

KV Institute of Management and Information Studies
BA5101- Economic Analysis for Business

UNIT III

PRODUCT AND FACTOR MARKET

Product market – perfect and imperfect market – different market structures – Firm’s equilibrium and supply – Market efficiency – Economic costs of imperfect competition – factor market – Land, Labour and capital – Demand and supply – determination of factor price – Interaction of product and factor market – General equilibrium and efficiency of competitive markets.

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3.1 Product Market

The marketplace in which a final good or service is bought and sold. A product market does not include trading in raw or other intermediate materials, and instead focuses on finished goods purchased by consumers, businesses, the public sector and foreign buyers.

In economics, the **product market** is the marketplace in which final goods or services are offered for purchase by consumers, businesses, and the public sector. Focusing on the sale of finished goods, it does not include trading in raw or other intermediate materials.

3.1.1 Perfect Competition and Imperfect Competition

Perfect vs imperfect competition Based on competition, the market structure has been classified into two broad categories like Perfectly competitive and Imperfectly competitive. Perfect Competition is not found in the real world market because it is based on many assumptions. But an Imperfect Competition is associated with a practical approach.

The type of market structure decides the market share of a firm in the market. If there exists a single firm, it will serve the entire market, and the demand of the customers are satisfied with that firm only. But if we increase the number of firms to two, the market will also be shared by the two. Similarly, if there are about 100 small firms in the market, the market is shared by all of them in proportion.

Therefore, it is the market structure, which affects the market. So here we are going to describe the differences between perfect competition and imperfect competition, in economics.

Definition of Perfect Competition

Perfect Competition is an economic structure where the degree of competition between the firm is at its peak.

Characteristics of Perfect Competition

In order to attain perfect competition, several factors need to be met. The following list outlines some of the main factors:

1. Knowledge is available to all buyers and sellers, and no individual has control over the prices.
2. Buyers and sellers have no barriers to enter or leave the market.
3. Buyers and sellers want to maximize profit.
4. There are too many sellers and buyers to take control of the market.
5. All goods are homogeneous.
6. The government does not get involved.
7. There are no costs associated with transportation.

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Example: Suppose you go to a vegetable market to buy tomatoes. There are many tomato vendors and buyers. You go to a vendor and inquire about the cost of 1 kg tomatoes, the vendor replies, it will cost Rs. 10. Then you go ahead and inquire some more vendors. The prices of all the vendors are same for the demanded quantity. This is an example of perfect competition.

Benefits of Perfect Competition

Now that the factors have been introduced, you might be asking, what are the benefits to a perfect market? Let's look at some of the benefits in more detail:

1. All of the knowledge, such as price and information pertaining to the goods, is equally dispersed among all buyers and sellers. In other words, there are no secrets, and communication about the products is shared evenly, preventing corruption.
2. Since there are no barriers to enter the market, this makes it impossible for a monopoly to occur.
3. Advertisement is not needed in a perfect competition because all goods are the same, and customers have all the knowledge pertaining to those goods.

Examples of Perfect Competition

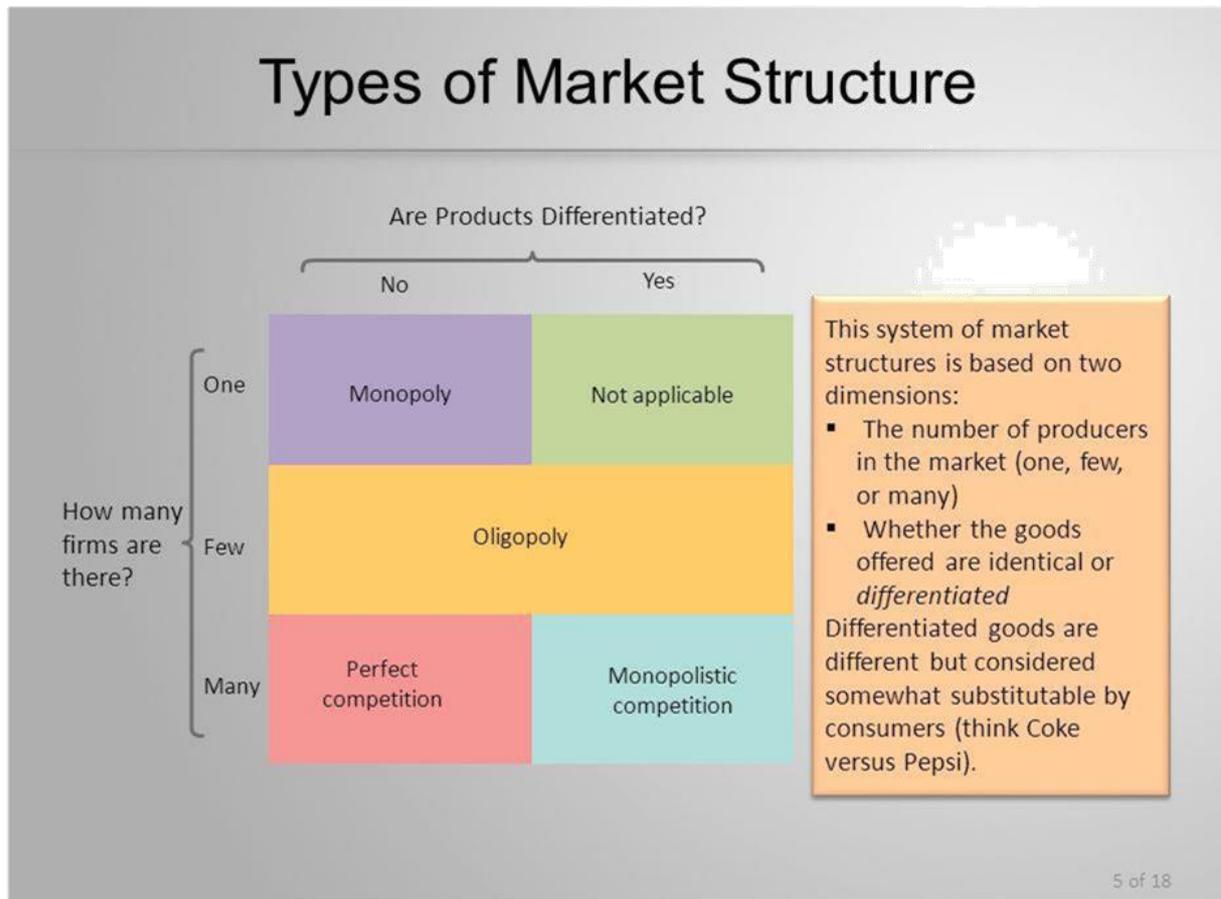
This leads to the next question: Is perfect competition in a market realistic in the real world? The answer is no, not really. There aren't any 100% perfect markets, but there are some industries that come close. Like we mentioned earlier, street food vending (more common in developing countries) has many of the factors required of a perfect market. Agricultural markets are examples of nearly perfect competition as well. Imagine shopping at your local farmers' market: there are numerous farmers, selling the same fruits, vegetables and herbs. You can easily find out the prices for the goods, but they are usually all about the same

Definition of Imperfect Competition

The competition, which does not satisfy one or the other condition, attached to the perfect competition is imperfect competition. Under this type of competition, the firms can easily influence the price of a product in the market and reap surplus profits.

In the real world, it is hard to find perfect competition in any industry, but there are so many industries like telecommunications, automobiles, soaps, cosmetics, detergents, cold drinks and technology, where you can find imperfect competition. By the virtue of this, imperfect competition is also considered as real world competition.

There are various forms of imperfect competition, described below:



Monopoly: Single seller dominates the entire market.

Monopoly (from the greek «mónos», single, and «polein», to sell) is a form of market structure of imperfect competition, mainly characterized by the existence of a sole seller and many buyers. This kind of market is normally associated with entry and exit barriers.

All of these features give the monopolist the ability to set prices with the only limitation of consumers' willingness to pay. Therefore, in monopolies, the seller is a price-maker and consumers will be price-takers. The firm will choose its production output (q) and price (p) in order to maximise revenue (π). The optimal condition, where we'll have marginal cost (MC) equals marginal revenue (MR).

The extent to which a firm can take advantage of its monopolistic condition will highly depend on the flexibility of its demand curve. If it is more rigid (steeper), it will only have to reduce its production in order to achieve a higher price. However the more flexible (flatter) the demand curve is, the less market power the firm has to increase prices. This relationship between price elasticity of demand and market power can be described using the Lerner index. This index measures the firm's level of market power by relating price to marginal cost.

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The equilibrium output of a monopoly to that of a perfectly competitive market, the consumers will be willing to pay more than marginal cost. This leaves space for improving efficiency, but monopolistic firms choose to produce less and set higher prices. This deadweight loss is represented by the areas A and B in the adjacent figure: while the monopolist gains area C' and loses B, consumers transfer area C' and lose A. As a result, firms increase their surplus, consumers lose part of it and in aggregate terms, society as a whole, will bury the deadweight loss.

Types of monopolies:

As we have previously explained, monopolistic firms maximise their profits with the level of output in which marginal cost equals marginal revenue. However we can distinguish different types of monopolies depending on how they achieve this. We can distinguish different types of monopolies:

Multiplant monopoly: firms which have many production plants and hence different marginal cost functions will have to choose the individual output level for each plant.

