggregate marginal revenue is obtained by adding the marginal revenue in the home market and that in the foreign market. In diagram No. 2.9 it is shown by ARE.

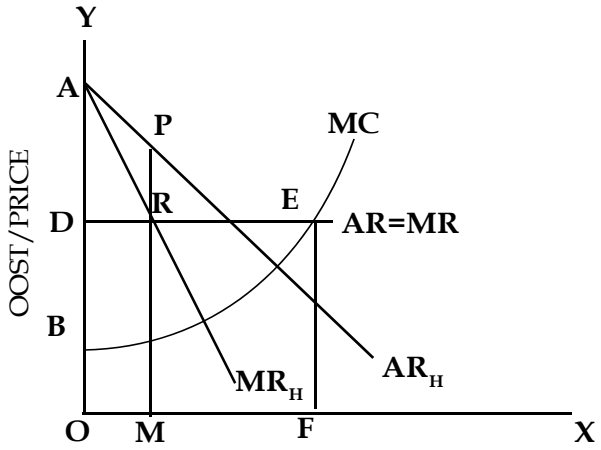


FIG No. 2.9

In order to maximise profits the monopolist equates the marginal revenue in the home and world markets shown by EF and RM. The price charged in home market is PM and output sold is OM. The price charged in the world market is EF, and the output sold is MF. The monopoly profit is equal to area AREB.

It is generally felt that price discrimination is bad because a monopolist in his greed for profit tries to fleece the people, both rich and poor alike, by changing discriminatory prices. So price discrimination of all types in all the cases is not desirable. But it may be desirable in certain cases.

The price discrimination can be justified on the ground of larger producing and larger employment resources. For example, when there is no discrimination the output produced by the monopolist would be small and so the cost of production and price would be high. Under price discrimination the output of the commodity may increase because the commodity may have to be supplied to more than one market. Sometimes, output becomes possible only with price discrimination. There is also a possibility that due to increase in production, costs may go down and consequently the product may be sold at a cheaper price both at home and abroad. Besides this, larger production would mean greater employment of labour, capital and other resources.

Secondly, we justify price discrimination on grounds of equity or equality. As the rich have high incomes and high purchasing power, they can and should pay higher prices. But as the poor people have low income and low purchasing power, lower prices should be charged from them. We can cite here the example of the doctor discriminating between the rich and the poor patient.

So price discrimination can be justified on the two grounds mentioned above.

2.2.5 Summary

In this lesson, you have studied how prices and output are determined under monopoly and price discriminating monopoly. Monopoly is an extreme form of imperfect competition which can be either private monopoly or public monopoly. In the monopoly, the price of product is under the control of the monopolist. Since the monopolist is the only supplier in the industry, thus the demand curve for the monopolist's product is also market demand curve for the product. But, the features of cost curves under monopoly are generally the same as those under pure competition. You have also read about the discriminating monopoly where the monopolist has a full control over the supply of a commodity, he can charge different prices from different customers for it. When a monopolist sells a single commodity at different prices to different buyers, the situation can be referred to as discriminatory monopoly. Price discrimination becomes profitable only when elasticity of demand for the product is different in different markets at the single monopoly price.

2.2.6 Technical Concepts

Monopoly: The case when there is only one seller or supplier of the commodity. The monopolist thus constitutes both firm and industry. He has full control over the supply and price of the product.

Discriminating monopoly: Since the monopolist has a full control over the supply of a commodity, he is in a position to charge different prices from different customers for it. The monopolist may charge different price in separate markets. While under simple monopoly, the monopolist charges one uniform price from all his customers for a single commodity.

2.2.7 Long Questions

1. Define monopoly and draw the of demand and cost curves of a firm under this market form.
2. What principles would be monopolist keep in mind while adopting price and output policy so that he maximises his profits.
3. Show equilibrium of a firm under the conditions of price discriminating monopoly.

2.2.8 Short Questions

(i) Monopoly (ii) Discriminating Monoply

(iii) Write a brief note on Monoply Equilibruim under constant cost condition

2.2.9 Suggested Readings

1. Koutsoyiannis : Modern Microeconomics
2. H.L. Ahuja : Principles of Microeconomics

LESSON NO. 2.3 **AUTHOR: PROF. UPINDER JIT KAUR**

MARGINAL PRODUCTIVITY THEORY OF DISTRIBUTION

Structure

2.3.1 Objectives

In this lesson, you will get to understand

- the concept of marginal physical product and marginal revenue product.
- the similarities and differences between factor pricing and commodity pricing.
- the analysis of the theory of marginal productivity.

2.3.2 Introduction

In the olden days, production was usually carried on by using one's own resources. Therefore, the producer himself was the owner of commodities produced by him and the question of distribution did not arise. But now the times have changed and large scale production takes place in collaboration with others. The entrepreneur obtains the services of different factors of production as inputs for the production process. Thus, the question of distribution of the product among the factors of production or the remuneration for their services comes to the forefont. The productive process requires co-operation of land, labour, capital and organisation. The material produced or the wealth produced by these factors of production is then distributed among them. The distribution theory is that branch of economics in which we study about the theories which help in the determination of rent for land, wages for labour, interest on capital and profits of entrepreneur.

The production that takes place as a result of combination of the four factors of production is called the national product. This product is to be distributed among the four factors of production. According to Marshall, "labour and capital of a country acting on its natural resources produce annually a net aggregate of commodities,

material and immaterial including services of all kinds. This is true national income, revenue of the country or national dividend."

While studying about distribution we are not concerned with personal distribution of income. Our attention is focused on the functional distribution of income. In other words, we do not analyse what a particular person earns but we probe into the basis of remuneration of different factors of production.

2.3.3 Marginal Productivity -Theory of Distribution

The general theory propounded by the economists for determining the remuneration of different factors of production is known as the Marginal Productivity Theory. According to the marginal productivity theory, the price of every factor is determined by the forces of demand and supply. Every factor of production equalises the marginal disutility of its work to the price offered for its services. The demand for a factor of production is rewarded according to its marginal productivity. This theory explains that ultimately the reward for a factor of production depends on its marginal productivity. Rent, wages, interest and profits are the rewards for land, labour, capital and entrepreneurship. This is, however, to be noted that the payment is made to all the factors for the use of their services. As interest is paid not for capital, but for· the services rendered by capital. Similar is the case with other factors of production.

Similarity between Factor-pricing and Commodity-pricing

It is generally accepted that price determination of the factors of production is a special case of the commodity pricing. It is rather a part of it. The price of each factor like the price of a commodity depends on the forces of its demand and supply. A producer will produce a commodity to that extent where his 'marginal cost equals his marginal revenue', In case of the factors of production, the entrepreneur will stop employing a factor when its marginal cost and marginal productivity are equal because here his profits will be maximum. Then just as price mechanism helps the distribution of commodities among consumers on the basis of their prices, similarly factor prices will distribute different factors of production among firms or industries.

The differences between commodity-pricing and factor-pricing

There are some differences between the price determination of the factors of production and that of the commodities. These differences are in fact the basis for a separate treatment for the pricing of factors of production, as will be clear from the points given below:

(i) The demand for a commodity is a direct demand, while the demand for a factor of production depends on the demand for the commodity which it helps to produce. In other words, the demand for a factor of production is a derived demand.

(ii) The price of a commodity is paid for the commodity itself but the price for a factor is not paid for its physical units, but for the services rendered by these units.

(iii) The supply of a commodity depends on its cost of production. But in the case of

a factor of production, it is just possible as it might not have any cost of production and if it has a cost it might not be possible to determine it exactly. Even if it is possible to determine the cost of factors of production, their supply is not so flexible as will be easy to adjust to demand conditions, as is the case with manufactured goods. Now it is clear that the nature of demand for and supply of a factor of production and the forces influencing it are different for the nature of consumer goods and the forces affecting them.

(iv) The remuneration paid to the factors of production has a great significance for them. Their material welfare greatly depends on it.

(v) Besides these there are many more important things linked up with factor pricing. The price paid by the firms for the use of the factors of production represents the money income of the household sector of the economy. Factor's income i.e., rent, wages, interest and profits depends on the quantity of factors employed by firms and the prices paid by them for their services. The distribution of income in an economy also takes place on the basis of factor prices. Thus, it is evident that it is very essential to study factor pricing as a separate topic.

The theory according to which factor prices are determined, is known as the Marginal Productivity Theory. On the one side, this theory links up factor remuneration with its productivity and, on the other; it establishes a relationship between distribution of factors of production and the demand for goods and services.

Assumptions of the Marginal Productivity Theory

The assumptions on which the marginal productivity theory is based are given below:

1. There is prefect competition in the factor market.
2. All the units of factors of production are identical or homogeneous. All the units are equally efficient. So they are prefect substitutes for one another. This assumption is necessary so that all the units of a factor of production may be rewarded equally.
3. It is possible to vary the quantity of a factor of production without any change in the composition of a unit of production. This assumption is necessary for finding out the marginal productivity of a factor of production.
4. This theory is also based on the assumption that the producer tries to maximise his profits. This is a basic assumption in economic analysis. Every producer will use a factor to that extent where its marginal remuneration (marginal cost for the producer) and marginal productivity (marginal revenue for the firm) are equal.
5. This theory is applicable only in the long-run. In the short-run, a factor of production may earn more or less than its marginal productivity.

6. Every unit of a factor of production has perfect professional and geographical mobility. If it is not so, factor returns will not be uniform.
7. Every factor of production has equality of opportunity for equally profitable employment. Consequently, if a factor is earning less than its marginal productivity in one employment, it will shift to another. As a result, the marginal productivity of all factors of production will become equal in all employment and their remunerations will be equal to their marginal productivities. This will happen only when the factors are perfectly mobile.

Now we shall explain the marginal productivity theory. We know that the demand for factors of production is a derived demand. A factor is demanded because it helps in production. Thus, the productivity of a factor is important because the demand for that factor depends on its productivity. Greater the productivity of a factor, greater will be demand for it and consequently higher will be its remuneration. Marginal productivity plays an important role in the price determination of the services rendered by factors of production because it is the basis of factor pricing. In order to maximise its profits, an entrepreneur will employ only as many units of a factor as will make marginal productivity of that factor equal to its marginal cost. Marginal productivity is the quantity of a product which is the result of the use of marginal unit of the factor. According to P.A. Samuelson, "The marginal produce of a productive factor is the extra product or output added by one extra unit of that factor, while other factors are being held constant. This is sometimes called Marginal Physical Productivity.

But an entrepreneur is much more interested in the revenue earned from the sale of the marginal physical product. This income is called Marginal Revenue Productivity. The explanation for interest in marginal revenue productivity is that the factors of production are paid for their use in the form of money. Samuelson has defined marginal revenue product as "the extra dollar of revenue that the marginal physical product of a factor actually brings you when you sell the extra physical product. Marginal revenue product for each factor must therefore, also be marginal revenue of output times marginal physical product." Joan Robinson has written in the context of marginal revenue product of labour." It is the increment of value of that total output caused by employing as additional man, the total value of other factors remaining unchanged." The following table shows the marginal revenue productivity of a variable factor of production.

