Unit one

Law of Demand

The law of demand is one of the most fundamental concepts in economics. It works with the law of supply to explain how market economies allocate resources and determine the prices of goods and services that we observe in everyday transactions. The law of demand states that quantity purchased varies inversely with price. In other words, the higher the price, the lower the quantity demanded. This occurs because of diminishing marginal utility. That is, consumers use the first units of an economic good they purchase to serve their most urgent needs first, and use each additional unit of the good to serve successively lower valued ends.

Key Takeaways

- The law of demand is a fundamental principle of economics which states that at a higher price consumers will demand a lower quantity of a good.
- Demand is derived from the law of diminishing marginal utility, the fact that consumers use economic goods to satisfy their most urgent needs first.
- A market demand curve expresses the sum of quantity demanded at each price across all consumers in the market.
- Changes in price can be reflected in movement along a demand curve, but do not by themselves increase or decrease demand.
- The shape and magnitude of demand shifts in response to changes in consumer preferences, incomes, or related economic goods, NOT to changes in price.

Understanding the Law of Demand

Economics involves the study of how people use limited means to satisfy unlimited wants. The law of demand focuses on those unlimited wants. Naturally, people prioritize more urgent wants and needs over less urgent ones in their economic behavior, and this carries over into how people choose among the limited means available to them. For any economic good, the first unit of that good that a consumer gets their hands on will tend to be put to use to satisfy the most urgent need the consuer has that that good can satisfy.

For example, consider a castaway on a desert island who obtains a six pack of bottled, fresh water washed up on shore. The first bottle will be used to satisfy the castaway's most urgently felt need, most likely drinking water to avoid dying of thirst. The second bottle might be used for bathing to stave off disease, an urgent but less immediate need. The third bottle could be used for a less urgent need such as boiling some fish to have a hot meal, and on down to the last bottle, which the castaway uses for a relatively low priority like watering a small potted plant to keep him company on the island.

In our example, because each additional bottle of water is used for a successively less highly valued want or need by our castaway, we can say that the castaway values each additional bottle less than the one before. Similarly, when consumers purchase goods on the market each additional unit of any given good or service that they buy will be put to a less valued use than the one before, so we can say that they value each additional unit less and less. Because they value each additional unit of the good less, they are willing to pay less for it. So the more units of a good consumers buy, the less they are willing to pay in terms of the price.

By adding up all the units of a good that consumers are willing to buy at any given price we can describe a market demand curve, which is always downward-sloping, like the one shown in the chart below. Each point on the curve (A, B, C) reflects the quantity demanded (Q) at a given price (P). At point A, for example, the quantity demanded is low (Q1) and the price is high (P1). At higher prices, consumers demand less of the good, and at lower prices, they demand more.

Demand vs Quantity Demanded

In economic thinking, it is important to understand the difference between the phenomenon of demand and the quantity demanded. In the chart, the term "demand" refers to the green line plotted through A, B, and C. It expresses the relationship between the urgency of consumer wants and the number of units of the economic good at hand. A change in demand means a shift of the position or shape of this curve; it reflects a change in the underlying pattern of consumer wants and needs vis-a-vis the means available to satisfy them. On the other hand, the term "quantity demanded" refers to a point along with horizontal axis. Changes in the quantity demanded strictly reflect changes in the price, without implying any change in the pattern of consumer preferences. Changes in quantity demanded just mean movement along the demand curve itself because of a change in price. These two ideas are often conflated, but this is a common error; rising (or falling) in prices do not decrease (or increase) demand, they change the quantity demanded.

Factors Affecting Demand

So what does change demand? The shape and position of the demand curve can be impacted by several factors. Rising incomes tend to increase demand for normal economic goods, as people are willing to spend more. The availability of close substitute products that compete with a given economic good will tend to reduce demand for that good, since they can satisfy the same kinds of consumer wants and needs. Conversely, the availability of closely complementary goods will tend to increase demand for an economic good, because the use of two goods together can be even more valuable to consumers than using them separately, like peanut butter and jelly. Other factors such as future expectations, changes in background environmental conditions, or change in the actual or perceived quality of a good can change the demand curve, because they alter the pattern of consumer preferences for how the good can be used and how urgently it is

Shifts in Demand and Supply (With Diagram)

So long we have examined how markets work when the only factor that influences demand and supply is the price of the commodity under consideration.