Bilateral monopoly: this market structure consists of a single buyer (monopsony) and a single seller (monopoly). Depending on who has greater negotiation power there can be different outcomes. Two possible scenarios may be in either one of them having all of the power, an intermediate solution may be found or a vertical integration may occur.

Multiproduct monopoly: instead of selling one product, the monopoly sells several. The firm will have to take into account how the changes in the price of one affect the rest of its products.

Discriminating monopoly: firms may want to charge different prices to different consumers, depending on their willingness to pay. Depending on the level of discrimination we have different degrees. The first degree or perfect discrimination is given when the monopolist sets the highest price that each consumer is willing to be pay. The second degree or nonlinear price fixing is given when price depends on the amount bought by the consumer. And finally, the third degree or market segmentation of price discrimination occurs when there are several differentiated consumers segments to which the firm will apply different prices, e.g. student or third age discounts.

Natural monopoly: this kind of monopoly occurs in industries in which, due to cost-technological factors, it is more efficient to have a single firm dealing with all of the production, as average costs are lower in the long run; a phenomenon known as subadditivity.

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Duopoly: Two sellers share the whole market.

Duopoly (from the Greek «duo», two, and «polein», to sell) is a type of oligopoly. This kind of imperfect competition is characterized by having only two firms in the market producing a homogeneous good. For simplicity purposes, oligopolies are normally studied by analysing duopolies. What strategies firms follow and their interactions are a key feature of this market structure.

In duopolies there are two variables of interest: the prices set by each firm and the quantity produced by each firm. Several models have been developed through time, from which we must highlight the Cournot, Stackelberg, Bertrand and the Edgeworth solution. The first two models seek the optimum quantity a firm should produce. Both have different conclusions as they have a different initial assumption. With time, and as the next two models proved, the focus changed to target the optimum price a firm should set in order to maximise profits.

There are also different perspectives in the analysis of duopolies, which deal with game theory. While the models by Antoine Cournot and Joseph Bertrand occur under a basis of simultaneous games, Heinrich von Stackelberg's model depends on sequential games.

Oligopoly: Few sellers are there who either act in collusion or competition.

Oligopoly (from the Greek «oligos», few, and «polein», to sell) is a form of market structure that is considered as half way between two extremes: perfect competition and monopolies. This kind of imperfect competition is characterized by having a relatively scarce amount of firms, but always more than one, which produce a homogeneous good. Due to the small number of firms in the market, the strategies between firms will be interdependent, thus implying that the profits of an oligopolistic firm will highly depend on their competitors' actions.

Firms in oligopolistic market can have a wide range of behaviour patterns making it difficult to have a single model. Static models are used as they present a simple way of analysing equilibriums in this market. However, the maximisation problem faced by the firm will be marked by the different strategic interdependence context in which that market works. Therefore, the firm must estimate and collect the reactions of its competitors in its optimisation problem to choose the best strategy to follow. As a result we must propose a conjectural variation on how competitors modify their behaviour as the firm varies strategies.

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Monopsony: Many sellers and a single buyer.

Monopsony (from the greek «mónos», single, and «opsōnía», purchase) is a market structure form of imperfect competition characterized by the existence of a unique buyer and many sellers. It is a similar case to monopoly but where the monopolistic powers come from the demand side and not from the supply one. Joan Robinson first coined this term in her book “The Economics of Imperfect Competition” 1933.

There are not many cases of real monopsonies in the world, however the many occur in any input market. Examples of this include the one of the United States over defence and security assets in the economy, which started during the cold war. Nevertheless, the most significant case analysed is monopsony in the labour market. Frictions between the job searching progress and joining to it, causes employees to be uncomfortable about leaving their workplace.

This position gives the employer monopsonist powers and allows them to push wages down to the marginal revenue product providing them with higher profits. Governments have the possibility to set a minimum wage to prevent wages dropping to very low levels.

Markets with the same features as monopsonies but where there are more than one buyer, being the number of buyers still small enough, are known as oligopsonies.

Oligopsony: Many sellers and few buyers.

The Economics of Imperfect Competition”, 1933, are a particular case of oligopsonies, where there is only one buyer, which holds all the negotiating power.

Monopolistic Competition: Numerous sellers offering unique products.

Monopolistic competition is a market structure defined by four main characteristics: large numbers of buyers and sellers; perfect information; low entry and exit barriers; similar but differentiated goods. This last one is key to distinguish monopolistic competition from perfect competition since in the latter all products are homogenous. This product differentiation leads consumers to perceive products in this market as unique, providing firms with a monopolistic-like property that enables them having price-making power. There is a distinction to be made between horizontally and vertically differentiated products in order to be able to understand different strategies that monopolistic firms might adopt. The former is given when consumers base their purchasing decision on subjective preferences when comparing products, e.g. colours or flavours. The latter occurs when the product can be evaluated with another one in terms of measurable and qualitative factors, e.g. technological differences or technical properties in engines.

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The extent to which each firm can take advantage of their monopoly condition depends on the flexibility of their demand curve. If it is too rigid (steeper), in order for the monopolist to achieve a higher price, it has only to reduce some of its production. However the more flexible (flatter) the demand curve is, the less market power the firm has to increase prices. Naturally, every monopolist in an imperfect market tries to expand the size of the market in which its product dominates. For this they have to compete with other monopolists leading them to a series of costs other than production (manufacturing and transportation costs), which are defined as selling expenses.

Key Differences Between Perfect Competition and Imperfect Competition

The main points of difference between perfect competition and imperfect competition in economics are depicted below:

- The competitive market, in which there are a large number of buyers and sellers, and the sellers supply identical products to the buyers; it is known as perfect competition. Imperfect competition occurs when one or more conditions of the perfect competition are not met.
- Perfect competition is a hypothetical situation, which does not apply in the real world. Conversely, Imperfect Competition is a situation that is found in the present day world.
- In perfect competition, there are many players in the market, but in imperfect competition, there can be few to many players, depending upon the type of market structure.
- In perfect competition, the sellers produce or supply identical products while in imperfect competition the products offered by the sellers can either be homogeneous or differentiated.
- In perfect competition, there are no barriers to the entry and exit of the firms which is just opposite in the case of imperfect competition.
- In perfect competition, it is assumed that the firms do not influence the price of a product. Hence they are price takers but in imperfect competition, the firms are price makers.

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MARKET STRUCTURES

PERFECT COMPETITION	MONOPOLISTIC COMPETITION	OLIGOPOLY	MONOPOLY
			
There are an infinite number of firms.	There are many, similar firms.	There are usually 2-10 different firms.	There is only one firm.
Each firm is tiny.	Each firm is small.	Each firm is large.	The firm is usually large.
Every firm produces identical products.	Every firm produces similar products.	Each firm produces a range of products.	The firm produces only one product.
Firms are hyper-competitive.	Firms are very competitive.	Firms are interdependent.	The firm is not competitive.
Every surviving firm achieves perfect efficiency in the long-run.	Every surviving firm achieves very good efficiency in the long-run.	Every surviving firms does not achieve good efficiency.	The firm does not achieve good efficiency.
Every surviving firm earns only normal profit.	Surviving firms can earn above normal profit.	Surviving firms can sustain above normal profit.	The firm can sustain above normal profit.

The Comparison of Four Different Market Structures

Types of Markets	<u>Perfect Competition</u>	<u>Monopoly</u>	<u>Monopolistic Competition</u>	<u>Oligopoly</u>
Number of Firms	High	One	Medium	Low/Few
Freedom of Entry	High	None	Medium/High	Low
Nature of Product	Identical	Unique	Similar/slight differences	Same/Slight differences
Implications for Demand Curve	Horizontal	Downward sloping inelastic	Downward sloping elastic	Downward sloping inelastic
Average Size or Firms	Small	Large	Small to large	Large
Possible Consumer Demand	Low	High	Medium	Medium
Profit Making Possibilities	Little	High	Small to large	High
Government Intervention	low	Medium	Medium	High
Examples	Stock exchange	enmax	Soda beverages	Car manufacturer

Conclusion

Perfect competition is an imaginary situation which does not exist in reality, but imperfect competition is factual i.e. which genuinely exist.

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Whichever market, you consider for this like for example if you consider the detergent market. There are many players like Tide, Rin, Surf Excel, Ariel, Ghadi, etc. producing similar product i.e. detergent.

At first instance, you may think that this is an example of perfect competition, but this is not so. If you dig a little deeper, you may find that all the products are different as well as they vary in their prices. Some are low budget detergents for capturing the market of price sensitive people while others are high budget detergents for quality sensitive people.

3.2 Equilibrium of the Firm:

Equilibrium indicates a situation in which there is a complete adjustment of the various forces operating there, and there is no inducement to change.

It is an ideal state. That is why a consumer is said to be in equilibrium, when he is deriving maximum satisfaction. Why should he then make any change?

A firm is said to be in equilibrium when it has no incentive either to expand or to contract its output. A firm would not like to change its level of output only when it is earning maximum money profits. Hence, making a maximum profit or incurring a minimum loss is an important condition of a firm's equilibrium. We shall presently discuss fully the conditions of a firm's equilibrium.

The equilibrium of the firm is usually discussed in terms of marginal cost and marginal revenue. Now, before explaining the conditions of equilibrium of a firm, it is necessary to describe the concept of marginal revenue and its relation with average revenue.