TABLE I

Marginal Revenue Product under Perfect Competition

Number of Labourers	Wage Rate Per day	Total Physical Product	Marginal Physical Product	Price of Commodity	Total Revenue	Marginal Revenue Product
0	8	0	-	2	0	0
I	8	6	6	2	I 2	12
2	8	14	8	2	28	16
3	8	24	10	2	48	20
4	8	32	8	2	64	16
5	8	38	6	2	76	12
6	8	42	4	2	84	8
7	8	44	2	2	88	4
8	8	45	1	2	90	2
9	8	45	0	2	90	0
10	8	44	-1	2	88	-2

From the Table I, it is clear that when the fourth labourer is employed, marginal revenue product starts diminishing. When the sixth labourer is employed the increase in the total revenue and total cost become equal. At this point the firm is maximising its profits. If the seventh labourer is employed then the total revenue increases by Rs. 4 only. It is evident that the firm will not employ the seventh labourer.

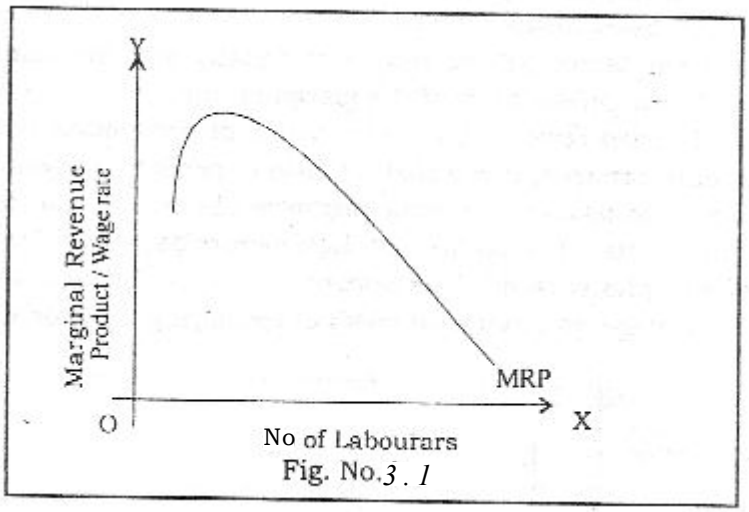


Fig. No.3 . 1

Marginal revenue product in Table No. 1 has been shown diagrammatically in Figure No.3.1. On the X-axis, we measure the number of labourers and on the Y-axis we measure wage rate .and marginal revenue product. It is clear that marginal revenue products at first increases and then starts diminishing. The downward sloping

portion of this curve is also called the Factor-Demand curve of a firm.

R. G. Lipsey has made it clear that demand for factor of production depends on three things:

(i) The demand for the factor is derived from the demand for the final good which it produces.

(ii) The price of the factor and the comparison of its price with the price of their factors.

(iii) Productivity of the factor.

The elasticity of demand for a factor of production further depends on :

1. The elasticity of demand for the final good. The elasticity of demand for a factor varies directly with the elasticity of demand for the final product.
2. The share of the factor in the total cost of the final product. The smaller the cost of a given factor as a proportion of the total cost of the final good, the more inelastic will be the demand for the factor.
3. The demand for a factor will be more elastic when it is easier to substitute some other factor for it in production.

The above discussion makes it clear how marginal productivity theory explains that a producer employs a factor for its productivity. The greater the productivity of a factor, the higher will be its reward. A producer will go on using a factor until the remuneration of the factor unit (marginal cost of the factor) become equal to its productivity. It has been assumed that all units of a factor are homogeneous and hence all units of the factor will be rewarded equally and the remuneration of each unit will be equal to the productivity of the marginal unit.

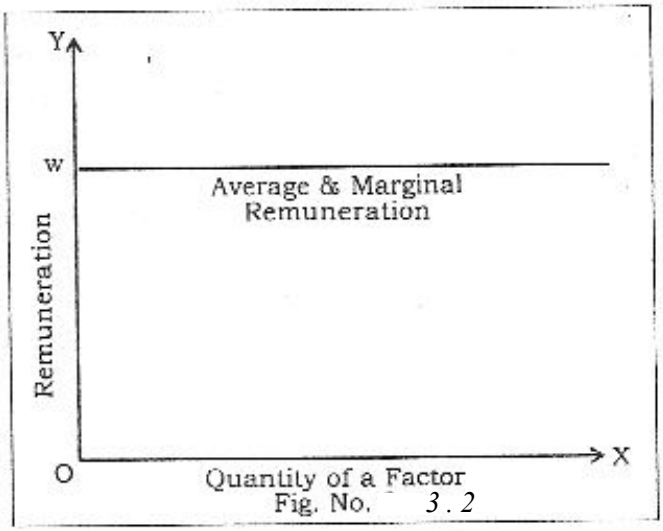


Fig. No. 3.2

We know that the remuneration of a factor of production is an income to that factor, but to an entrepreneur it is a cost. In case of perfect competition, the price paid by an entrepreneur to factors of production depends on the market forces. We have assumed that all units of a factor are homogeneous and for this reason, the remuneration of all units is same. This horizontal line in Figure 3.2 indicates that for an entrepreneur the average and marginal costs of employing a factor units are the same.

On the other hand, we already know the shape of the average revenue product and marginal revenue product curves. Marginal productivity at first increases and then after a point it starts diminishing. This happens when a variable factor is used with fixed quantities of other factors and also as a result of many other conditions on production. For a firm to be in equilibrium, it is necessary that the margin physical product must diminish after a particular point. The diagram no. 3.3 shows the marginal and average revenue products curves.

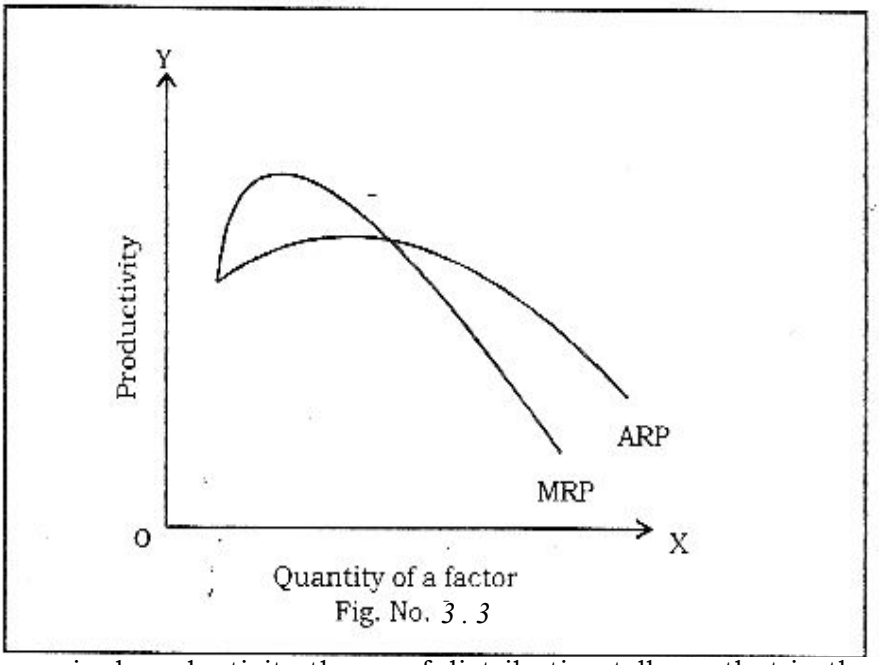


Fig. No. 3 . 3

The marginal productivity theory of distribution tells us that in the long-run and under conditions of perfect competition, factor-remuneration will always be equal to its marginal and average production. At this point the profits of the entrepreneur will be maximum. Suppose the factor of production is labour, in case of perfect competition the necessary conditions for a firm to be in equilibrium is given below:

Marginal Revenue Productivity of labour = Marginal Wage Rate = Average Wage Rate.

When the factor remuneration is equal not only to marginal revenue productivity, but also to average revenue productivity then it means that the industry as a whole is in full equilibrium and all the entrepreneurs are earning normal profits. In the short-run, the remuneration can be more for less than average revenue productivity but in the long-run it equals productivity. Under such a condition all the firms are getting normal profits. The position of equilibrium is shown in . Figure No.3.4.

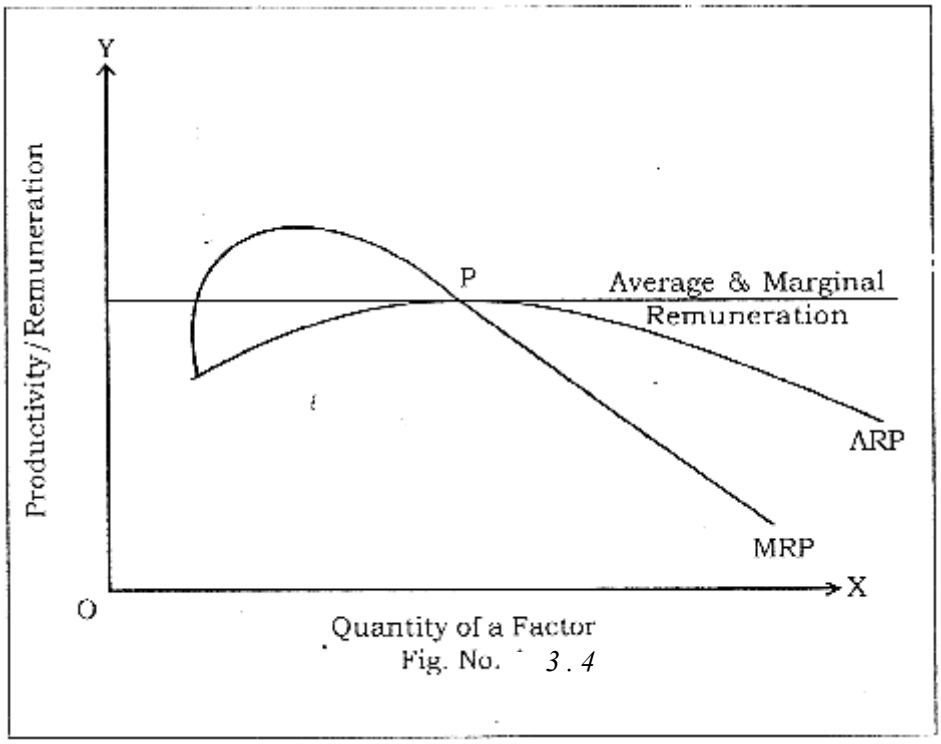


Fig. No. 3.4

Criticism of the Marginal Productivity Theory

(i) It assumes that all the units of a factor are homogeneous, but this is not actually the case. All the units of a factor of production cannot be identical in all respects. In practice, it is observed that all the labourers are not alike and they differ in efficiency. The productivity of two pieces of land also varies. So it is wrong to assume that the different units of a factor are alike and interchangeable.

(ii) This theory is based on the unreal assumption of perfect competition. In the real world, we find imperfect competition instead of perfect competition. Under the condition of imperfect competition a producer can succeed in exploiting a

factor and as a result the factor remuneration can be less than its marginal productivity.

(iii) The assumption that the factors of production are mobile between various uses, is also made unrealistic. In this age of specialisation, the productive process is becoming more and more complex and this specialisation is taking place at so fast a rate that the mobility of labour is very low. Besides his remuneration, labourer has to take so many other things into consideration. For example, religion, caste, climate, food, habits and language are some of the obstacles that hinder his mobility. So is the case with other factors.