To do this, we made use of the ceteris paribus assumption and held all other factors which influence demand and supply constant. We may now relax the assumption in order to see how changes in the conditions of supply and demand (i.e., changes in other variables) affect market price and quantity.

It may be repeated that changes in the conditions of demand or supply cause shifts of the demand or supply curve to a new position. Each curve can shift either to the right or to the left. A rightward shift refers to an increase in demand or supply. The implication is that a larger quantity is demanded, or supplied, at each market price. A leftward shifts refers to a decrease in demand or supply. It means that less is demanded or supplied, at each price. We may now refer to the following four laws of supply and demand.

Four "Laws" of Supply and Demand:

Since both the supply and demand curves can shift in either of the two directions, we have to consider four cases of changes in demand and supply. These cases are so important and universal in nature that they are often called 'laws of supply and demand'.

These laws are derived for free markets that we are considering. Such markets have the following features:

(i) the demand curve is downward sloping,

ii) the supply curve is upward sloping,

(iii) the buyers and sellers are price-takers and

(iv) the buyers and sellers are maximizers.

The laws of demand and supply are applicable only when these conditions hold. If anyone these conditions are not applicable the laws may not hold.

1. A Rise in Demand:

Let us first consider a rise in demand as in Fig. 9.3. The original demand curve is D and the supply is S. Here p_0 is the original equilibrium price and q_0 is the equilibrium quantity.

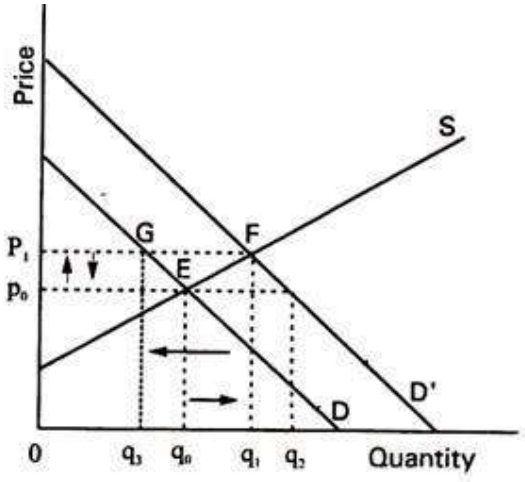


Fig. 9.3. The effect of a shift of the demand curve

We may now consider a change in the conditions of demand such as a rise in the income of buyers. If the income of the buyers rises the market demand curve for carrots will shift to right to D'. This implies that consumers will now be willing to buy a larger quantity at every price.

Thus at the original price P_0 they will now be eager to buy q_2 units. So excess demand develops in the market. This excess demand q_2-q_0 creates market forces which cause the equilibrium price to rise. The process will continue until a new equilibrium is reached as at point F where the new demand curve intersects the old supply curve. The net result is a rise in market price to p_1. The quantity sold also increase from q_0 to q_1 in this new equilibrium situation.

So we first consider (1) rightward shift of the demand curve (i.e., a rise in the demand for a commodity) causes an increase in the equilibrium price and quantity (as is shown by the arrows in Fig. 9.3).

2. A Fall in Demand:

Next we may consider the effect of a fall in demand. Demand may fall due to changes in the conditions of demand. If, for example, there is a fall in the price of a substitute for the commodity under consideration, consumers may want to buy smaller quantities at every price.

Suppose D' in Fig. 9.3 is the original demand curve. Now the original price and quantity are p_1 and q_1, respectively. Suppose a fall in demand leads to a leftward shift of the .demand curve. The new demand curve is D. So an excess supply $q_1 - q_3$ (=FG) develops in the market.

As a result of the operation of the market forces price falls. The new equilibrium price is p_0. The new equilibrium quantity is q_0. So we reach the second conclusion a leftward shift of the demand curve (i.e., a fall in the demand for a commodity) causes a decrease in the equilibrium price and quantity.

3. An Increase in Supply:

In Fig. 9.4 we consider the effect of a shift in the supply curve. Here S and D are original supply and demand curves. The two curves meet at point E. So p_0 and q_0 are the original equilibrium price and quantity. We may now examine the effect of a change in the conditions of supply.