Average Revenue and Marginal Revenue:

Average revenue must be carefully distinguished from marginal revenue. Average revenue is the revenue per unit of the commodity sold. It is found by dividing total revenue by the number of units sold. But, since different units of a commodity are sold at the same price, in the market, average revenue equals price at which the commodity is sold. Thus, average revenue means price. It is revenue for the seller and price for the consumer.

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AR Curve:

It is the same thing as demand curve. Since the consumer's demand curve is the graphic relation between price and amount demanded, it also represents the average revenue or price at which the various amounts of a commodity are sold, because the price offered by buyers is the revenue from the seller's point of view. Therefore, average revenue curve of the firm is really the same thing as demand curve of the consumer.

On the other hand, marginal revenue at any level of firm's output is the net revenue earned by selling another (additional) unit of the product. Algebraically, it is the addition to total revenue earned by selling n units of product instead of $n-1$ units, where n is any given number.

The word 'net' in the first definition is important. If the price of a product falls when more of it is offered for sale, then that would involve a loss on the previous units, which were sold at a higher price before and will now be sold at the reduced price along with the additional one. This loss in the previous units must be deducted from the revenue earned by the additional unit.

For example, if a firm is selling 7 units of the output at the price of Rs. 16 per unit and if it wants to sell 8 units instead of 7. and thereby the price of the product falls to Rs. 15 per unit, then the marginal revenue will not be equal to Rs. 15 at which the eighth unit is sold, because seven units which were sold at the price of Rs. 16 before will also have to be sold at the reduced price of Rs. 15. That will mean the loss of one rupee on each of the previous 7 units.

The total loss on the previous units would be equal to Rs. 7. Therefore, this loss of 7 rupees should be deducted from the price of Rs. 15 of the eighth unit, while reckoning the marginal revenue. The marginal revenue in this case, therefore, will be Rs. 15 — Rs. 7 = Rs. 8 and not Rs. 15, which is the average revenue.

Marginal revenue can also be directly found by taking out the difference between the total revenue before and after selling the additional unit as follows:

Total revenue when 7 units are sold at the price of Rs. 16 = $7 \times 16 = \text{Rs. } 112$.

Total revenue when 8 units are sold at the price of Rs. 15 = $8 \times 15 = \text{Rs. } 120$.

Therefore, Marginal Revenue or the net revenue earned by the 8th unit = $120 - 112 = \text{Rs. } 8$.

Thus, Marginal Revenue of the n th unit

= difference in total revenue in going from $n-1$ units to n units.

= Price of n th unit minus loss in revenue on previous units resulting from price reduction.

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Generally speaking, marginal revenue is less than price as indicated by the above formula. But in perfect competition, when a firm can sell any amount at the ruling market price, marginal revenue is equal to average revenue, since there is no loss incurred on the previous units. Hence, under perfect competition, MR and AR coincide (see Fig. 26.2).

Relationship between Marginal and Average Revenue:

Let us consider the relationship between marginal, average and total revenue at various levels of output more fully with the help of a table given below. This table represents a situation of a hypothetical firm.

Total, Average and Marginal Revenue Schedules:

Total, Average and Marginal Revenue Schedules			
1 <i>Number of units sold</i>	2 <i>Price or Average Revenue</i>	3 <i>Total Revenue (AR × Quantity sold)</i>	4 <i>Marginal Revenue (addition made to total revenue)</i>
1	22	22	22
2	21	42	20
3	20	60	18
4	19	76	16
5	18	90	14
6	17	102	12
7	16	112	10
8	15	120	8
9	14	126	6
10	13	130	4

It is clear from the above table that average revenue and marginal revenue are two different things and, therefore, should not be confused. Column 2 shows the Average Revenue, while Column 4 shows the Marginal Revenue. Marginal Revenue has been derived from the total revenue column of the table. Thus, in going from two to three units, the marginal revenue is 18 and this is found by subtracting 42 from 60, and so forth. The Table further shows that when the average revenue is falling, the marginal revenue is less than the average revenue.

Shape of AR and MR Curves:

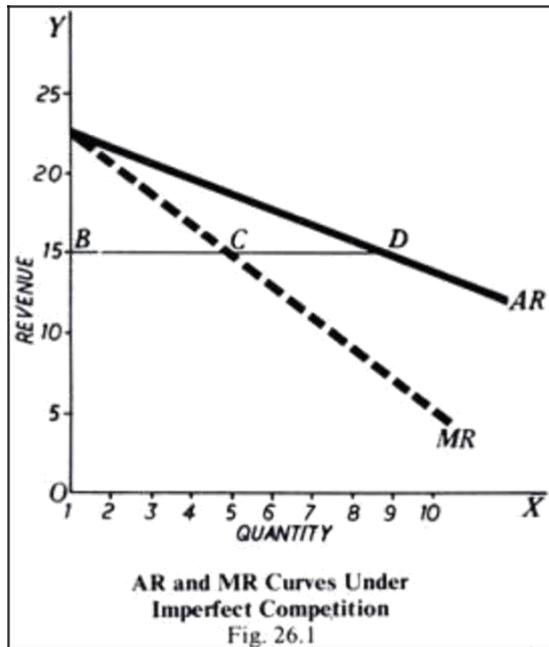
Under Imperfect Competition:

On converting the above schedules of Average Revenue and Marginal Revenue into curves, we get two downward sloping curves and find that marginal revenue curve is below average revenue curve. This is shown in Fig. 26.1. AR is the Average Revenue Curve and MR, the dotted curve, is the Marginal Revenue Curve. This divergence between the average revenue and marginal revenue, as shown in the figure, is actually found when a firm is working under conditions of monopoly or imperfect competition.

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AR and MR Curves Under Imperfect Competition



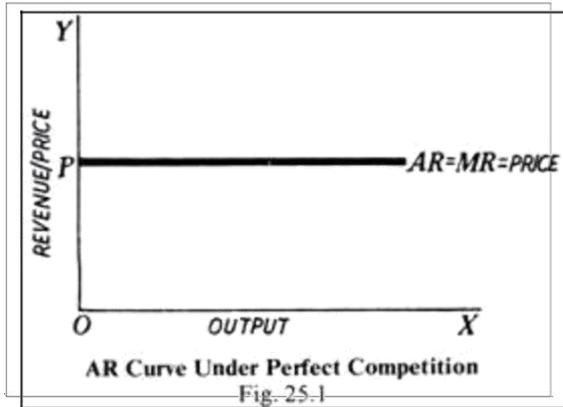
It is quite obvious that when price is falling, as indicated by the declining AR curve, the marginal revenue (MR) must always be less than the average revenue (AR), because a falling price must mean some loss on the sale of additional supply. That is why MR curve lies below AR curve.

We have stated above that when average revenue curve falls downward the marginal revenue curve will lie below it (or to the left of it). Now the question arises how far to the left it will lie. When both the marginal revenue curve and the average revenue curve are straight lines and sloping downwards, as shown in the Fig. 26.1, the marginal revenue curve will bisect any line from AR curve drawn perpendicular to the Y-axis. That is, if D is any point on the average revenue curve and if we draw DB a perpendicular from D to the Y-axis, then marginal revenue curve MR must pass through the middle of this perpendicular, i.e., from C where $BC = CD$.

Under Perfect Competition:

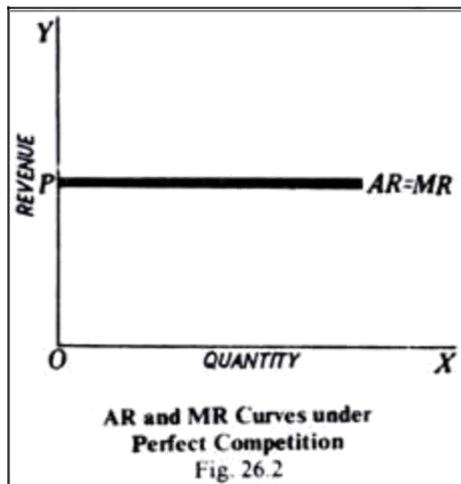
In perfect competition, the average revenue curve of the firm is a horizontal straight line. This is so because an individual firm under perfect competition by its own action cannot influence the price. The seller, under perfect competition, can sell any amount of the commodity at the ruling market price. In this case when average revenue curve is a horizontal line, marginal revenue curve coincides with the average revenue curve.

AR Curve Under Perfect Competition



This is so because additional units are sold at the same price as before and no loss is caused on the previous units, which would have resulted if the sale of additional units had forced the price down. The average revenue and marginal revenue curves of a firm under perfect competition are shown in Fig. 26.2.

AR and MR Curves under Perfect Competition



Conditions of Firm's Equilibrium:

We are now in a position to discuss the conditions of equilibrium of the firm. Here we shall attempt only an analysis of the conditions of firm's equilibrium in general and not with reference to any particular market form.

Assumptions:

Before explaining firm's equilibrium, we assume that the entrepreneur, i.e., the owner of the firm, is rational. The rationality on the part of the entrepreneur implies that he tries to maximize his money profits. This is a fundamental assumption in theory of production, and without this the equilibrium of the firm cannot be easily explained. We further assume that the firm produces only one product.