(iv) The assumption that production can be varied by a very small change in the units of a factor of production has been bitterly criticised. This can be true in case of small firms but in the case of large firms, where the factors are used in large quantities it is not so. In large industries production is not affected when the number of units of a factor employed is increased by a unit. Thus, when the largescale production takes place through capital intensive techniques, it is not possible to find out the marginal productivity of a factor. But without this, remuneration of factors of production cannot be determined. This theory is applicable to those industries where the gestation period is very short and where the industries are run on a small scale. Then there are some factors whose quantity cannot be varied and whose marginal productivity cannot be measured. If to measure its marginal productivity we reduce one unit of entrepreneurship the very existence of a firm is eliminated and if we increase it by one unit then the very concept of a firm is unfounded because a single firm cannot have two entrepreneurs. Thus, it is clear that marginal productivity of an entrepreneur cannot be found out by varying this number. Under such conditions the marginal productivity of an entrepreneur has no meaning. Thus, in many cases it is not possible to vary the quantity of factors of production and their relation is determined by the technological conditions.

(v) This theory tells us that in the long-run remuneration of factors of production is equal to their marginal productivity. But most of our problems which include the problem of factor remuneration are short-run problems. We have no problems in the long-run. According to Keynes, the long-run never comes. He is of the view that in the long-run we are all dead and after death, we have no material or non-material problems. So the marginal productivity theory based on the assumption of long-run is of no help in the determination of rewards of the factors of production because it is not a long-run problem.

(vi) Marginal productivity theory is based on the assumption of the law of constant returns. It does not apply to the industries operating under the law of increasing

or diminishing returns. But in the real world most of the industries are operating under those laws. This assumption of constant returns has been bitterly criticised by Mr. Douglas. He has pointed out that under conditions of perfect competition average cost curve of a firm is a horizontal straight line and the firm can never be in equilibrium. The equilibrium position in such a case will be indeterminate and the firm will go on expanding. In an increasing return industry if the producer acts on this theory, he will be a loser, and in case of diminishing return industry, there will be exploitation of the factors of production. Therefore, in increasing and diminishing return industries the marginal productivity theory instead of solving the problems of distribution will give birth to the lock-outs, strikes and other industrial disputes. Under the law of increasing returns, the marginal productivity of labour or any other factor of production will be less in case of a firm than in the case of an industry. If the firm is forced to pay factor remuneration according to marginal productivity of the industry, the firm will suffer a loss and it will have to shut down. If the marginal productivity of individual firm is taken into consideration this will mean that various firms are paying factor remuneration at different rates. Consequently, there will be economic unrest in the factor market. In this context, Mrs. John Robinson has rightly observed, "When there are economies of large scale industry the marginal physical productivity of labour to a competitive industry will be greater than to the individual firm, since an increment of employment by one firm will enhance the efficiency of the others."

(vii) If we accept the marginal productivity theory, we will also have to accept that employment is determined by wage rate i.e., if wage-rate is reduced more labourers would be employed. But as has been emphasized by Keynes, the size of employment in an economy depends on the aggregate effective demand and not on wage rate. Had there been any relationship between the level of employment and wage-rate then decreasing wage rates and increasing unemployment would not have been found occurring together during the Great Depression.

(viii) The theory assumes full employment, but this assumption rarely holds. In the real world, equilibrium of an economy at the level of full employment is rarely found. In this dynamic world, we generally come across equilibrium at a level lower than that of full employment.

In conclusion it will not be wrong to say that in this dynamic world the marginal productivity theory offers only disputable basis for the determination of factor prices. It does not take into account such important factors as trade union, social status and

many other sociological considerations. The theory does not provide a correct answer to the question as to how wages, interest, profits etc. are determined in a dynamic economy. But it is very clear from this theory that the productivity of a factor is certainly one of the important factors which determine the price of the factor. Demand for a factor depends upon its marginal revenue productivity.

2.3.5 Summary

The marginal productivity theory can be summed up as below:

1. The marginal productivity theory clarifies that in the long-run under conditions of perfect competition, the remuneration of a unit of factor of a production is equal to its average productivity and marginal productivity.
2. The marginal productivity of a factor of production is equal in all employments. The equilibrium will not be achieved and the factors will keep on shifting until their marginal productivities are equal in all employments because all the factor units are homogeneous and are perfectly mobile.
3. The marginal productivity of a factor of production in a particular employment is equal to the marginal productivity of other factors of production. We know that the main objective of the entrepreneur is to maximise his profit. He will go on substituting a factor with higher marginal productivity of the factor which has lower marginal productivity until the marginal productivity of all factors become equal and the profits of the entrepreneur are maximised. According to Marshall, the chief function of the entrepreneur is to facilitate the free action of this great principle of substitution. The remuneration of different factors of production and the remuneration of single factor in its different uses can be equal when we act on this principle.
4. The price of a factor is equal to its productivity. This theory is based on the belief that if every factor of production is paid according to its marginal productivity the total product will be exhausted. Euler's Theorem provides and explanation of this statement. Wickstead, Walras and Clark have propounded this general theory independently .

This theory assumes constant returns and it has been bitterly criticised on the basis of this assumption. Now it has been accepted that a firm under conditions of perfect competition carries on its production up to the lowest point of its average cost curve. Thus, the solution for the assumption of constant returns has been found in this explanation.

2.3.6 Technical Concepts

Marginal Physical Productivity:The marginal produce of a productive factor is the extra product or output added by one extra unit of that factor, while other factors are being held constant.

Marginal Revenue Product of labour: It is the increment of value of that total output caused by employing as additional man, the total value of other factors remaining unchanged.

2.3.7 Long Questions

1. State and criticise the marginal productivity theory of distribution in the context of wages.
2. Under perfect competition the value of the marginal product of a factor would be equal to its price." Explain the statement.

2.3.8 Short Questions

1. Differentiate between commodity pricing and factor pricing.
2. Give the assumptions of Marginal Productivity Theory.

2.3.9 Suggested Readings

H.L. Ahuja : Principles of Microeconomics

LESSON NO. 2.4 **AUTHOR: PROF. UPINDER JIT KAUR**

RENT

Structure

2.4.1 Objectives

In this lesson, you will get to

- understand the concept of rent and quasi rent.
- analyse the Ricardian theory of rent.
- analyse the Modern theory of rent.

2.4.2 Introduction

The services of factors of production are needed to produce goods required for the satisfaction of human wants. No entrepreneur possesses all these factors in requisite quantities. He has, therefore, to hire them. Since the persons supplying these factors are themselves consumers and, thus, have to spend on goods and services, they will not supply these factors free of charge. Each factor, therefore, expects a price for the services that it will render. The general principle that helps in determining the price of these factors has already been studied under the name of the Marginal Productivity Theory. But each factor has some peculiarities of its own. Problems arising from such peculiarities are not taken care of by the Marginal Productivity Theory. We will now proceed to study the case of each factor in detail and see how the theory of factor pricing needs modification when applied to specific factors. In this lesson, we will study how rent is determined.

2.4.3 Economic Rent

In everyday usage, the term rent is used to denote any periodic payment made for the use of a house, a machine or a transport vehicle, say a taxi. In that sense, this term is synonymous with a hiring charge. The payments made by tenants to the landlord are also usually termed as rent. But this is not rent in the economic sense. Since this payment includes a payment for the use of land, a return on the capital invested on the land, a payment for the risk borne by the landlord which is made for the use of land only. When a farmer hires a piece of land he usually settles the payment which he would make to the landlord. This amount is known as contract rent and depending on competition for land. Contract rent may be higher or lower than economic rent. It must, however, be remembered that whereas the contract rent involves the payer and the payee, the economic rent need not necessarily be paid to some one else, e.g., if a farmer cultivates his own land. Economic rent may emerge due to reason to be studied later on, but there is no question of any contract rent in this case. In this lesson, the term rent will be used in the sense of economic rent, though the adjective 'economic' may often be dropped in the next part of the lesson.

Since economic rent does not result from any effort on the part of the landlord, it is also called producer's surplus. This view that rent is reward for the more ownership of a factor of production, and not a payment for efforts spent on it is quite important in economics. Following this idea, the concept of economic rent may be widened to include any surplus (of return over cost)--obtained by any factor of production if its supply is less than perfectly elastic and this is the case with most of the factors with land as the main example. Before we pursue this point further it will be useful to examine the question as to how does rent arise? David Ricardo supplies an answer to this question and this is examined below:

2.4.4 Ricardian Theory of Rent

Ricardo defined rent as that portion of the produce of the earth which is paid to the landlord for the use of the original and indestructible powers of the soil. He based his theory on three points : (i) Land is heterogeneous in quality i.e., all plots of land are not equal in fertility; (ii) the differences in fertility of land are due to original and indestructible powers of the soil; (iii) there exists no-rent land which just meets the cost of cultivation. Keeping the basic point in mind, the Ricardian Theory can be easily understood by taking a simple, but hypothetical example.

We assume that: (i) there are four grades of land in the country and that each grade differs from the other in fertility (ii) the area covered by each grade is fixed (iii) this land is best suited for the production of a particular crop, say wheat; (iv) the supply of labour and capital is variable and comes in units which cost Rs. 500 each,

(v) the law of diminishing returns operates on each grade of land as indicated in the table below.

Table

Unit of Labour and Capital	GRADES			
	A	**B**	**C**	**D**
1	25	20	15	10
2	20	15	10	5
3	15	10	5	0
4	10	5	0	-5

New settlers in this country will find A grade land freely available. Since one unit of labour and capital yields 25 mts of wheat, it must sell at Rs. 20 per mt, to cover expenses of production. Clearly there is no surplus here. Receipts from sale of wheat are just equal to cost of cultivation. When demand for wheat increases, say due to increase in population, and if the whole of A grade land has already been brought under cultivation, supply of wheat cannot be increased unless the price rises sufficiently to make cultivation of inferior grade land worthwhile.

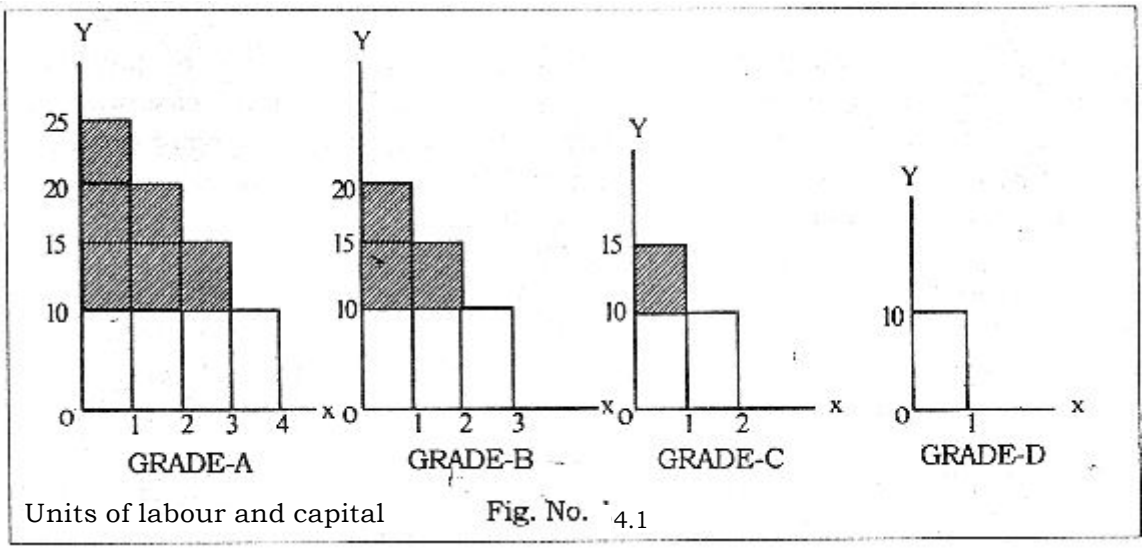


Fig. No. 4.1

Rise in price will provide the incentive and cultivators can either turn to B grade land or cultivate the A grade land more intensively, Neither of the two alternatives will be possible unless the price has risen to Rs. 25 per unit. For only then value of the marginal product in each case covers the cost of labour and capital.