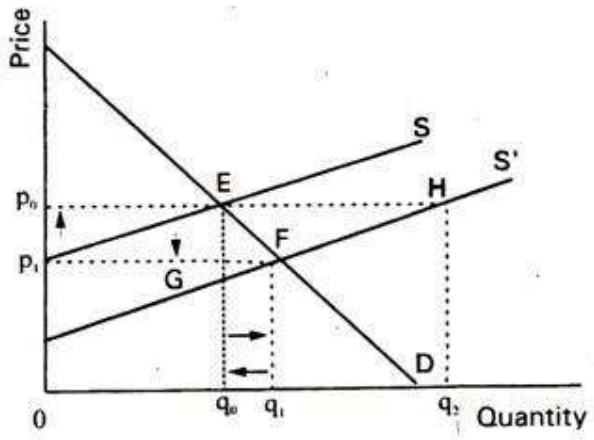


Fig. 9.4. The effects of shifts of the supply curve

Such a change increases the quantities that producers are prepared to offer for sale at each price. For example, there was a rightward shift of the supply curve due to increase in the productivity of factors of production, caused by technological advance.

The Green Revolution which has occurred in India is an example of such a change. Technological progress has the effect of reducing the cost of production. As a result, a larger quantity (q_t instead of q_0) is offered for sale at a lower price (p_1 instead of p_0). This happened in the computer industry in the late 90's.

An increase in supply implies that a larger quantity is offered for sale at the same price (q_2, instead of q_0 at p_0) or the same quantity at a lower price (as point G indicates). In other words, an excess of supply of q_0 q_2 (=EH) develops at the original price p_0. It sets in motion market forces which cause the price to fall.

Since there is not much demand for their product, producers find it difficult to sell the entire output at the original price. They start charging lower price. Consumers know about it and start paying a lower price. Consequently price starts falling and it ultimately reaches the value p_1. At this new price the equilibrium quantity is q_1. Thus we reach the third conclusion a rightward shift of the supply curve (i.e., an increase in the supply of a commodity) causes a fall in the equilibrium price and an increase in equilibrium quantity.

4. A Decrease in Supply:

Finally, we may examine the effect of a rise in the price of a factor, such as wages in a unionized industry. As a result, total cost will rise and the sellers will be willing to offer a smaller quantity for sale at each price. In this case, the original supply curve is S'. Equilibrium price and quantity are p_1 and q_1. Now the supply curve shifts to left. The new supply curve is S.

At the original equilibrium price p_1, the quantity offered for sale is zero but the quantity demanded is still q_1. So the entire quantity demanded (viz., q_1) is excess demand. This excess demand sets in motion market forces which tend to raise price. The process continues until and unless the new equilibrium price p_0 is reached.

At this price the quantity supplied and demanded are equated at q_0. Thus we reach the fourth and final conclusion a leftward shift in the supply curve (i.e., a decrease in the supply of a commodity) leads to an increase in the equilibrium price and a fall in equilibrium quantity.

Changes in Market Prices: Recap:

From our discussion so far we discover four possibilities for change in market price as Fig. 9.5 shows. In this figure we consider all the four possibilities of changes in demand and supply.

Ceteris paribus, an increase in demand will bring about an extension of supply so that more is supplied at a higher price [Fig. 9.5(a)]. A fall in demand leads to a contraction of supply with a smaller quantity purchased at a lower price [Fig. 9.5(b)]. Conversely, an increase in supply causes an extension of demand so that more is bought at a lower price [Fig. 9.5(c)] and a decrease in supply causes a contraction of demand so that less is purchased at a higher price [Fig. 9.5(d)].