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Our conditions would, however, remain valid also in the case of a multi-product firm. But when a firm produces two goods or more, certain other complications arise, which we wish to avoid at this stage. The equilibrium of the firm can be explained with the aid of marginal revenue and marginal cost curves.

There are two conditions of a firm's equilibrium which we discuss below:

First Condition: Equality of MR and MC:

A firm will be in equilibrium when it is earning maximum profits:

It is obvious that total profits can be increased by expanding output as long as the addition to revenue resulting from the sale of an extra unit of output is greater than the addition to cost caused by producing that extra unit. Now the additions to total revenue and total cost due to an extra unit of output are nothing else but marginal revenue and marginal cost respectively. Thus, a firm will go on expanding output as long as marginal revenue exceeds marginal cost of production.

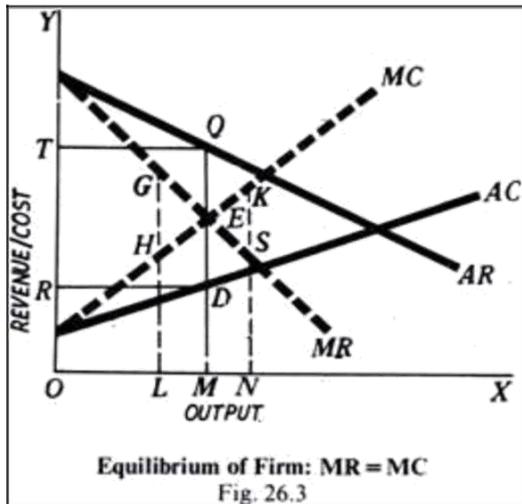
If at any output, marginal revenue falls short of marginal cost, i.e., an additional unit of output adds less to the revenue than to the cost, the firm will contract output, to avoid a loss and thus increase its profits. The level of output, where marginal revenue and marginal cost are equal, is the point of maximum profit.

Before this point of equality of marginal revenue with marginal cost is reached, the firm will be increasing its total profits by producing more, as it is adding more to the revenue than to the cost'. But if production is carried beyond this point of equality, the profits will start decreasing as the extra revenue will be smaller than the extra cost of production of a unit of output.

The whole argument can be explained with the help of Fig. 26.3 in which MC is the marginal cost curve and MR the marginal revenue curve. AC and AR are the average cost and average revenue curves respectively. At Output OM, marginal cost equals marginal revenue. This represents the point of maximum profits, and hence of equilibrium.

Equilibrium of Firm: $MR=MC$

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At outputs smaller than OM , marginal revenue exceeds marginal cost, and hence there is scope for increasing profits by increasing output. For example, at output OL , marginal revenue is LG and marginal cost is LH and LG is greater than LH . It means that by producing the L th 'unit, the firm is adding more to revenue than to its cost and, therefore, it will be profitable for it to produce the L th unit.

Similarly, for every other unit till the M th one, the marginal revenue exceeds marginal cost, and, therefore, the firm can increase its total profits by producing up to OM output. If the firm stops producing at OL , the units of output which could have added more money to the firm's revenue than to its cost would not have been produced and profits would have been smaller by the area GHE than they could have been at output OM . Thus, a firm has an incentive to produce up to OM level of output.

If the output is increased beyond OM , marginal cost would exceed marginal revenue and the production of each additional unit beyond OM output would add more costs than to revenue. For example, at ON output, the marginal cost is KN and marginal revenue is SN , and KN is greater than SN . Thus, production of additional units beyond OM would involve losses and thus reduce total profits. Therefore, the firm would not like to produce beyond OM .

Hence, we conclude that profits are maximum and the firm is in equilibrium when Marginal Cost = Marginal Revenue. This is, however, only one condition, i.e. it is a necessary condition but not a sufficient condition.

In Fig. 26.3, total profits earned by the firm in the equilibrium position can be easily found. At output OM , the average cost is DM , while the average revenue is QM . Hence, the profit per unit will be equal to QD and the total profits will be equal to the rectangle $QDRT$.
 Second Condition: MC Cutting MR from Below.

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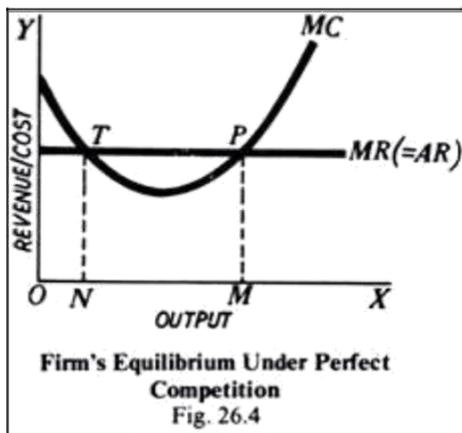
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The second condition of a firm's equilibrium is that the marginal cost curve must cut the marginal revenue curve from below. The condition that for a firm to be in equilibrium marginal cost must equal marginal revenue is no doubt a necessary condition, but not a sufficient condition of equilibrium. For attaining equilibrium, a second condition must also be satisfied.

This is that MC must cut the MR from below at the point of equilibrium. In other words, beyond the equilibrium output, marginal cost must be greater than marginal revenue. If this condition is not met, a firm will not be earning maximum profits, and hence will not be in equilibrium.

In Fig. 26.4, the point P (i.e., at output OM) satisfies this second condition also, as the MC curve cuts the MR curve from below at P. Beyond the point, P, MC is greater than MR, and it will clearly be not profitable to expand output beyond OM.

Firm's Equilibrium Under Perfect Competition



There can, however, be cost-revenue situation, which satisfies the first condition of MC being equal to MR, but does not satisfy the second condition of MC cutting MR curve from below. This is shown in Fig. 26.4. In this figure, MR is the straight line marginal revenue curve (as we have already seen, a straight line marginal revenue curve is actually faced by a firm under perfect competition). MC represents the marginal cost of the firm. At point T, the two curves intersect and, therefore, the marginal cost equals marginal revenue. But from the figure it is clear that at T, marginal cost curve.

MC is cutting marginal revenue curve MR from above and, therefore, marginal cost is less than the marginal revenue beyond the point T. Obviously, T cannot be a position of equilibrium since after T marginal cost is less than marginal revenue, and it will be profitable for the firm to expand output. At T or at output ON, the firm instead of making maximum profit is making maximum losses.

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At point P, however, in the same figure marginal cost curve is cutting marginal revenue curve from below and marginal cost beyond point P is greater than marginal revenue and, therefore, if the firm expands output beyond P, it will be adding more to cost than to revenue—clearly an unprofitable move. Hence, in Fig. 26.4, point P, and not point T, is the profit-maximizing point. In this equilibrium position, the firm is producing equilibrium output OM.

3.3 Market efficiency

In economics, a market is efficient if the maximum amount of goods and services are being produced with a given level of resources, and if no additional output is possible without increasing the amount of inputs. Efficient markets ensure optimal resource utilization by allowing for price to motivate independent actors in the economy. If buyers and sellers are free to choose how to allocate resources, prices will direct resources towards those who value them most and can utilize them most effectively.

Suppose consumer preferences change so that good A is now more desired than good B. We would expect the price of good A to shift higher and the price of good B to shift lower. This in turn will induce the production of additional units of good A and the devotion of more input resources to good A, while similarly decreasing production of B and its associated input resources.

In the real world today we have seen higher oil prices stimulate more drilling for oil and more investment in oil substitutes. The wage rates of mainframe programmers in the United States has decreased over the last several years in comparison to the year 2000, as there less of a need for their services. The lower wage rates have induced more mainframe programmers to retrain themselves with other computer skills, or to leave the field.

3.4 Economic Costs Of Imperfect Competition

The Cost of Inflated Prices and Insufficient Output

Our analysis has shown how imperfect competitors reduce output and raise price, thereby producing less than would be forthcoming in a perfectly competitive industry. This can be seen most clearly for monopoly, which is the most extreme version of imperfect competition. To see how and why monopoly keeps output low, imagine that all dollar votes are distributed properly and that all industries other than one are perfectly competitive, with Me equal to P and no externalities.

In this world, price is the correct economic standard or measure of scarcity: price measures both the marginal utility of consumption to households and the marginal cost of producing goods by firms.

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Now Monopoly Inc. enters the picture. A monopolist is not a wicked firm-it doesn't rob people or force its goods down consumers' throats. Rather, Monopoly Inc. exploits the fact that it is the sole seller of a good or service. By keeping its output a little scarce, Monopoly Inc. raises its price above marginal cost. Since $P = MC$ is necessary for economic efficiency, the monopolist's output will be less than the efficient output the marginal value of the good to consumers is therefore above its marginal cost. The same is true for oligopoly and monopolistic competition, as long as companies can hold prices above marginal cost.

3.5 Factor market

A **factor market** is a marketplace for the services of a **factor** of production. A **factor market** facilitates the purchase and sale of services of **factors** of production, which are inputs like labor, capital, land and raw materials that are used by a firm to make a finished product.

In economics, a **factor market** refers to markets where services of the factors of production are bought and sold, such as the labor markets, the capital market, the market for raw materials, and the market for management or entrepreneurial resources.