If the decision is to use B grade land, this is the extensive margin of cultivation because cultivation cannot by extended to the C grade and B grade land is no rent land. If it is decided to apply another unit of labour and capital to A grade land then we can say that the intensive margin of cultivation has been reached because it is not worthwhile to apply the third unit to labour and capital even to the A grade land. In either case there will be a surplus of Rs. 125 on A grade land. In the same manner, we can calculate that neither C grade will be used nor A and B grades will be used more intensively unless the price of wheat rises to Rs. 5 per unit.

The situation can be illustrated by Fig. 4.1. Each diagram indicates the yield expected from application of various units of labour and capital to one of the four grades of land. In a populous country all type of land is used and the best ones will be utilised more intensively. Thus, on the A grade four units of labour and capital are used and the successive increments of yield resulting there from are shown by the blocks of decreasing size. As is clear from the figure three units of labour and capital on B grade, two on C grade, only one on D grade lands are used. In each the total area of the block represents the total yield which, multiplied by price gives the total value product obtained. Now the cost of applying four units of labour and capital on A grade land is Rs. 500 × 4 = Rs. 2000. The total value of product resulting from these units is 70 mt × Rs. 50 per mt = Rs. 3500. Thus, economic rent on this is equal to Rs. 1500. Similarly, on B and C grade land rent is equal to Rs. 2250 - Rs. 1500 = Rs. 750 and Rs. 250 respectively.

Criticism

(i) It has been pointed out that there are no "original and indestructible powers of the soil." Even good lands, after they have constantly been cultivated, lose fertility to a considerable extent. If farmers continue to manure their land to save them from complete exhaustion it becomes difficult to decide which powers of the land are 'original' and which are not. This is what makes Stonier to say, "the concept of the original power of the land is to say the least nebulous." Coming to indestructible powers, he says, "in these days of nuclear physics and atomic energy it is very dangerous to assert that anything is indestructible." But Ricardo was not altogether wrong because certain factors like the climate, sunshine, rainfall, situation etc. associated with a particular piece of land are in fact fixed by the nature and man cannot alter them .

(ii) Carey and Roscher have pointed out that people do not always cultivate the best land first and hence the order of cultivation laid down by Ricardo is wrong. They have argued that which is most conveniently accessible are the first to be cultivated. This criticism can also be considered irrelevant because the necessary point in the Ricardian theory is that there must be differences in the yield from different lands and not the order of cultivation.

(iii) The Ricardian theory, as pointed out in the beginning assures that there exist no rent land which just repays the cost of cultivation. But critics say that land has a variety of uses. If a plot of land does not yield any rent when wheat is sown, it may do so when jute or some other crop is sown. Further, if that plot is put to some other use, say for constructing a building it may yield still higher earning.

(iv) Another charge levelled against this theory is that even if all lands were equally fertile, rent will be paid so long as the total supply of land falls short of demand for it. This rent is known as scarcity rent.

(v) Ricardo was of the view that, since rise in price proceeds emergence of rent, it does not enter into price. But this is not always acceptable as a valid proposition. We will come to this point again later on.

2.4.5 Modern Theory of Rent

Before taking up Ricardian theory we noted the reason why rent is usually associated with land and all that rent can be earned by any other factor of production, if its supply is less than perfectly elastic. We come back again to this point in order to understand the modern theory of rent.

The proposition that rent is a differential advantage enjoyed by superior land over the marginal land due to some factors like fertility and location, ignores the fact that the same plot may have alternative uses and some of these may be more paying than others and fluctuations in prices of different crops may make the cultivation of one crop more profitable than that of another. There will, thus, be a tendency of land be transferred from one use to another in search of higher earning. However, this is true not only for land, but for other factors of production also. Thus, in order to retain a factor (or a unit of it) in a particular use, we must pay it at least that much as it would get in its next best use. This brings out to us the concept of transfer earnings which Lipsey defines as any payment which must be made to a factor to keep it in its present use i.e., a payment necessary to prevent the factor from transferring to some alternative employment.

The concept of transfer earnings has a close bearing on the theory of economic rent because modern economists define economic rent as the difference between a factor's actual earnings and its transfer earning. Benham says, "In general excess of what unit gets over its transfer earning is the nature of rent."

Thus, we can say that:

Actual earning of factor = Its transfer earning + Economic rent

But in limited cases this equation gives rise to two equations, viz.

Actual earning = Transfer earnings

And; Actual earning = Economic rent.

The first of these equations holds when the supply curve of a factor of production is perfectly elastic, i.e., horizontal in shape as indicated in Fig 4.2, and industry using this factor can take any number of units of this factor at the going price.

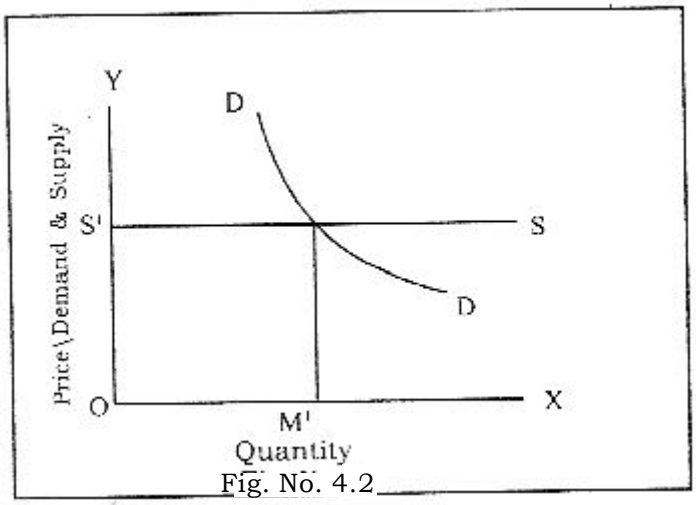


Fig. No. 4.2

The second equation signifies a situation, where the supply curve of factor is perfectly inelastic i.e., vertical in shape, as indicated in Fig. 4.3. This diagram shows that the factor is fixed in supply. The first equation represents the general situation between the two extremes, with a supply curve neither completely horizontal nor completely vertical in shape, as is shown in Figure 4.4.

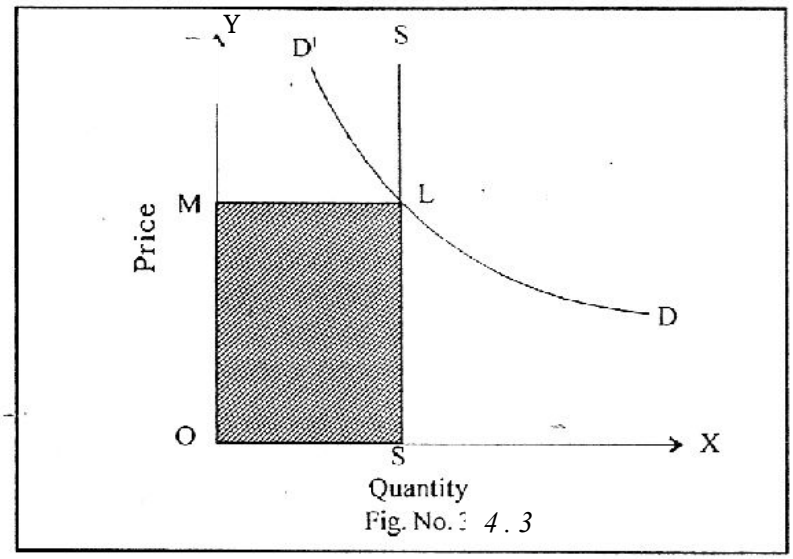


Fig. No. 4.3

The figure indicates the equilibrium price will be ON.

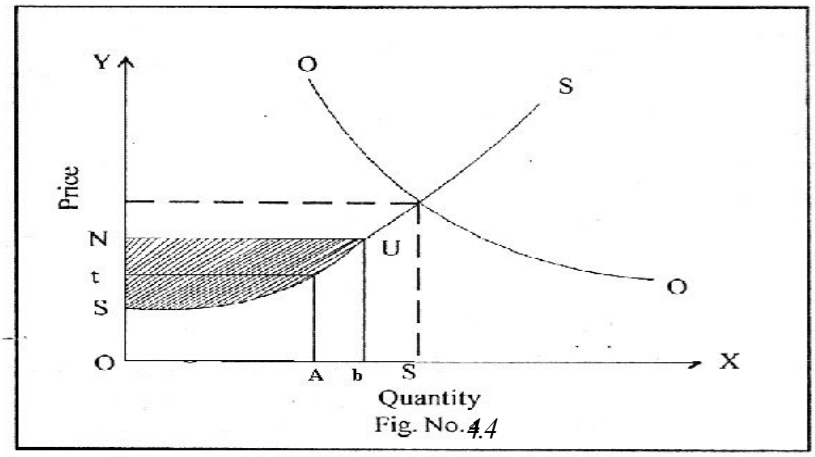


Fig. No. 4.4

If only OA units of a factor were needed they will be available at price ot. If this price rises to ON additional Ob units will be available for use. Thus, each point of the supply curve indicates the price that must be paid in order to keep the corresponding units in use i.e., its transfer earnings. If it is decided to employ ob units of a factor, the total earnings of the units are obun. But the area of this rectangle consists of two parts i.e., white and black parts. The white part indicates the transfer earnings and the black part indicates the economic rent earned by these units. We can, thus, conclude this section by emphasizing the point that the more elastic the supply curve of a factor, the more will be element of transfer earning in the payments made to it and hence, the less will be element of rent included in these payments.

Ricardo expressed rent in too simple a way and if all lands were equally fertile (and equally favourably situated), obviously there would be no economic rent. The differential principle can explain only why a more fertile plot of land commands higher rent than a less fertile one, it does not explain how rent arises. This theory simply ignored the existence of scarcity rent.

Modern economists define economic rent in a wider sense to denote producer's income i.e., all income earned by a factor in excess of income necessary to keep it in its present use (or its transfer earnings). There is, thus, little justification for treating land as a special factor as we will just note.