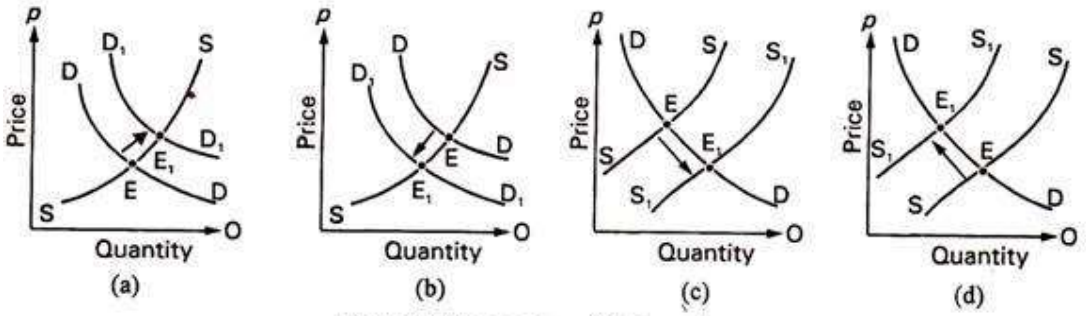


Fig. 9.5. Changes in equilibrium price

Complex Changes:

So long we were able to reach may firm conclusions regarding shifts of supply and demand curves because we stuck to the ceteris paribus assumption, i.e., we considered only one change at a time. But, in practice, it is possible for two factors to vary at the same time. Suppose, there is a large rise in the demand for mangoes because of a rise in per capita income of the people.

This may be followed by an unexpected bumper crop of mangoes. What will be the final effect of such changes on the equilibrium price? The answer can be found from both the following diagrams. However, although both the quantity demanded and quantity supplied increase in each case, in Fig. 9.6(a) the market price falls and in Fig. 9.6(b) it rises.

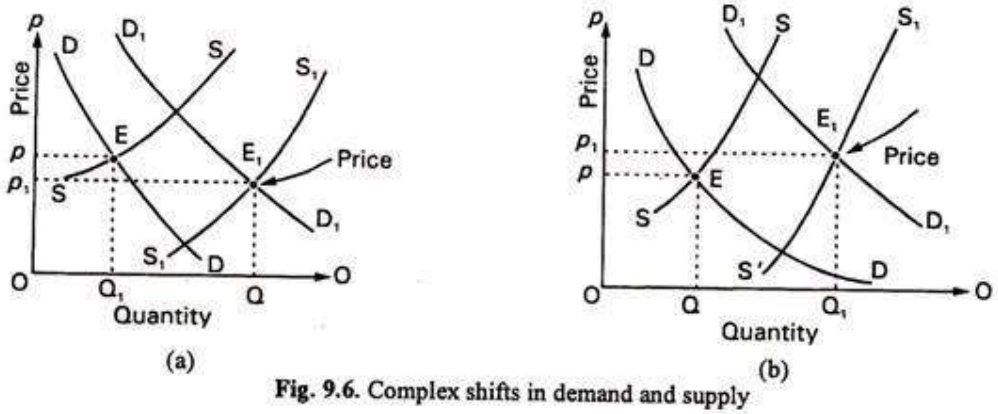


Fig. 9.6. Complex shifts in demand and supply

Thus, when multiple shifts in demand and supply curves are considered price may rise or fall depending on the two magnitudes of changes a change in demand and a change in supply.

Suppose, one is asked to consider the effect of a number of changes in the demand and supply of a particular product. It is clear from Fig. 9.6(a) and 9.6(b) that no firm conclusion can be reached unless both changes move in the same direction; for example, an increase in supply and a decrease in demand at the same time will definitely lower the equilibrium price.

The solution lies in explaining one change at a time. For instance, fast explain the effect of an increase in demand and draw a diagram to illustrate it. Then explain the effect of the increase in supply by drawing another diagram. So one must always stick to the rule of explaining one change at a time unless one is having precise details of demand and supply.

It is also possible to show that if the supply curve shifts to the left due to bad crop and the demand curve shifts to the right due to rising per capita income, the same quantity will be offered for sale at a higher price. In this case price will be higher as a result of both types of changes but the equilibrium quantity will be the same.

Sometimes shifts of curves and movements cause confusion as the following statement shows:

'An increase in income causes demand to rise. The rise in demand causes an increase in price. The increase in price causes an increase in supply, which pushes price back towards its original level.'

What is the mistake in this quotation? There is no doubt that an increase in income certainly shifts the demand curve to the right. As a result of a rise in demand, price rises. It is also true that the rise in price tends to increase the quantity supplied. But the rest of the statement is wrong. How can supply increase along the same supply curve (because there is no shift of the supply curve)? In fact, there is an increase in quantity supplied along the same supply curve.