Firms buy productive resources in return for making factor payments at factor prices. The interaction between product and factor markets involves the principle of derived demand. Derived demand refers to the demand for productive resources, which is derived from the demand for final goods and services or output. For example, if consumer demand for new cars rises, producers will respond by increasing their demand for the productive inputs or resources used to produce new cars.

Production is the transformation of inputs into final products.^[1] Firms obtain the inputs or factors of production in the factors markets. The goods are sold in the products markets. In most respects these markets are the same. Price is determined by the interaction of supply and demand; firms attempt to maximize profits, and factors can influence and change the equilibrium price and quantities bought and sold, and the laws of supply and demand hold.

Markets price and can "purchase" as many inputs as they need at the market rate. Because labor is the most important factor of production, this article will focus on the competitive labor market, although the analysis applies to all competitive factor markets.

The existence of factor markets for the allocation of the factors of production, particularly for capital goods, is one of the defining characteristics of a market economy. Traditional models of socialism were characterized by the substitution of factor markets for some kind of economic planning, under the assumption that market exchanges would be made redundant within the production process if capital goods were owned by a single entity representing society.

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Factors of production :

Human activity can be broken down into two components, production and consumption. When there is production, a process of transformation takes place. Inputs are converted into an output. The inputs are classified and referred to as land, labour, and capital. Collectively the inputs are called factors of production.

According to the traditional classification, there are four factors of production. They are Land, Labour, Capital and Organisation.

When the factors of production are combined in order to produce something, a fourth factor is required. Goods and services do not produce themselves but need some conscious thought process in order to plan and implement manufacture. This thought process is often called entrepreneurship or organisation.

Factors of production refer to those goods and services which help in the productive process.

Factors of production are broadly classified into primary factors and derived factors. Man (Labour) acts upon Nature (Land) to produce goods and services and wealth. These two factors (Land and Labour) are naturally given and without them no goods can be produced. These are called primary factors.

Capital and organisation are derived from the primary factors of production, and are called derived factors of production. These derived factors of production, when combined with the primary factors of production, raise total production.

According to the traditional classification, there are four factors of production. They are Land, Labour, Capital and Organisation.

3.5.1 Land

Land as a factor of production refers to all those natural resources or gifts of nature which are provided free to man. It includes within itself several things such as land surface, air, water, minerals, forests, rivers, lakes, seas, mountains, climate and weather. Thus, Land includes all things that are not made by man.

Characteristics or Peculiarities of land

1. Land is a free gift of nature
2. Land is fixed (inelastic) in supply.
3. Land is imperishable
4. Land is immobile

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5. Land differs in fertility and situation
6. Land is a passive factor of production

As a gift of nature, the initial supply price of land is zero. However, when used in production, it becomes scarce. Therefore, it fetches a price, accordingly.

3.5.2 Labour

Labour is the human input into the production process. Alfred Marshall defines labour as the use or exertion of body or mind, partly or wholly, with a view to secure an income apart from the pleasure derived from the work.

Characteristics or Peculiarities of labour

1. Labour is perishable.
2. Labour is an active factor of production. Neither land nor capital can yield much without labour.
3. Labour is not homogeneous. Skill and dexterity vary from person to person.
4. Labour cannot be separated from the labourer.
5. Labour is mobile. Man moves from one place to another from a low paid occupation to a high paid occupation.
6. Individual labour has only limited bargaining power. He cannot fight with his employer for a rise in wages or improvement in work-place conditions. However, when workers combine to form trade unions, the bargaining power of labour increases.

Labour can assume several forms. Digging earth, breaking stones, carrying loads comprise simple labour operations but labour also covers highly qualified and skilled managers, engineers and technicians.

Division of Labour

The concept Division of Labour was introduced by Adam Smith in his book An Enquiry into The Nature and Causes of Wealth of Nations.

Meaning of Division of Labour

Division of Labour means dividing the process of production into distinct and several component processes and assigning each component in the hands of a labour or a set of labourers, who are specialists in that particular process.

For example, a tailor stitches a shirt in full. In the case of garment exporters, cutting of cloth, stitching of hands, body, collars, holes for buttons, stitching of buttons, etc., are done independently by different workers. Therefore, they are combining the parts into a whole shirt.

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A tailor may stitch a maximum of four shirts a day. In the case of garment exports firm, it may stitch more than 100 shirts a day. Thus, division of labour results in increased production.

Division of Labour and Market

It is stated Division of Labour is limited by the extent of market. When markets for a commodity grows from local to national and national to international, producers of that commodity divide and subdivide the processes of its production into finer and finer divisions of labour. Each sub-division is assigned to a particular set of specialist workers. As a result, production rises enormously.

Merits of Division of Labour

1. Division of labour improves efficiency of labour when labour repeats doing the same tasks.
2. Facilitates the use of machinery in production, resulting in inventions. e.g. More telegraphic codes.
3. Time and materials are put to the best and most efficient use.

Demerits of Division of Labour

The demerits of Division of Labour are:

1. Repetition of the same task makes labour to feel that the work is monotonous and stale. It kills the humanity in him.
2. Narrow specialisation reduces the possibility of labour to find alternative avenues of employment. This results in increased unemployment.
3. Kills the growth of handicrafts and the worker loses the satisfaction of having made a commodity in full.

3.5.3 Capital

Capital is the man made physical goods used to produce other goods and services. In the ordinary language, capital means money. In Economics, capital refers to that part of man-made wealth which is used for the further production of wealth. According to Marshall, Capital consists of those kinds of wealth other than free gifts of nature, which yield income.

Money is regarded as capital because it can be used to buy raw materials, tools, implements and machinery for production. The terms capital and wealth are not synonymous. Capital is that part of wealth which is used for the further production of wealth. Thus, all wealth is not capital but all capital is wealth.

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Forms of Capital

1. Physical Capital or Material Resources
2. Money Capital or Monetary Resources, and
3. Human Capital or Human Resources

1. Physical Capital

All man-made physical assets like plant and machinery, tools, buildings, roads, dams and communication, etc., are the various forms of physical capital.

Characteristics of Physical capital

1. It is an asset which has a specific life period.
2. Physical capital asset can be used in production again and again. As a result, it undergoes wear and tear or depreciation.
3. When used in production, it gives a series of annual income flows called annuities, during its life period.

Accumulation of more and more physical capital is called physical capital formation

2. Money Capital

The investment that is made in the form of money or monetary instruments is called money capital. A household saves its income in the form of bank deposits, shares and securities or other monetary instruments. These are the sources of money capital.

3. Human Capital

Human capital refers to the quality of labour resources, which can be improved through investments in education, training, and health. Higher the investments in human capital, higher will be the productivity.

Characteristics of capital

1. Capital is a passive factor of production
2. Capital is man-made
3. Capital is not an indispensable factor of production, i.e. Production is possible even without capital
4. Capital has the highest mobility
5. Supply of capital is elastic
6. Capital is productive
7. Capital lasts over time (A plant may be in operation for a number of years)
8. Capital involves present sacrifice (cost) to get future benefits.

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3.5.4 Organisation or entrepreneurship

An entrepreneur is a person who combines the different factors of production (land, labour and capital), in the right proportion and initiates the process of production and also bears the risk involved in it. The entrepreneur is also called organiser. Entrepreneurship is risk taking, managerial, and organizational skills needed to produce goods and services in order to gain a profit. In modern times, an entrepreneur is called the changing agent of the society. He is not only responsible for producing the socially desirable output but also to increase the social welfare.

Functions of an Entrepreneur

1. Identifying Profitable Investible Opportunities

Conceiving a new and most promising and profitable idea or capturing a new idea available in the market is the foremost function of an entrepreneur. This is known as identifying profitable investible opportunities.

2. Deciding the size of unit of production

An entrepreneur has to decide the size of the unit whether big or small depending upon the nature of the product and the level of competition in the market.

3. Deciding the location of the production unit

A rational entrepreneur will always locate his unit of production nearer to both factor market and the end-use market. This is to be done in order to bring down the delay in production and distribution of products and to reduce the storage and transportation cost.

3.5.5 Factor of Production: Demand and Supply

Modern economists rejected the marginal productivity theory mainly because of two reasons.

Firstly, according to modern economists, the marginal productivity theory does not take into account the supply side of a factor of production.

Secondly, the marginal productivity theory is concerned only with the units of factors of production, not with the determination of prices of factors. According to modern economists, as the prices of products are determined by the interaction of two forces, demand and supply in the market.

Similarly, in perfect competition, the prices of factors of production are also determined by matching the demand and supply in the factor market. Therefore, we will discuss the two aspects of a factor of production, namely demand and supply, in the factor market.

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Demand for a Factor of Production:

The demand for factors is a derived demand. This is because the demand for a factor of production (input) is derived from the demand of output. If the demand of output is high, then the demand for input or factor of production would also be high and vice versa.

According to the modern theory, the demand for a factor of production depends on two parameters, which are explained as follows:

i. Magnitude of demand for a factor:

Involves three conditions, which are as follows:

a. Condition 1:

Implies that there would be high demand for a factor of production if it is highly important in the production process.

b. Condition 2:

Implies that there would be high demand for a factor of production if the demand for output or final product is high.

c. Condition 3:

Implies that there would be low demand for a factor of production if it has close substitutes.

ii. Elasticity of demand for a factor:

Refers to the responsiveness of demand for a factor with change in its price.