Looking from the point of view of an entrepreneur, the income earned by a factor is the price paid by the former. Now at the particular price only a limited supply of a factor is available. If more units of this factor are required they will be available either at the same or at a higher price depending on whether the supply of that factor

is perfectly elastic or relatively inelastic. We have already noted that if the supply curve of a factor is horizontal in shape, i.e., perfectly elastic, an increase in demand for it will not lead to any increase in its price. We can simply recollect that price paid for various units of such a factor does not include rent. If, however, additional units of a factor can be had only at an enhanced price, all units of the factor under competitive conditions will have to be paid the same price. The units already in use will now earn more than their transfer earnings and this excess is nothing but rent.

Some writers are of the view that mere inelasticity of a factor is not enough to entitle it to this surplus. Another point emphasized by them is that this factor should be indispensable i.e., it should not be replaced by some other factors.

Now the question arises : Can we explain rent of land by this more general approach? The answers is yes. From the point of view of the economy as a whole, the supply of land is perfectly inelastic and hence the transfer earning of land from the point of view of the economy as a whole will be zero and all earnings of land will be rent. In Fig. 4.3. SS line indicates the inelastic supply of land (=OS) and DD curve indicates the demand for land. The area of the rent OSLM is the economic rent.

Since the inelastic supply of land reflects its scarcity, the rent earned in this situation is often known as scarcity rent. From the point of view of a particular industry; the supply of land may be perfectly elastic and as already shown in Fig. 2; land in such cases may get a price just equal to its transfer earnings i.e., rent in this case will be equal to zero. There is, thus, no justification in treating rent of land by a special theory not applicable to the case of other factors which may also earn more than their transfer earnings and, if they do, wages, profits and interest may also contain element of rent.

2.4.6 Rent and price

The relation between rent and price must be clearly understood because it often causes a confusion. According to Ricardo, rent of land is a surplus above the cost of production and does not, therefore, enter into price of the produce of land. The logic offered in support of this argument is simple. Since the price of the agricultural produce tends to be equal to the cost of production of the marginal or ,no rent land, rent does not enter into the price of the produce. Again, since the price of the produce in question must rise to make cultivation of the inferior grade land possible, rent is the result of price. Rent is, therefore, price determined and not price determining. This is why we come across the statement; "Corn is not high because rent is high, but rent is paid because corn is high." This was the view held by Ricardo and this still holds so long as land, regarded as a free gift of nature, requires no payment to maintain its total supply.

But most of the land is capable of being put to alternative uses. If more of it is

required for one use, less of it will be available for other uses. In order to attract more land for one particular use, people will have to offer at least the amount which a plot of land would have earned in its most profitable alternative use. This price is called the 'transfer price' or 'transfer cost' of land. Now the transfer cost will constitute a plot of the cost of produce raised on that plot of land. Thus, from the point of view of the supply of land for any particular use rent to be paid is not surplus, but a part of the cost of cultivation of a particular crop and hence it does enter into price.

Davenport, however, has settled this controversy by arguing that rent neither determines price nor is determined by price and that both of them are governed by the relative scarcities of the produce of land.

2.4.7 Quasi Rent

Ricardo associated rent only with land. But the peculiarities possessed by land that are responsible for emergence of rent are possessed by some other factors also, temporarily atleast; if not permanently. One important characteristic of land is that its total supply is almost fixed i.e., almost inelastic. The case is similar with other instruments, of production like machines, buildings and means of transport. For example, if demand for buildings in a particular town goes up, it will take a number of months if not years to construct new buildings in a particular town. In the meanwhile, the existing buildings will enjoy a kind of surplus income due to the fact that their rent will exceed the returns expected on their investment. Marshall attached a great importance to the analysis of such man-made durable goods and appliances of production. He coined special term known as Quasi Rent to denote such earnings. Since then this term has been used both by him and others in a variety of related but not identical senses. Such earnings are called rent because supply of such goods is fixed, but at the same time is quasi because their supply is only temporarily fixed. Whereas Marshall, called the whole of such income, quasi rent, while Flux and others, used the term to mean income in excess of the normal earnings. Samuelson says, "The return to any factor in temporarily fixed supply, is sometimes call quasi-rent."

Quasi-rent can be ,earned by human being also. For example, if demand for doctors increases say during a war, their supply cannot be immediately increased. Hence their earnings will be of the nature of quasi-rent. In the long-run, however; when the supply of doctors increases, quasi-rent will disappear.

Self Check Exercise

1. Define Quasi Rent

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Distinction between Rent, Quasi-Rent and Interest

We have seen that rent is usually related to land and quasi-rent to man made assets. Interest is associated with loanable funds. Evidently all the three terms denote a returns on assets the elasticity through time in case of which is different. The supply of land is fairly inelastic, both in the short period and in the long period. Man-made machines have a more elastic supply in the long period, but a less elastic one in the short period. Loanable funds can be quickly increased or decreased, whereas the supply of fixed assets is fairly inelastic in the short period. Thus, the difference between rent, quasi-rent and interest is a matter of degree and not that of kind. That is why "Marshall said, "Interest" on free capital and quasi-rent on old investment of capital shade into one another gradually; even the rent of land being not a thing by itself, but the leading specific of a large genus."

2.4.8 Summary

In this lesson, you have studiedRicardian theory of rent which is based on the producer surplus or differential gain which is found in land only. Ricardo defined rent as that portion of the produce of the earth which is paid to the landlord for the use of the original and indestructible powers of the soil. The theory is based on three points, firstly, Land is heterogeneous in quality i.e., all plots of land are not equal in fertility; secondly, the differences in fertility of land are due to original and indestructible powers of the soil; thirdly, there exists no-rent land which just meets the cost of cultivation. Further, you have studied about modern theory of rent which states that rent is the surplus arises due to the difference between actual earnings and transfer earnings. You have also learnt the concept of quasi rent which is the return to any factor in temporarily fixed supply.

2.4.9 Technical Concepts

Economic Rent: any surplus (of return over costobtained by any factor of production if its supply is less than perfectly elastic.

Quasi Rent : surplus earnings generated by factors of production except land.

2.4.10 Long Questions

1. Explain the Ricardian theory of rent.
2. Discuss the modern theory of Rent.

2.4.11 Short Questions

(i) Define Rent (ii) Define Quasi Rent

(iii) What is the relation between Rent and Price?

2.4.12 Suggested Readings

1. Koutsoyiannis : Modern Microeconomics
2. H.L. Ahuja : Principles of Microeconomics

LESSON NO. 2.5 **AUTHOR: PROF. UPINDER JIT KAUR**
PROF. BALBIR SINGH

THEORIES OF INTEREST

Structure

2.5.1 Objectives

In this lesson, you will get to understand

- the concept of net interest and gross interest.
- analyse the theories of interest.

2.5.2 Introduction

Interest is the reward for the services rendered by capital in production. It is the payment made by the borrower to the lender for use of the latter's capital. In the words of Benham, "Interest is the price paid for a loan. If you borrow Rs. 1000 and promise to pay back Rs.1050 at the end of the twelve months, you are promising to pay rate of interest at 5 percent per annum." In the words of Dr. Marshall, "the payment made by borrower for the use of loan for say a year is expressed as the ration which that payment bears to the loan and is called interest". Thus, capital is lent mostly in the form· of money and interest is also paid in that form and is expressed as a certain percentage per annum.

2.5.3 Gross interest and Net Interest :

A distinction may be made between gross rate of interest and net rate of interest. Net or pure interest is the payment made exclusively for the use of capital. In other words, it may be defined as the return on capital invested in channels free from risk, inconvenience and management duties. The amount which the borrower actually and always pays to the lender is gross interest and it includes besides net interest, insurance against risk and payment for trouble and inconvenience also Moreland, in his book, introduction to Economics, says : "Gross interest is what we

mean by interest in ordinary talk, the whole amount that a borrower has to pay, while net interest is that portion of the gross interest which is paid simply in the use of capital."

Thus, Gross Interest = Net interest plus any or all of the following:

(i) **Insurance Against Risk:** When you lend some money to somebody, you incur the risk or its loss on account of inability or unwillingless of the borrower to pay back the amount to you. This risk is to two types:

(a) **Business or Trade Risk:** The business for which a person borrows may be safe of risky. For instance, the business of speculator is most risky, than of a farmer is risky and that of a publisher is comparatively safe. Therefore, the lender will charge more from the speculator, comparatively less from the farmer and the publisher.

(b) **Personal Risk:** The borrower may have the money to pay back the loan, but he may not be willing to do so. He may be dishonest. While the gross interest charged from a dishonest person is high, it will be low in case of a person who is honest. People accept a much lower rate of interest on Government bonds or certificates and also from banks because there is no risk involved. A village money lender charges an exorbitant rate of interest from a farmer because there are both business and personal risks involved. Agriculture in India is gamble in monsoons. Further, an Indian agriculturist is very extravagant and sometimes he does not want to return a loan even when he has the money to do so.

(ii) **Rewards for Inconvenience :** The lender may need money himself at one time, but it may not be available. He may then have to borrow money himself. That is exactly what sometimes happens if you deposit your money in the fixed deposit account with a bank. Inconvenience is caused in another way also. The debtor may, at any time, repay the debt in lumpsum to the lender and at that time it is possible that the lender does not know of satisfactory channel of investment. Thus, he loses interest till he is able to invest the amount. The lender charges some thing from the borrower for all these inconveniences. An ideal investment is one where money be invested at any time and in any amount and withdrawn at any time and in any amount. Depositing money in the current account with a bank is an example. While interest paid by the bank is the highest on deposit in the fixed account, it is very little on deposits in the current account with and some banks do not pay interest on deposits in the current account.

(iii) **Payment for Management Duties:** The lender had to spend some time, money

and energy in performing certain duties in respect of his lending business. He has to find out suitable borrower, settle the rate of interest with him, undergo some legal formalities, maintain proper accounts and at times even send reminders to his debtors when they do not pay him back, punctually. For all these duties, a charge is made-an addition made to net interest. Because the Mahajans and Kabulis have to bother a lot to realise dues, they charge a very high rate of interest.

(3) Why is interest paid and charged?:

It is worthwhile to quote the following lines from Smart's preface of the translation of Bohm Bawerk's *Capital and Interest* to enable you to understand why interest is paid and charged.

"If we appeal to the common consciousness to say what it is that capital does, or forebears to do, that it should receive interest we shall probably get two answers. One will be that the owner of capital contributes a valuable element to production, the other that he abstains from using his wealth for his own immediate consumption. One or more of these grounds, the capitalist is said to deserve a remuneration and this remuneration is obtained by him in the shape of interest. The first contribution is positive that capital does something; the other negative that the capital abstains from doing something. In the one case, interest is a payment for a tool, in the other, a compensation for a sacrifice. The first answer is the basis of productivity theories and the second is the basis of the abstinence theory.

Thus, capital can be looked at from two stand points-from the point of view of the borrower and from the view of the lender. For the borrower the capital is productive. It is capable of creating value in addition to its own value. Let us take an example. A tailor who does not have a sewing machine, working with his hands earns, say only Rs. 200/- per month. He also knows that if he uses sewing machine he can earn Rs. 800/- per month. The productivity of machine will be (Rs. 800 - Rs. 200) Rs. 600 per month. If he is offered the necessary amount of money with which he can buy a sewing machine, on the condition that he will have to pay Rs. 20/- per month as interest, he will most happily agree to the proposal. Out of the additional Rs. 600/- which he can earn with the help of machine and which we have described as the productivity of capital in this case. He can easily pay Rs. 20/- per month and even then have a net additional income of Rs. 580/- per month. The capital actually belongs to the capitalist. He must, therefore, get a share out of the productivity of capital.