The mistake lies in confusing a movement along the supply curve, as a result of a change in price, which does occur, with a shift in the supply curve which does not occur.

Elasticity of Demand: Meaning and Types of Elasticity (explained with diagram)

Meaning of Elasticity of Demand:

Demand extends or contracts respectively with a fall or rise in price. This quality of demand by virtue of which it changes (increases or decreases) when price changes (decreases or increases) is called Elasticity of Demand.

"The elasticity (or responsiveness) of demand in a market is great or small according as the amount demanded increases much or little for a given fall in price, and diminishes much or little for a given rise in price". – Dr. Marshall.

Elasticity means sensitiveness or responsiveness of demand to the change in price.

This change, sensitiveness or responsiveness, may be small or great. Take the case of salt. Even a big fall in its price may not induce an appreciable ex appreciable extension in its demand. On the other hand, a slight fall in the price of oranges may cause a considerable extension in their demand. That is why we say that the demand in the former case is 'inelastic' and in the latter case it is 'elastic'.

The demand is elastic when with a small change in price there is a great change in demand; it is inelastic or less elastic when even a big change in price induces only a slight change in demand. In the words of Dr. Marshall, "The elasticity (or responsiveness) of demand in a market is great or small according as the amount demanded increases much or little for a given fall in price, and diminishes much or little for a given rise in price."But the demand cannot be perfectly 'elastic' or 'inelastic'.

Completely elastic demand will mean that a slight fall (or rise) in the price of the commodity concerned induces an infinite extension (or contraction) in its demand. Completely inelastic demand will mean that any amount of fall (or rise) in the price of the commodity would not induce any extension (or contraction) in its demand. Both these conditions are unrealistic. That is why we say that elasticity of demand may be 'more or less', but it is seldom perfectly elastic or absolutely inelastic.

Types of Elasticity:

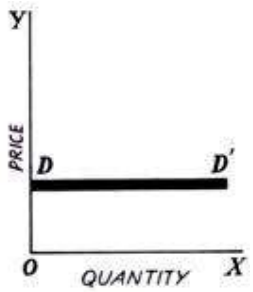
Distinction may be made between Price Elasticity, Income Elasticity and Cross Elasticity. Price Elasticity is the responsiveness of demand to change in price; income elasticity means a change in demand in response to a change in the consumer's income; and cross elasticity means a change in the demand for a commodity owing to change in the price of another commodity.

Degrees of Elasticity of Demand:

We have seen above that some commodities have very elastic demand, while others have less elastic demand. Let us now try to understand the different degrees of elasticity of demand with the help of curves.

a) Infinite or Perfect Elasticity of Demand:

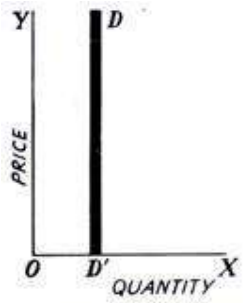
Let as first take one extreme case of elasticity of demand, viz., when it is infinite or perfect. Elasticity of demand is infinity when even a negligible fall in the price of the commodity leads to an infinite extension in the demand for it. In Fig. 10.1 the horizontal straight line DD' shows infinite elasticity of demand. Even when the price remains the same, the demand goes on changing.



Infinite Elasticity
Fig. 10.1

(b) Perfectly Inelastic Demand:

The other extreme limit is when demand is perfectly inelastic. It means that howsoever great the rise or fall in the price of the commodity in question, its demand remains absolutely unchanged. In Fig. 10.2, the vertical line DD' shows a perfectly inelastic demand. In other words, in this case elasticity of demand is zero. No amount of change in price induces a change in demand.

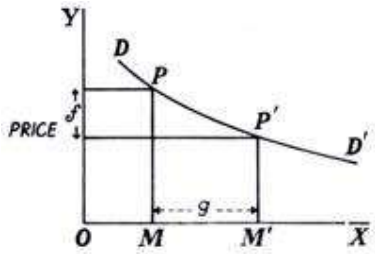


Zero Elasticity
Fig. 10.2

In the real world, there is no commodity the demand for which may be absolutely inelastic, i.e., changes in its price will fail to bring about any change at all in the demand for it. Some extension/contraction is bound to occur that is why economists say that elasticity of demand is a matter of degree only. In the same manner, there are few commodities in whose case the demand is perfectly elastic. Thus, in real life, the elasticity of demand of most goods and services lies between the two limits given above, viz., infinity and zero. Some have highly elastic demand while others have less elastic demand.