The elasticity of demand for a factor also depends on three conditions, which are as follows:

a. Condition 1:

Implies that if the price of a factor is very low with respect to the total cost, then the demand for that factor will be inelastic and vice versa.

b. Condition 2:

Implies that if the demand for the product for which the factor of production is used is elastic, then the demand for the factor used would also be elastic.

c. Condition 3:

Implies that if the factor of production has easy availability of substitutes in the market, then its demand would be highly elastic. Now let us discuss the individual

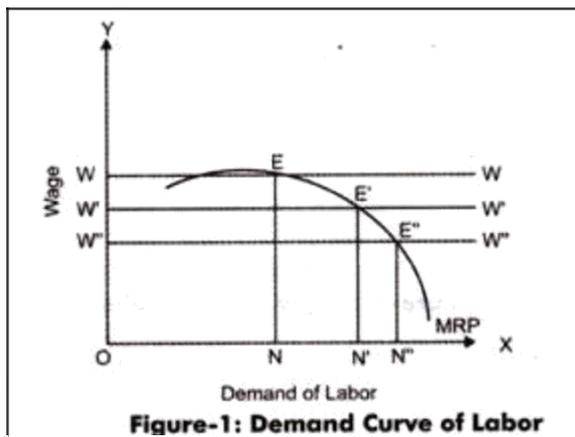
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demand curve of a factor of production. The demand curve of a factor of production is determined with the help of MRP. Here, we take the example of labor and wages to draw the individual demand curve. The demand for labor is determined by an employer with the help of MRP and prevailing wage rates. In case, the wage rate is low, then the labor employed would be higher and vice versa.

Figure-1 shows the demand curve of labor:

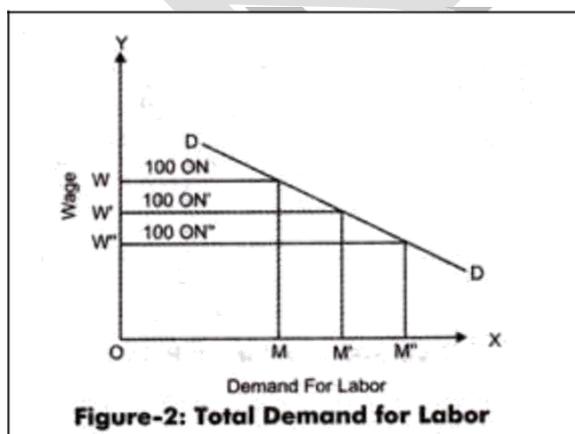
Demand Curve of Labor



In Figure-1, when the wage rate is OW and the demand for labor is ON , then the equilibrium is attained at point E . Similarly, at point E' , the wage rate is OW' and demand for labor is ON' and at E'' the wage rate is OW'' with demand for labor ON'' . MRP represents the demand curve for an individual organization. However, it is required to determine the market demand for labor.

The market demand curve can be derived by adding up the MRP curves of different organizations in an industry-, which is shown in Figure-2:

Total Demand for Labor



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In Figure-2, DD curve shows the market demand for labor in an industry. It is assumed that the number of organizations in an industry is 100. In Figure-2, when the wage rate for an individual organization is OW, then the demand for labor was ON.

However, in Figure-2, when the wage rate for an industry is OW, then the demand for labor is $OM = 100 ON$, which is the demand for labor for 100 organizations in the industry). Similarly, when the wage rate of industry is OW then demand of labor is $OM' (=100 ON')$ and at OW'' it is $OM'' (=100 ON'')$. The downward slope of demand curve DD represents that increase in labor would result in the decrease of marginal productivity.

Supply of a Factor of Production:

After discussing the demand for a factor of production, it is important to understand its supply, so that the price of the factor can be determined. Determining the supply of factors of production is a complex task as each type of factor creates a problem. For example the quantity of land is fixed, thus its supply cannot be increased or decreased with change in its prices.

Similarly, if we analyze the total supply of labor in a country, it depends on a number of factors, such as size and composition of population, efficiency of labor, geographical distribution, expected wages, and educational qualifications.

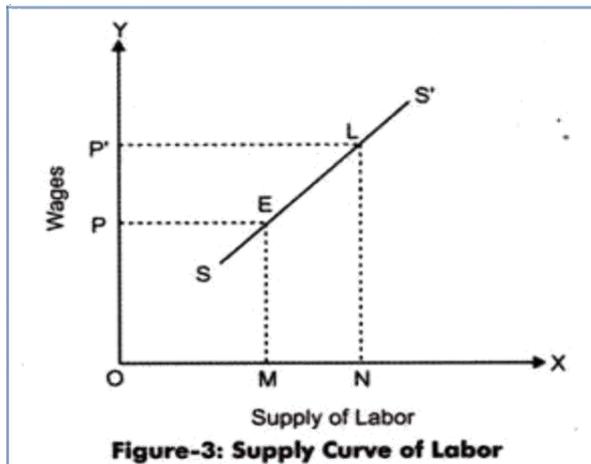
In such a case, the total supply of labor is fixed; however, it can be increased by increasing the working hours of labor employed. Moreover, the supply of capital also depends on factors, such as rate of interest, saving capacity of individuals, and their willingness to save. Therefore, in short, it can be said that the supply of a factor is also a function of price.

If the price of a factor of production is higher, then its supply would also be higher while others factors are constant and vice versa. Therefore, the slope of the supply curve of a factor of production is upward to right. Here, again we take the example of labor and wages to draw the supply curve.

Figure-3 shows the supply curve of labor:

Supply Curve of Labor

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Interaction of Demand and Supply:

According to the modern theory, the price of a factor of production is determined at a point where the demand and supply curves of the factor intersect each other. This point is known as equilibrium point, where the demand of a factor is equal to its supply.

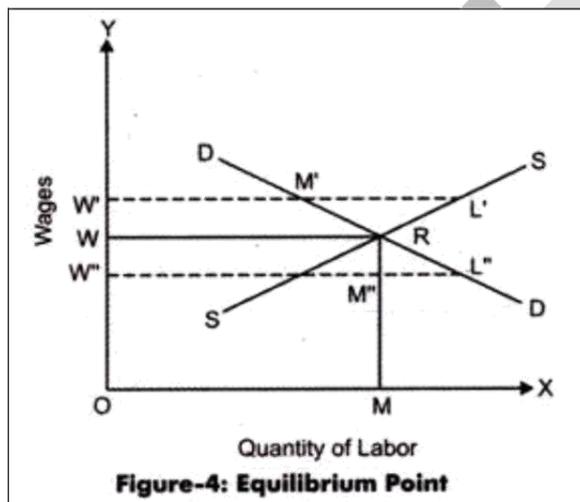


Figure- 4 shows the equilibrium point where the price of a factor of production is determined:

Equilibrium Point

In Figure-4, demand and supply curves of labor intersect each other at point R, which is the equilibrium point. At point R, the wage rate is $OW (=MR)$ and demand for labor is OM . At wage rate of OW , the demand for labor is $W'M'$, which is less than its supply. This implies that there is surplus of labor in the market.

For overcoming the situation, the wage rate falls down to OW (where the equilibrium is attained). Similarly, if the wage rate is OW'' , then the demand for labor is $W''L''$, which is more than its supply. This implies that there is a shortage of labor in the market. In such a case, the wage rate increases to OW . Finally, we reach the equilibrium point at which the demand and supply of labor is equal. At this point, the wage rate for labor is determined.

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The modern theory of factor pricing was an attempt to make improvement in marginal productivity theory.

However, the modern theory is criticized due to its weak assumptions, which are as follows:

- i. Assumes only perfect competition in both the product market as well as the factor market. However, in real situations, both of these markets face imperfect competition.
- ii. Assumes that there is homogeneity in all the factors of production, which is not true in real market scenario.
- iii. Assumes that all factors of production have close substitutes, which is not always possible.

3.5.6 Determination of a Factor Price:

Factor Pricing: Concept and Theories

Factors of production can be defined as inputs used for producing goods or services with the aim to make economic profit.

In economics, there are four main factors of production, namely land, labor, capital, and enterprise. The price that an entrepreneur pays for availing the services of these factors is called factor pricing.

An entrepreneur pays rent, wages, interest, and profit for availing the services of land, labor, capital, and enterprise respectively. The theory of factor pricing deals with the price determination of different factors of production.

The determination of factor prices is always assumed to be similar to the determination of product prices. This is because in both the cases, the prices are determined with the help of demand and supply forces. Moreover, the demand for factors of production is similar to the demand for products.

However, there are two main differences on the supply side of factors of production and products. Firstly, in product market, the supply of a product is determined by its marginal cost of production. On the other hand, in factor market, it is not possible to determine the supply of factors on the basis of marginal cost.

For example, it is difficult to ascertain the exact cost of production for factors, such as land and capital. Secondly, the supply of factors of production cannot be readily adjusted as in the case of products. For instance, if the demand for a land increases, then it is not possible to increase its supply immediately.

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Concept of Factor Pricing:

Factor pricing is associated with the prices that an entrepreneur pays to avail the services rendered by the factors of production. For example, an entrepreneur needs to pay wages to labor, rents for availing land, and interests for capital so that he/she can earn maximum profit. These factors of production directly affect the production process of an organization.