When we look at the capital from the point of view of the capitalist, saving and accumulation entails abstinence from present consumption i.e., sacrifice, waiting or patience to enjoy the money saved by him. It implies the negative act of denying to himself the right to spend the whole of his income. Even after making all this sacrifice

the capitalist does not himself make use of his capital productivity and foregoes his privilege in favour of the borrower. So, he fully deserves to be rewarded for this abstinence or sacrifice and unless the reward is forthcoming, he will not supply capital. For this reason, the borrower at once agrees to pay interest. Thus, the productivity of capital enables and the abstinence or sacrifice undergone by the capitalist induces the borrower to pay interest. For the same two considerations, the capitalist charges interest from the borrower.

2.5.4 Theories of Interest

We shall now discuss how the rate of interest is determined. In this connection various theories have been put forth. Let us study them one by one.

(i) The Abstinence (or waiting) Theory: According to this theory, associated with the name of Senior, interest is the reward for abstaining from immediate consumption of wealth. Since abstinence from present consumption means sacrifice and it is painful, it is necessary to induce people to do so by offering them a reward in the form of interest.

The theory is criticised on the ground that the major part of loanable funds comes from wealthy people who save without the least inconvenience or sacrifice. They have so much of wealth that they find it easier to save, difficult to spend the whole of it. Karl Marx refers to members of this class as "The queer saint, that knight of the woeful contenance, the capital abstainer." Prof. Marshall preferred the word 'waiting' for Senior's abstinence and called the theory as 'waiting theory of interest'. Thus, according to him the lender, rich or poor has to undergo waiting when he lends money. But waiting also entails sacrifice on the part of lender. Even then, the theory gives only one reason why a price must be paid for capital. The theory seeks to explain the supply side only. It does not explain why capital side is demanded.

(ii) The Austrian or Agio Theory: This theory, associated with the name of professor Bohm Bawerk, a leader of Austrian or Psychological School of Economists, is an attempt to penetrate to the root of interest. This theory is also called the psychological theory. It maintains that payment of interest arises from the fact, that the man prefers present satisfaction to future satisfaction. Future goods are less valuable than present goods, in the same way we maintain that "a bird in hand is worth two in the bush." Interest is the payment which man requires in order to equate future with present values. It is the price of time, its cause and measure is impatience to enjoy." said Irving Fisher.

This theory is sometimes called as the Agio theory. Agio means premium to present goodsThese enjoy a premium over future goods. Future satisfaction is discounted as compared with present satisfaction. Interest makes good the premium which present satisfaction enjoys over future satisfaction. Bohm Bawerk, has given

three reasons why a present good enjoy a premium over future good: (i) Future satisfaction is more remote and less certain. (ii) Present wants are felt more keenly than future wants. (iii) Present goods are considered to be technically superior to future goods.

Let us have an example. If you are given the choice between Rs. 1000/- now or Rs. 1000/- after a year, you will certainly choose the present payment. But if you are offered Rs. 1100/- after a year against Rs. 1000 now, you might choose the future payment. Your decision would depend on whether Rs. 100/- is compensation for the postponement of a satisfaction and the estimation by investor of the value of this postponement determines the rate of interest.

This theory has also been criticised on the ground that it is one sided it ignores the demand side or productivity of capital and lays emphasis only on supply side. The fact is that interest is paid only because the lender is induced to lend but also because the borrower is willing and able to pay for the accommodation.

(v) The Productivity Theory: The older economists maintained that interest is paid because capital is productive. The borrower makes use of capital and obtains extra product. The exponents of this theory hold that capital can produce value in addition to its own value; and the amount of this value depends entirely on the productivity of capital concerned. Labour becomes much more productive when assisted by capital. A fisherman can catch much more fishes when he does so with the help of a net. Likewise, a farmer can produce far more when he does so with the help of tractor and mechanical reaper than with a hand plough and a sickle.

Thus, a borrower demands capital because it is productive and there is a demand price for capital. As and when more units of capital are employed, its demand price diminishes because its marginal productivity, governed by the law of diminishing returns, goes on diminishing whenever the rate of interest is lower than the marginal net product of capital. On the other hand, when the rate of interest is higher than the marginal net product, the borrower will demand less capital, there by increasing this marginal net product. Thus, in the long run, the rate of interest will tend to equate with the marginal productivity of capital.

This theory is one-sided. It only explains how capital is demanded. It overlooks the fact that capital has a supply side as well.

(vi) The Classical (Demand and Supply) Theory: This theory, like the demand and supply theory of wages, is the most plausible. According to it, rate of interest is determined both by the demand for and supply of capital. It is more or less a combination of the productivity theory which constitute the demand side for capital, and the Abstinence and Austrian theories which constitute the supply side of capital. Capital has a demand price, the maximum beyond which the borrower is not prepared

to pay, and it equals the marginal productivity of capital. It has also a supply price the minimum below which the lender is not prepared to accept and it equals, like the supply price of a commodity, the marginal cost of production of capital. Cost of production of capital means the money measure of the abstinence of sacrifice involved in accumulative and supplying a given amount of capital and its marginal cost may be taken to mean the money measure of the value of the abstinence by the marginal saver.

According to the classical theory mainly given by Marshall and Pigou, the rate of interest is determined by the demand for and supply of capital. So it has two aspects i.e., demand for capital & supply of capital.

Demand for Capital :

The demand for capital arises for productive and consumptive activities. Capital is demanded by the investors mainly because it is productive. But this demand for capital demands on the marginal productivity of capital. It is assumed that demand for savings comes from the entrepreneurs who want to invest this money in capital goods. As an entrepreneur continues to invest more and more into capital equipment , marginal productivity after a certain point starts diminishing. So the demand for capital also starts declining. Therefore, the demand curve for capital is downward sloping from left to right.

Supply of Capital :

According to Classical economists, the money required to purchase capital goods comes from the savings of the people. The theory also states that the savings are interest elastic. This means the amount of savings would increase if the rate of interest increases and vice-a-versa. Therefore, the supply curve of savings will slope upward to the right.

Equilibrium between Demand and Supply :

In the classical theory rate of interest is determined where demand for savings and supply of savings are equal. This can be shown in diagram No. 5.1. It is clear in the diagram that the intersection of demand curve (DD) for investment and supply curve (SS) of saving takes place of point E. So point E shows the equilibrium point. At this the rate of interest is or as has been depicted in the diagram. If due to any reason the demand for money for investment increases, suddenly the rate of interest would increase. But allured by the high rate of interest people would increase the savings and after sometime both demand for money for investment and supply of savings would again become equal at the earlier point of equilibrium i.e., E and the rate would again comes down to Or.

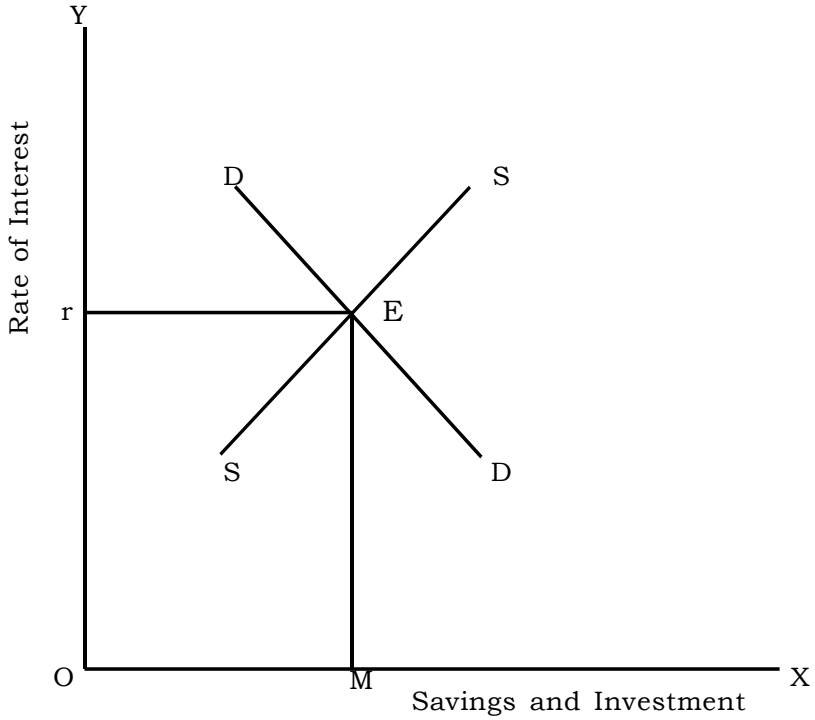


Fig. No. 5.1

Criticism:

There are some points on which the classical theory of interest has been criticized.

First, the classical theory of interest assumes that savings depend on the level of income, but it is almost impossible to know the rate of interest unless the income level is already known.

Second, J. M. Keynes says that the classical theory is based on the unrealistic assumption of full employment. But in most of the time period there exists under employment and not full employment is an economy.

Third, the classical theory has been criticized on the point that it assumes the level of income is given and considers interest as an equilibrating mechanism between the demand for funds through savings. But J. M. Keynes criticized the theory on the ground that income is variable not constant and equality between savings and investment comes through changes in income and not by changes in the rate of interest.

Fourth, the classical theory does not take into consideration the effect of investment. A rise in the rate of interest would cause a decline in the level of investment by making it less profitable. Due to this low level of investment output, income and employment would decline. This decline would further cause decline in

savings. So it is contrary to the classical view that saving is a direct function of the rate of interest.

Fifth, the classical theory assumes that savings come out only from the current income, but if the rate of interest increases further people might lend their past savings.

Last, but not the least, point of criticism is that the classical theory regards the demand and supply curves of savings as independent of each other. This would imply that if there is a change in demand, the demand curve can shift up above or below the original demand curve without making a change in the supply curve. But the two curves are not independent of one another as described by J. M. Keynes. For example, if an invention causes the shift in the demand curve upward, income will rise and it will increase the level of savings and would shift the supply curve also. On the contrary a shift in supply curve will cause a change in the demand curve also.

The Loanable Funds Theory of Interest

The neo-classical economists formulated a new theory of interest, generally known as loanable funds or neo-classical theory of interest. This theory was first given by K. Wicksell and was later elaborated by many economists such as B. Ohlin, D. H. Robertson, G. Myrdal, Jacob Viner etc. According to this theory non-monetary factors such as thriftness, waiting, time-preference, productivity of capital etc. are not the only factors that determine the rate of interest. But monetary factors such as hoarding, dishoarding of money, bank money, monetary loans for consumption also play an important role in determining the rate of interest. This theory is sometimes also called monetary theory of rate of interest though it is partly monetary because it also accepts the role of non-monetary (real) factors in determining the rate of interest.