(c) Very Elastic Demand:

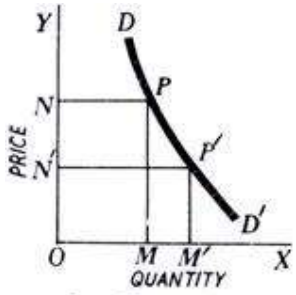
Demand is said to be very elastic when even a small change in the price of a commodity leads to a considerable extension/contraction of the amount demanded of it. In Fig. 10.3, DD' curve illustrates such a demand. As a result of change of T in the price, the quantity demanded extends/contracts by MM', which clearly is comparatively a large change in demand.



Very Elastic Demand
Fig. 10.3

(d) Less Elastic Demand:

When even a substantial change in price brings only a small extension/contraction in demand, it is said to be less elastic. In Fig. 10.4, DD' shows less elastic demand. A fall of NN' in price extends demand by MM' only, which is very small.



Less Elastic Demand
Fig. 10.4

Unit Two

Measurement of Utility: Cardinal Utility and Ordinal Utility

The measurement of utility has always been a controversial issue. Neo-classical economists, such as Alfred Marshall, Leon Walrus, and Carl Meneger believed that utility is cardinal or quantitative like other mathematical variables, such as height, weight, velocity, air pressure, and temperature.

Therefore, these economists developed cardinal utility concept to measure the utility derived from a good. They developed a unit of measuring utility, which is known as utils. For example, according to the cardinal utility concept, an individual gains 20 utils from ice-cream and 10 utils from coffee.

However, modern economists, such as J.R. Hicks, gave the concept of ordinal utility of measuring utility. According to this concept, utility cannot be measured numerically, it can only be ranked as 1, 2, 3, and so on. For instance, an individual prefers ice-cream than coffee, which implies that utility of ice-cream is given rank 1 and coffee as rank 2.

Let us discuss these two concepts in detail in the next sections.

1. Cardinal Utility Concept:

The neo-classical economists propounded the theory of consumption (consumer behavior theory) on the assumption that utility is cardinal. For measuring utility, a term 'util' is coined which means units of utility.

Following are the assumptions of the cardinal utility concept that were followed by economists while measuring utility:

a. One until equals one unit of money

b. Utility of money remains constant

However, over a passage of time, it has been felt by economists that the exact or absolute measurement of utility is not possible. There are a number of difficulties involved in the measurement of utility. This is because of the fact that the utility derived by a consumer from a good depends on various factors, such as changes in consumer's moods, tastes, and preferences.

These factors are not possible to determine and measure. Therefore, no such technique has been devised by economists to measure utility. Utility; thus, is not measureable in cardinal terms. However, the cardinal utility concept has a prime importance in consumer behavior analysis.

2. Ordinal Utility Concept:

Cardinal utility approach is based on the fact that the exact or absolute measurement of utility is not possible. However, modern economists rejected the cardinal utility approach and introduced the concept of ordinal utility for the analysis of consumer behavior.

According to them, it may not be possible to measure exact utility, but it can be expressed in terms of less or more useful good. For instance, a consumer consumes coconut oil and mustard oil. In such a case, the consumer cannot say that coconut oil gives 10 utils and mustard oil gives 20 utils.

Instead he/she can say that mustard oil gives more utility to him/her than coconut oil. In such a case, mustard oil would be given rank 1 and coconut oil would be given rank 2 by the consumer. This assumption lays the foundation for the ordinal theory of consumer behavior.

According to neo-classical economists, cardinal measurement of utility is possible in practical situations. Moreover, they believed that the concept of cardinal utility is useful in analyzing consumer behavior. However, modern economists believed that utility is related to psychological aspect of consumers; therefore, it cannot be measured in quantitative terms.

In addition, they advocated that the ordinal utility concept plays a significant role in consumer behavior analysis. Modern economists also believed that the concept of ordinal utility meets the theoretical requirements of consumer behavior analysis even when there is no cardinal measure of utility is available.