In context of an economy, these four factors of production when combined together produce a net aggregate of products, which is termed as national income. Therefore, it is important to determine the prices of these four factors of production. The theory of factor pricing deals with the determination of the share prices of four factors of production, namely land, labor, capital and enterprise.

In other words, the theory of factor pricing is concerned with the principles according to which the price of each factor of production is determined and distributed. Therefore, the theory of factor pricing is also known as theory of distribution. According to Chapman, the theory of distribution, “accounts for the sharing of the wealth produced by a community among the agents, or the owners of the agents, which have been active in its production.”

Determination of factor price:

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

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

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

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

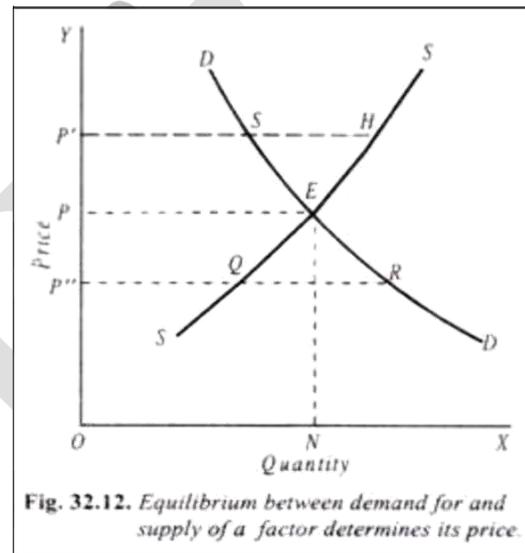
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In other words, given the demand and supply curves of a factor, the price of the factor will adjust to the level at which the amount of the factor supplied is equal to the amount demanded. This is shown in fig. 32.12, where DD is the demand curve and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

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

Equilibrium between Demand for and Supply of a Factor Determines its Price

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



Though price of a factor is determined by demand for and supply of the factor, it is equal to the marginal revenue product of the factor. This is illustrated by Fig. 32.13. It will be seen from Fig. 32.13(a) that equilibrium price OP of the factor is determined in the market and ON is equilibrium quantity demanded and supplied of the factor.

An individual producer or firm who demands that factor will take the factor price OP as given. It will now be seen from Fig. 32.13 (b) which depicts the position of a single firm or entrepreneur that at price OP the firm will employ or use OM quantity of the factor.

This is so because in order to maximise its profits, the firm will equalise the price of the factor with the MRP of the factor, and at OM, the price of the factor is equal to the marginal revenue product of the factor. If the firm employs fewer than OM units of the factor, then the MRP of the factor will be greater than the price of the factor which will imply that there is still a scope for earning more profits by increasing the use of the factor.

If, on the other hand the, firm employs more than OM units of the factor, MRP of the factor will be less than the price paid for it. As a result, the firm will incur losses on the marginal units and it will therefore be to the advantage of the firm to reduce the employment of the factor.

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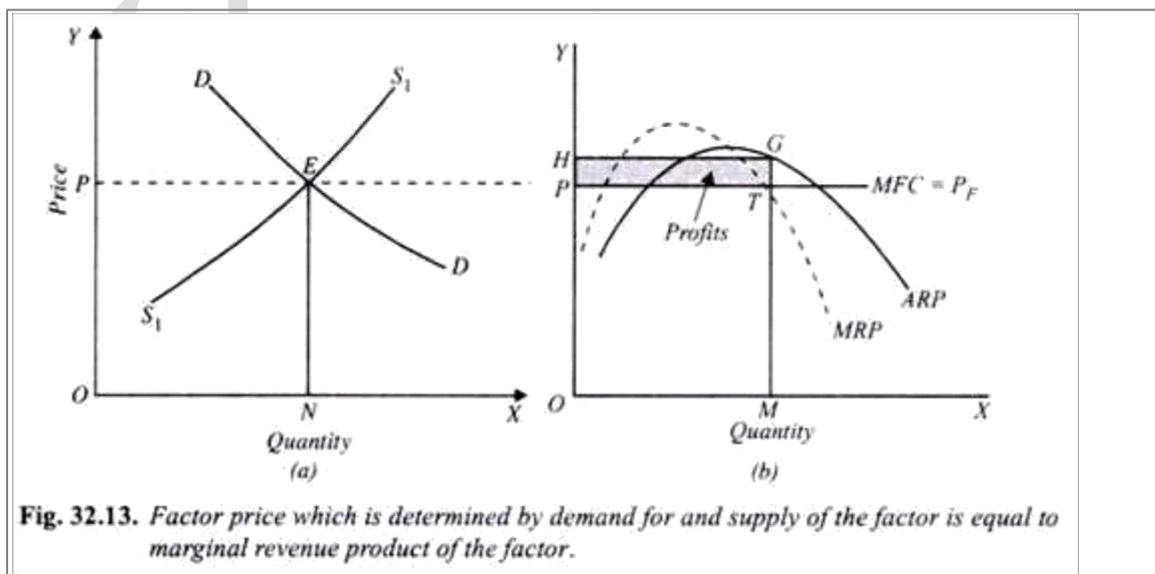
Thus, the firm maximises its profits and is in equilibrium when it is employing OM amount of the factor at which MRP of the factor is equal to the price of the factor. To sum up, price of a factor is determined by the demand for and supply of the factor and is equal to the marginal revenue product of the factor.

As is evident from 32.13, at price OP, the firm is earning super-normal profits, since in equilibrium ARP of the factor is greater than the price of factor. This can happen in the short run, but not in the long run. If firms are earning super-normal profits, more entrepreneurs will enter the market in the long run to purchase that particular factor to produce the products made by that particular type of the factor.

Entry of more entrepreneurs to the factor market will compete away the super-normal profits. As a result, the demand for factors will rise and the demand curve for the factor in Fig. 32.13(a) will shift outward to the right. This shift in demand curve due to rise in demand for the factor is shown in Fig. 32.14. With this increase in demand, the price of the factor will rise to OP'.

It is evident from Figure 32.14 that with factor price OP', the firm will be in equilibrium at H when it is employing OM' amount of the factor. At OM' amount of the factor the price of the factor is equal to MRP as well as ARP of the factor. Since at OM' the price of the factor OP' is equal to ARP of the factor, the firm is neither making super-normal profits, nor having losses. It is earning only normal profits.

Factor Price which is Determined by Demand for and Supply of the Factor is Equal to Marginal Revenue Product of the Factor



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If, in the short run, firms are having losses, some entrepreneurs will leave and stop purchasing the factor. As a result, the demand for the factor will decrease. The demand curve will shift down-ward and to the left so that the price of the factor will fall to a level at which price the firms earn only normal profits. Thus, in the long run, under perfect competition in the factor market, price of the factor is equal to both MRP and ARP of the factor.

Factor Price Determination in the Long Run

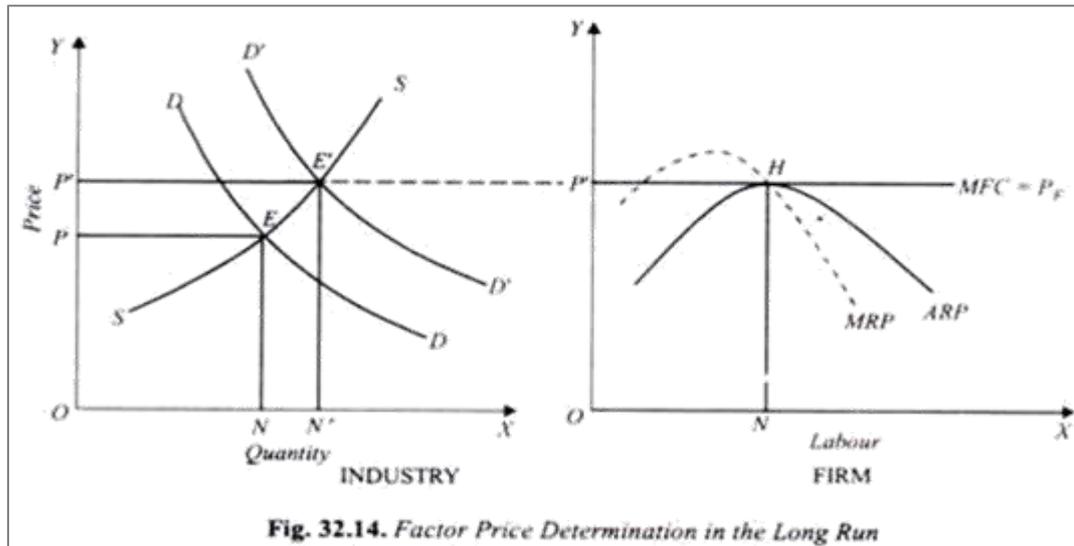


Fig. 32.14. Factor Price Determination in the Long Run

To sum up, in the long run, the equilibrium between demand for and supply of the factor is established at the level where the price of the factor is equal to both the MRP and ARP of the factor and thus the firms earn only normal profits.

We have seen above that when demand for a factor of production increases, given the supply curve of the factor, the factor price will rise. Now, what happens when the supply of a factor in-creases, given the demand curve of the factor.