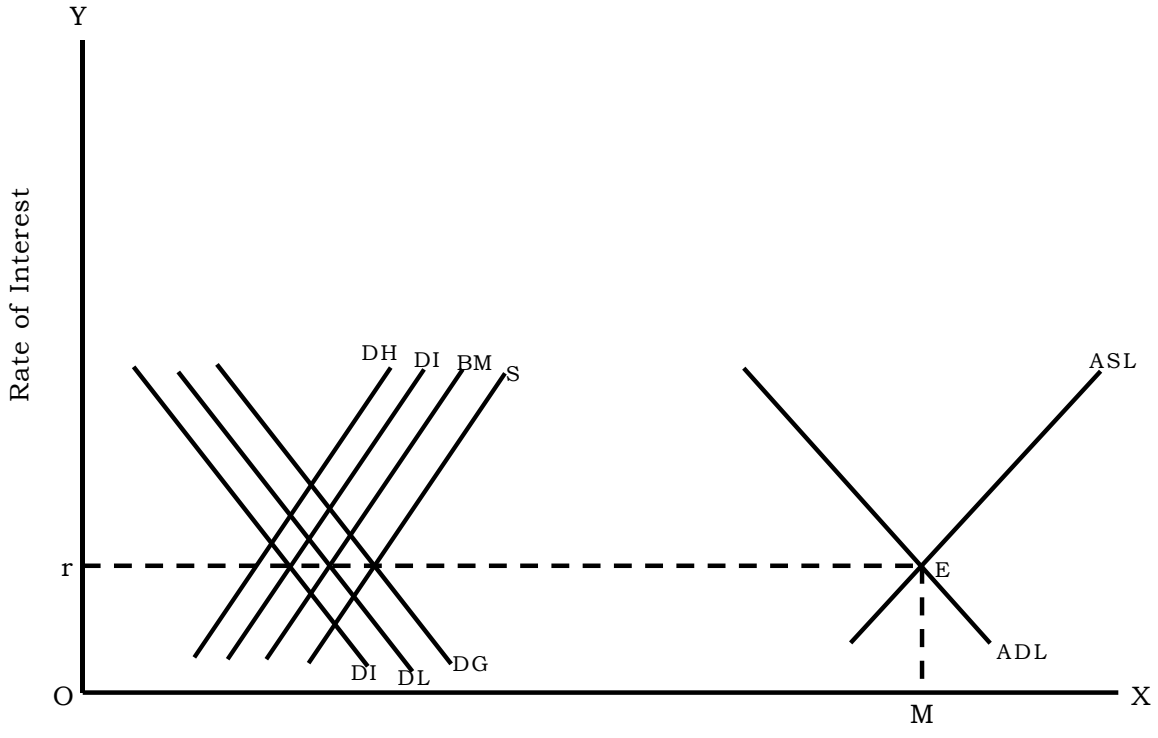
Demand for Loanable Funds :

In an economy money is demanded mainly for three purposes i.e., hoarding, investment and consumption. Firstly, people demand some amount of funds in the liquid form for hoarding so that it can be used in some emergency requirements. This money lying at the disposal of a person can be quickly used and these funds are interest elastic. Secondly, loanable funds are also demanded for the purpose of durable consumer goods such as scooter, car, television, etc. These funds are more in demand if the rate of interest is lower. Thirdly, businessmen demand the loanable funds for investment purposes. There would be more demand for this purpose if the rate of interest is low and vice-versa.

Supply of Loanable Funds :

The supply of loanable funds comes from savings (S), dishoarding (DH), credit (BM) and disinvestment (DI). Private savings, individual and corporate sector savings account for the main source of savings. These savings are interest elastic, e.g., if

the rate of interest is higher, it would increase the inducement to increase the supply of savings and vice-versa. Similarly, if the rate of interest is higher, more funds would come up for lending out of hoarded money and vice-versa. In the same way, lenders compare their income from investment with the prevailing rate of interest. If the income from rate of interest is higher than that of the income (technically called marginal efficiency of capital) from the investment, the owners of money would prefer to lend their money on interest by disinvesting from their business. So disinvestment is also a source of supply of funds for loanable funds. The fourth source of supply of loanable funds is bank credit i.e., known as bank money (BM). It is also interest elastic. Bankers would like to supply more money if rate of interest is higher and vice-versa. So these are four sources (S+DH+DI+BM) of supply to loanable funds. According to the neo-classical (Loanable Funds) theory, the rate of interest would be determined at the equilibrium point where demand for loanable funds equals the supply of loanable funds. This has been shown in the diagram No. 5.2 given below. In the diagram all the individual demand curves for loanable funds have been represented by ADL. On the otherhand, all the sources of supply of loanable funds have been added and have been shown by the aggregate supply curve known as ASL.



Loanable Funds
Fig. No. 5.2

It is clear from the given diagram that equilibrium takes place at point E where aggregate supply curve for loanable funds (ADL) is equal to the aggregate demand curve for loanable funds. At this equilibrium point L, the rate interest has been determined in market at Or as depicted in the diagram.

Criticism:

The founders of neo-classical theory regarded it as superior to the classical theory of interest. But still this theory is not free from its shortcomings.

Firstly, Prof. Hansen says that neo classical theory of interest is indeterminate. Accordingly to him, savings, a component of supply of loanable funds, change with previous income and change in the current income. It implies that the total supply of loanable funds, change with previous income and change in the current income. It implies that the total supply of loanable funds also change with income. It is because of this change, the loanable funds theory becomes indeterminate unless the income level is already known.

Secondly, this theory has been criticized on the ground that it makes use of both real as well monetary factors. But it is not correct to combine monetary factors such as dishoarding and bank credit with real factors such as savings and investment without making changes in income level. Besides this, there is difference in the nature of real and monetary factors.

Thirdly, according to the loanable funds theory the supply of loanable funds can be increased by increasing the quantity of cash balances of savings and decreased by absorbing cash balances into savings. It reveals that cash balances are fairly elastic. But it is not true because the total cash balances available with the nation are fixed and equal the total supply of money at any time. Actually, the variations in cash balances are due to the variations in the velocity of circulation of money rather than in the quantity of cash balances.

Fourthly, savings are not always interest elastic as the theory emphasizes. But there is a general tendency that people save not to earn rate of interest, but to fulfil their precautionary motives.

Superiority of Neo-Classical Theory over Classical Theory

This theory is considered to be superior to the classical theory due to the following reasons :

As in the first place classical theory neglects the role of bank credit in the total money supply which influences the rate of interest and is given important role in the loanable funds theory.

Secondly, by providing the role to hoarded money for loanable funds, the neo - classicals became more realistic than the classical theory which do not give any role to the hoardings in a clear cut way.

Thirdly, the classical theory takes into consideration only real factors and ignores the effect of monetary factors which are also important in determining the rate of interest, especially in the modern times.

2.5.5 Summary

In this lesson, you have studied the concept of net interest and gross interest. The former includes the return on capital invested in channels free from risk, inconvenience and management duties whereas the latter is the amount which the borrower actually pays to the lender. Further, you have studied the determination of interest rate according to the various theories. The AbstinenceTheory states that the interest is the reward for abstaining from immediate consumption of wealth.The Austrian or Agio Theorymaintains that the payment of interest arises from the factthat the man prefers present satisfaction to future satisfaction. The Productivity Theory hold that capital can produce value in addition to its own value; and the amount of this value depends entirely on the productivity of capital concerned.According to the Classical Theory, rate of interest is determined both by the demand for and supply of capital. It is more or less a combination of the productivity theory which constitute the demand side for capital, and the Abstinence and Austrian theories which constitute the supply side of capital.According to the Loanable Funds theory of Interest, non-monetary factors such as thriftiness, waiting, time-preference, productivity of capital etc. are not the only factors that determine the rate of interest. But monetary factors such as hoarding, dishoarding of money, bank money, monetary loans for consumption also play an important role in determining the rate of interest.

2.5.6 Technical Concepts

Net interest: is the payment made exclusively for the use of capital.

Gross Interest: the whole amount that a borrower has to pay.

2.5.7 Long Questions

1. Critically examine the loanable funds theory of interest.
2. Interest brings equilibrium between supply of savings and demand for savings'. Examine the statement.

2.5.8 Short Questions

1. Define Interest
2. Distinguish between Gross and Net Interest.
3. How is Neo-Classical Theory of Interest superior to Classical Theory of Interest?

2.5.9 Suggested Readings

1.	Stonier, A.W. & Hague, D.C.	:	A Text Book of Economic Theory
2.	Ahuja, H.L.	:	Principles of Micro Economics
3.	Sharma, B.K. and	:	Price-theory and Distribution
4.	Kumar, Gulshan		(Punjabi Medium)

LESSON NO. 2.6 **AUTHOR: PROF. UPINDER JIT KAUR**

THEORIES OF PROFIT

Structure

2.6.1 Objectives

Let us now examine the various aspects of profits, particularly the nature of profits, determination of profits etc. We propose to deal with the various questions pertaining to profits in the following manner:

A. Nature of Profits; Pure and Gross
B. Determination of Profits;
C. Profits under different situations
   (a) Profit in various forms of market: Perfect Competition & Monopoly
   (b) Economic States : Stationary and Dynamic;
   (c) Economy: Capitalist & Socialist; and
D. Function of profits

2.6.2 Introduction

We know that the fourth factor of production is organisation. This factor plays a significant role in the production of goods and services. In the present day industrial set up, an overwhelming importance has been assigned to the entrepreneur. He is expected to play an important role in modern production. He pioneers the project, organises the productive effort, hires other factors of production and mixes them in the most profitable way, coordinates their activities and also undertakes the most vital responsibility of risk taking and uncertainty bearing. For all these functions, he

expects a reward from the society. Whatever the society pays him, in return for his services, comprises his profits, gross profits. In simple words, profits constitute for his services comprises his profits, gross profits are entrepreneur's reward for the functions performed by him for the society. It may be mentioned in the very beginning that the whole of his share may be called gross profits. Pure (or net) profits are strictly the reward for risk-taking and uncertainty-bearing (More of this distribution shall be explained subsequently).

2.6.3 Nature of Profit: Pure and Gross Profit

As already mentioned above, total receipts of an entrepreneur, in lieu of his total services rendered to the society, constitute his gross profits. The surplus of total sale receipts over the total cost of production represents his gross profits. Pure or net profit is the amount that occurs to the entrepreneur for assuming the risk which is inseparable from all business under the system of production in anticipation of demand. Pure profits are, thus, the payment exclusively for the bearing of the risk which cannot be shifted to any other factor of production. This distribution between the two terms could be more clear by stressing the constitutes of gross profits. The following elements which constitute the gross profits are given below:

(i) **Pure Profits :** Pure profits constitute receipts which are for the entrepreneur's unique function of risk-taking. This is an important ingredient of gross profits.

(ii) **Element of Wages :** Besides the function of risk-taking the entrepreneur might be managing the business and putting in a lot of labour. All these duties could have been performed by a paid manager, had he employed him. Or, had he himself got employment somewhere else, he would have got wages as a manager. These wages, thus, appear to the part of profits.

(iii) **Element of Rent:** Similarly, the building where the project is located might be his own. In case it had been rented to some other concern, it might have fetched him some rent. But now the gains on this property are included in his gross profits.

(iv) **Monopoly Gains :** Gross profits may also include certain gains to the entrepreneur as he happens to enjoy monopoly right in a market. Chance occurance of monopoly markets swells his profits.

(v) **Windfall Gains:** Sometimes unexpected events may multiply his profits. For instance, outbreak of a war, sudden changes in demand and supply and some fiscal measures adopted by the Government may increase his gross profits. These gains influence the grass profits.

Thus, all such factors influence the gross profits. Pure profits could be measured if all these elements are excluded from gross profits.

Self Check Exercise

1. Define Net Profit.

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2. Define Gross Profit.

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2.6.4 DETERMINATION OF PROFIT

Let us now examine the various theories of profits.

RISK-TAKING AND UNCERTAINTY-BEARING THEORIES OF PROFIT: It may be mentioned at the very outset that these theories have been explained by various writers. For instance. Risk-taking theory of profit has been given by Mr. Hawley and the uncertainty-bearing theory by F.H. Knight. Here both the theories have been grouped under a common head, as both these explanations emphasize practically the same set of causes, with slight variations. Let us examine these theories.

RISK-TAKING THEORY OF PROFITS: According to Hawley, risk-taking is the special function of an entrepreneur and is the basis of profits. The expectations of profits will lure the entrepreneurs to venture into new field and start new projects. Some of the businesses are speculative and uncertain to a great extent, the new ones are even more so. Only the cost adventurous entrepreneurs would dare to take risk in such lines. Greater the risk, according to Hawley, greater would be the margin of profit. In case the line of production is old and long-exploited by all types of entrepreneurs, risks, being eliminated to almost zero level, the profits would be less. Thus, the degree of risk inherent in a market project would determine the rate of profits. Implicitly, according to Hawley, the degree of risk influencing the supply of entrepreneurs, would determine the profits. Further, Hawley maintains that assumption of risk and risk alone ensures a margin of profits to the entrepreneurs.

Though this theory underlines the most important factor that gives profit and also explains the profit differentials in various industries; yet the theory is not free from many objections, some of which are given below:-

(i) Profits arise not because the risks are undertaken, but because the risks are reduced by efficient entrepreneurs.

(ii) Like other theories this theory, too, ignores important factors viz. productivity innovations, dynamic factors etc. which influence the rate of profits.

(iii) According to Knight, all risks do not give rise to profits. There are certain

risks which are easily insured and are, thus, borne by the insurance companies. Such risks do not entitle the entrepreneur to profits. Only those risks which are economic uncertainties such as changes in demand and supply give rise to profits.

(iv) The entrepreneurs are never the risk-bearers. They are rather the innovators, risks being borne mostly by the capitalist.

Thus, the theory fails on more than one count. But Knight tried to modify the theory by introducing the idea of uncertainty - bearing in place of risk-taking.

UNCERTAINTY-BEARING THEORY OF PROFITS: As already mentioned above, Knight divides the risk into two types: (i) Risks which are certain and known and could be insured against, (ii) Risks which are unknown and uncertain and could not be insured against, as no insurance company insures them. Knight calls the latter risks economic uncertainties and they are caused by changes in the techniques of production, changes in demand etc. The former risks, on the other hand, are insurable and easily ascertainable, for instance, loss of property on account of fire, theft or dishonesty. The expenses on the insurance of these risks make an important part of the cost of production.

According to Knight, only the non-insurable risks of modern business which are difficult to ascertain and calculate, give rise to profit. When these risks are borne by them, only then they are rewarded. Thus, profit is a payment of uncertainty-bearing and not for risk-taking. Further, Knight categorised these non-insurable risks i.e., uncertainties into the following groups:

(i) Competition risks which arise from the development of some new products.

(ii) Technical risks, which arise from the possibility of machines becoming obsolete;

(iii) Risks of government action arising from frequent changes in the policies viz., fiscal and monetary, which alter the costs and prices, and

(iv) Business cycle which simply reduce effective demand etc.

Thus, these uncertainties borne by the entrepreneurs lead to profit.

The theory brings out the simple truth that profit is the result of uncertainties. So far, the explanation is valid. But the theory is inadequate on many points which need clarification and hence expose this theory to criticism. Some points of criticism are as follows:-

(i) Economic uncertainty is not the one factor that gives rise to profits. Many other factors that limit the supply to enterpreneur may also be responsible for profits.

(ii) Uncertainty-bearing is not the only function of the entrepreneurs. They might be rewarded for many more functions e.g., pioneering, initiating and

coordination the business etc.

(iii) Like many other theories this theory seems to be one sided. It elevates the uncertainty to the status of factor of production which is something unwarranted.

Concluding the profits theories, it may be stated that profit determination is yet an unexplored field. No complete explanation for determining profit has been given so far. Only this much could be said that all these theories provide us the knowledge about the nature of profit and they collectively explain the factor which determine profits.

2.6.5 PROFITS UNDER DIFFERENT SITUATIONS

(a) PROFITS IN VARIOUS FORMS OF MARKETS

Let us examine how profits behave on a practical plane in an actual market. For simplification, we will take into account only two types of market viz.-perfect competition and monopoly.

In the case of perfect competition characterised by free entry, free mobility of factors of production, many buyers and sellers having an influence on demand and supply by their individual actions and standardized goods, profits may have rather curiously depend on the assumption of short and long period when capital stock cannot be changed nor new innovations can be introduced nor new entrants come in from other industries, the firms or industry may enjoy more profits (more than normal profits, i.e. abnormal profits). But if the short-period gives place to long period when entry of new firms could be assumed, installation or expansion of new capital is possible and new techniques could be evolved, competition may become so thorough that the rate of profit earned by the industry or firm may be only normal. Emergence of abnormal profit (more than the normal profit) in the long period in the industry will attract more new firms and may compel the old ones to expand. This process would certainly eliminate the possibility of profit.

In the case of an absolute monopoly, where supply is wholly controlled by one seller and when the possibility' of remote substitutes is excluded, profits may emerge in the long period. The firm (or for that matter the industry) would have more than normal profit. Only the threat of government action might compel monopolist to curb his desire to get heavy profits.

(b) PROFITS IN THE VARIOUS FORMS OF ECONOMIC STATE

Now we are to explain the magnitude of profits in the various forms of economic state viz. Stationary and Dynamic states. Let us take up the stationary state.

We know that in a stationary state neither demand nor supply changes. Dynamic factors such as income size, population growth, capital stocks, taste and likings, techniques of production and innovations are conspicuous by their absence.

They do not operate on the side of demand and supply. Since supply and demand are assumed to be static, the prices and the costs of production become constant too. All will try to adjust their output to market demand and would try to attain the static equilibrium position where the total cost will be equal to total receipts, only normal profits would accrue to the firm or the entrepreneurs. In fact, no much scope will be there for the enterprising to innovate to undertake risks or bear uncertainties. Hence no reward by way of pure profits will be claimed by them as their share out of the national dividend. In a dynamic state, profits arise because of dynamic changes constantly are taking placed.

(c) PROFITS IN THE VARIOUS TYPES OF ECONOMY

We must now come to a controversial discussion. Economists are said to have divergent views about the nature of profits and its magnitude in various types of economy viz. capitalist and socialist. In the case of a capitalist economy profits accrue to the entrepreneurs for the services rendered by them to the society. This is compensation, strictly speaking for the assumption of risk or uncertainty or innovation introduced by the entrepreneurs. Similarly, in the case of **capitalistic system** where the means of production are owned and controlled by individuals, and where these means are exploited for personal gains, profits have been given an overwhelming importance. And so are the entrepreneurs. The success of the venture will be indicated by the margin profits. As would be shown later on, profits play a significant role in the resource allocation in such a society.

In the case of a **socialist economy**, where all the means of production are owned by the State and managed for the social interests, profits are said to disappear. It is maintained by the socialist thinkers that profits have no part whatsoever to play in such an economy. Moreover, in such a controlled economy profits may not be the tool to allocate productive resources. Profits are the surplus of total sale. Receipts over total costs, may exist but they may be appropriated by the State or by the pubic sector Progressively the socialist economies are bearing round to the concept of profits creation even in the public sector as a means to add to capital formation. This may be the social purpose in contrast to the private interest. Even centrally planned economies now have come to depend upon rate of profits as an incentive to increased efforts on the part of the working class. Thus, gradually the profits are being assigned greater (relatively speaking) role in such system. Thus, profits do exist in both types of economy. Mixed economy may not be an exception at all. Profits do discharge the same function in this type of economy. Both the sectors, public and private, use profits as a guide for allocation of resources and for measuring the degree of success achieved in various projects.

2.6.6 FUNCTIONS OF PROFIT

As already stressed above, profits are assigned an important role to play in the various economies. Sometimes, it is said that profits arise at the expense of consumers of society even though they benefit the entrepreneurs. A conflict is said to exist between private and social ends. This may be particularly true. But generally; the two may coincide and benefit the private and the social interests alike. For instance, proper allocation of resources and their optimum utilisation by the entrepreneurs may not only benefit the entrepreneur, but also the society. In the pursuit of successful new ventures, the entrepreneurs also develop the economy. In short, whatever may be the form of economy, profits discharge the following function.

(i) In their battle for survival, it is the duty of the entrepreneurs to cover current costs of business.

(ii) To cover the future costs of staying in the market arising out of risks, uncertainty, obsolescence and replacement etc.

(iii) To cover the losses of unsuccessful ventures by the efficient management of other ventures;

(iv) To cover the costs of certain social services such as education, medical and sanitation facilities through contribution to tax-receipts of Government.

(v) To provide a ready basis for allocation of productive resources in various industries and sectors. Magnitude of profit in the various sectors of economy would indicate the need for inflow and outflow of productive resources in these avenues. A rising rate of profit indicates the need for large allocation and a declining rate the need for withdrawal of resources from a particular use.

Profits, thus, perform all these functions and have come to be relied upon increasingly for realising the ideal allocation of resources.

But to set the record in correct perspective it may be added that profits, particularly for personal gains at the cost of society should be controlled. A regulated profit policy on the part of the government may go a long way in harmonizing the private and social end in allocating the resources on an optimum basis and curbing the wrong tendencies toward inequitable distribution of wealth and income.

2.6.7 Summary

In this lesson, you have studied about the concept of gross interest which is the surplus of the total sale receipts over the total cost of product and net interest which is the payment exclusively made for the bearing of the risk which cannot be shifted to any other factor of production.Further, you have studied the various theories of profits. The Risk-Taking Theory of Profits states that the expectations of profits will lure the entrepreneurs to venture into new field and start new projects which are also speculative and uncertain in nature. So, greater the risk and greater would be the margin. According

to Uncertainty-Bearing Theory of Profit, only the non-insurable risks of modern business which are difficult to ascertain and calculate, give rise to profit. When these risks are borne by them, only then they are rewarded. Thus, profit is a payment of uncertainty-bearing and not for risk-taking.

2.6.8 Technical Concepts

Gross profits: the surplus of total sale receipts over the total cost of production.

Net profit: is the amount that occurs to the entrepreneur for assuming the risk which is inseparable from all business under the system of production in anticipationof demand.

2.6.9 Long Questions

1. Explain the risk-bearing and uncertainty theory of profit. How far this theory explains the profit determination properly ?
2. According to the modern theory of profit "an entrepreneur's role is limited to the extent that he faces the non-insurable risks and uncertainty." Explain this statement.

2.6.10 Short Questions

1. Define Net Profit.
2. What are the elements of gross profit?
3. Give the functions of Profit.

2.6.11 Suggested Readings

1. Koutsoyiannis : Modern Microeconomics
2. H.L. Ahuja : Principles of Microeconomics

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Note: Students, kindly click this google form link, and fill this feedback form once.