When the supply of a factor increases, the supply curve will shift to the right. This new supply curve will intersect the given demand curve at a lower price. Thus, with the increase in the supply of a factor, its price will tend to fall. On the other hand, when the supply of a factor decreases, the supply curve will shift to the left and, given the demand curve, the price of the factor will rise.

As regards the policy of factor owners, two results follow from our analysis. First, if the owners of a factor want to raise the price of the service of their factor, they should try to increase the demand for their factor service.

The demand for a factor will rise if demand for and price of the product rise or the price of the substitute factor rises, or there are increases in the productivity of the factor due to the improvement in technology. Second, if factor owners want to maintain the price of their factor service, i.e., to prevent the price from falling, they should not allow their supply to increase.

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The above modern theory of factor pricing under conditions of perfect competition is based upon Marshall-Hicks' version of marginal productivity theory. In this, marginal productivity of a factor is an important economic force which determines the price of the factor.

3.6 Effects of Product Market Distortions on Factor Markets

Developing countries tend to protect capital-intensive industries. The resulting distortions in product markets engender a flow of resources from labor-intensive to capital-intensive industries, thereby favoring capital at the expense of labor.

Ceteris paribus, the protection of capital-intensive industries will raise the price of capital relative to the price of labor. But protection will also reduce demand for imports and cause the exchange rate to appreciate (a unit of domestic currency will buy more foreign exchange). This, together with relatively low tariffs on capital goods, and the use of tariff exemptions on these products, will mean lower prices for imported capital goods in terms of local currency.

Take the case, for example, when the exchange rate is 100 pesos to the dollar under free trade and an average tariff of 50 percent necessitates a 20 percent appreciation of the currency in order to ensure balance-of payments equilibrium. Now, under an exchange rate of 80 pesos to the dollar, tariff exemptions on capital goods will mean that capital goods cost 20 percent less under protection than under free trade.

3.7 General Equilibrium Analysis:

- As against partial equilibrium analysis, general equilibrium analysis is concerned with economic system as a whole.
- It recognises the fact that economic system is a network in which all the parts are mutually dependent on one another and in mutual interaction with one another.
- Goods are either competitive or substitutes. Some goods are used in the manufacture of other goods. Factors of production are complementary to each other to the extent they can be substituted for each other, they are competitive also. Resources also face competitive demand from producers.
- Therefore, change in the demand or supply of any commodity or factor of production sets in motion a chain reaction. A disturbance in one sector of the economy produces its repercussions on all sides. General equilibrium analysis is concerned with the overall effects of a disturbance.
- Instead of taking only a few variables at a time, we take into consideration all the relevant variables which may affect the particular phenomenon in hand. In this type of analysis, all the side-effects of an economic disturbance are analysed in full.

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- An example will make the concept of general equilibrium clearer. Suppose the demand for India-manufactured consumer goods suddenly increases in Western Europe. Indian exports will increase thereby increasing output, employment and profits in the export industries. Resources will be diverted from other industries to the export industries.
- The demand and prices of the substitute commodities will also increase. The increased demand for exports will have economy-wide effects. An all-round analysis of the repercussions of the economic disturbance increased demand for manufactured consumer goods for export can be done only through general equilibrium theory.
- General equilibrium analysis deals with the equilibrium of the whole organisation in the economy consumers, producers, resource-owners, firms and industries. Not only should individual consumers and firms be in equilibrium in themselves but also in relation to each other.
- Business firms enter product markets as suppliers, but they enter factor markets as buyers. Households, on the other hand, are buyers in product markets but suppliers in factor markets. General equilibrium prevails when both the product and factor markets are in equilibrium in relation to each other.

General equilibrium theory is a macroeconomic theory that explains how supply and demand in an economy with many markets interact dynamically and eventually culminate in an equilibrium of prices. The theory assumes that there is a gap between actual prices and equilibrium prices. The goal of general equilibrium theory is to identify the precise set of circumstances under which the equilibrium price is likely to achieve stability.

The theory is most closely associated with Léon Walras, who wrote "Elements of Pure Economics" in 1874. While the idea had been vaguely hinted at by earlier economists, he was the first one to articulate the idea thoroughly.

Walras started his explanation of general equilibrium theory by describing the simplest economy imaginable. In this economy, there were only two goods that could be exchanged, referred to as x and y . Everyone in the economy was presumed to be a buyer of one of these products and a seller of the other. Under this model, supply and demand would be interdependent, because the consumption of each of the goods would be dependent on the wages derived from selling each of the goods.

The price of each of the goods would be decided by a bidding process, which Walras referred to as "tâtonnement" (or "groping" in English). He described this in terms of an individual seller calling out the price of a good in the market and consumers responding by either buying or declining to pay. Through a trial and error process, the seller would adjust the price to suit demand – the equilibrium price. Walras believed that there would be no exchange of goods until the equilibrium price was reached, an assumption which has been criticized by others.

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When describing equilibrium on a grander scale, Walras applied this principle to multi-market settings, which are much more intricate. He introduced a third good to his model – referred to as *z*. From this, three price ratios could be determined, one of which would be redundant as it would not give any information that could not be identified from the others. This redundant good could be identified as the standard by which all other price ratios could be expressed – the standard would provide a guide to currency rates.

Objectives of General Equilibrium Analysis:

General equilibrium analysis serves many important purposes.

- Firstly, it provides us with a theoretical tool to understand the economy in its entirety the mechanics of its working, its structure, and the major forces making it work. The theory is analysis of the interrelationships of the various sectors of an economy. As such, it helps us in knowing clearly the economy-wide implications of an economic change.
- Secondly, we can apply general equilibrium theory to determine the primary, secondary and tertiary effects of an economic disturbance which has an intersectoral impact. Whenever there is an economic disturbance say, like the defence programmes in the wake of Chinese aggression in 1962 it has some immediate effects in one sector of the economy.
- Gradually, the impact of such a disturbance is felt in other sectors. The whole economy goes into disequilibrium. Process of adjustment to the economic disturbances starts to establish a new equilibrium.

3.8 Efficiency in perfectly competitive markets

When profit-maximizing firms in perfectly competitive markets combine with utility-maximizing consumers, something remarkable happens—the resulting quantities of outputs of goods and services demonstrate both productive and allocative efficiency.

Productive efficiency means producing without waste so that the choice is on the production possibility frontier. In the long run in a perfectly competitive market—because of the process of entry and exit—the price in the market is equal to the minimum of the long-run average cost curve. In other words, goods are being produced and sold at the lowest possible average cost.

Allocative efficiency means that among the points on the production possibility frontier, the point that is chosen is socially preferred—at least in a particular and specific sense. In a perfectly competitive market, price is equal to the marginal cost of production. Think about the price that is paid for a good as a measure of the social benefit received for that good; after all, willingness to pay conveys what the good is worth to a buyer.

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Then think about the marginal cost of producing the good as representing not just the cost for the firm but, more broadly, as the social cost of producing that good.

When perfectly competitive firms follow the rule that profits are maximized by producing at the quantity where price is equal to marginal cost, they are ensuring that the social benefits received from producing a good are in line with the social costs of production.

Let's walk through an example to more thoroughly explore what is meant by allocative efficiency. Let's begin by assuming that the market for wholesale flowers is perfectly competitive, so $P = MC$. Now, consider what it would mean if firms in that market produced a lesser quantity of flowers. At a lesser quantity, marginal costs would not yet have increased as much, so the price would exceed marginal cost: $P > MC$, is greater than, M, C.

In this situation, the benefit to society as a whole of producing additional goods—as measured by the willingness of consumers to pay for marginal units of a good—would be higher than the cost of the inputs of labor and physical capital needed to produce the marginal good. In other words, the gains to society as a whole from producing additional marginal units would be greater than the costs.

On the other hand, consider what it would mean if—compared to the level of output at the allocatively efficient choice where $P = MC$ —firms produced a greater quantity of flowers. At a greater quantity, marginal costs of production would increase so that $P < MC$, is less than, M, C. In this case, the marginal costs of producing additional flowers would be greater than the benefit to society as measured by what people are willing to pay. For society as a whole—since the costs are outstripping the benefits—it would make sense to produce a lower quantity of such goods.

When perfectly competitive firms maximize their profits by producing the quantity where $P = MC$, they also ensure that the benefits to consumers of what they are buying—as measured by the price they are willing to pay—is equal to the costs to society of producing the marginal units—as measured by the marginal costs the firm must pay. Thus, allocative efficiency holds.

When we say that a perfectly competitive market in the long run will feature both productive and allocative efficiency, we need to remember that economists are using the concept of efficiency in a particular and specific sense, not as a synonym for “desirable in every way”. For one thing, consumers’ ability to pay reflects the income distribution in a particular society. Thus, a homeless person may have no ability to pay for housing because they have insufficient income.

Perfect competition, in the long run, is a hypothetical benchmark. For market structures such as monopoly, monopolistic competition, and oligopoly—which are more frequently observed in the real world than perfect competition—firms will not always produce at the minimum of average cost.

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Moreover, real-world markets include many issues that are assumed away in the model of perfect competition, including pollution, inventions of new technology, poverty—which may make some people unable to pay for basic necessities of life—government programs like national defense or education, discrimination in labor markets, and buyers and sellers who must deal with imperfect and unclear information.

The theoretical efficiency of perfect competition does, however, provide a useful benchmark for comparing the issues that arise from these real-world problems.

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