Consumer's Equilibrium Through Indifference Curve Analysis:

Definition:

"The term ***consumer's equilibrium*** refers to the amount of goods and services which the consumer may buy in the market given his income and given prices of goods in the market".

The aim of the consumer is to get maximum satisfaction from his money income. Given the price line or budget line and the indifference map:

"A ***consumer is said to be in equilibrium*** at a point where the price line is touching the highest attainable indifference curve from below".

Conditions:

Thus the consumer's equilibrium under the indifference curve theory must meet the following two conditions:

First: A given price line should be tangent to an indifference curve or marginal rate of satisfaction of good X for good Y (MRS_{xy}) must be equal to the price ratio of the two goods. i.e.

$$\mathbf{MRS_{xy} = P_x / P_y}$$

Second: The second order condition is that indifference curve must be convex to the origin at the point of tangency.

Assumptions:

The following assumptions are made to determine the consumer's equilibrium position.

(i) Rationality: The consumer is rational. He wants to obtain maximum satisfaction given his income and prices.

(ii) Utility is ordinal: It is assumed that the consumer can rank his preference according to the satisfaction of each combination of goods.

(iii) Consistency of choice: It is also assumed that the consumer is consistent in the choice of goods.

(iv) Perfect competition: There is perfect competition in the market from where the consumer is purchasing the goods.

(v) Total utility: The total utility of the consumer depends on the quantities of the good consumed.

Explanation:

The consumer's consumption decision is explained by combining the budget line and the indifference map. The consumer's equilibrium position is only at a point where the price line is tangent to the highest attainable indifference curve from below.

(1) Budget Line Should be Tangent to the Indifference Curve:

The consumer's equilibrium in explained by combining the budget line and the indifference map.

Diagram/Figure:

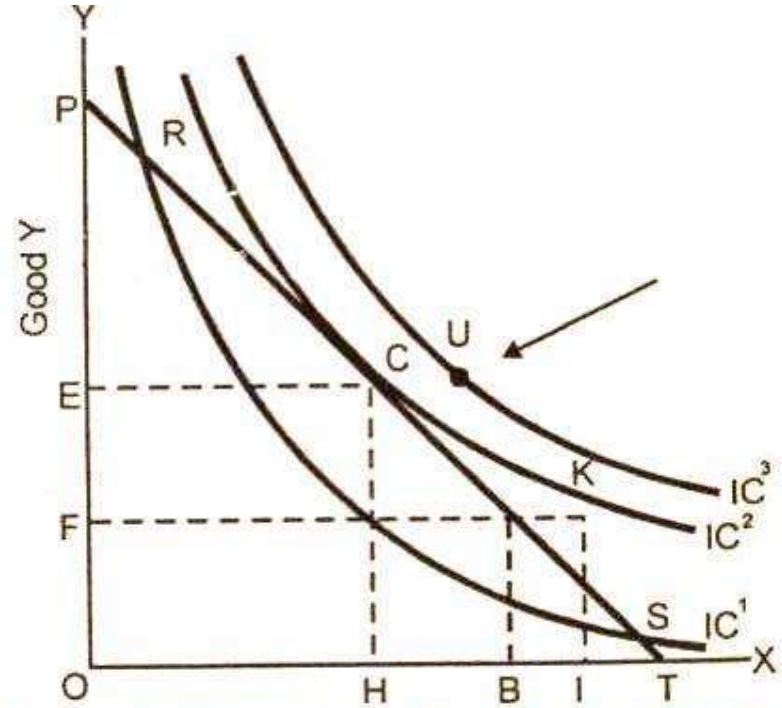


Fig. 3.11: Consumer's equilibrium through indifference Curves

In the diagram 3.11, there are three indifference curves IC^1, IC^2 and IC^3. The price line PT is tangent to the indifference curve IC^2 at point C. The consumer gets the maximum satisfaction or is in equilibrium at point C by purchasing OE units of good Y and OH units of good X with the given money income.

The consumer cannot be in equilibrium at any other point on indifference curves. For instance, point R and S lie on lower indifference curve IC^1 but yield less satisfaction. As regards point U on indifference curve IC^3, the consumer no doubt gets higher satisfaction but that is outside the budget line and hence not achievable to the consumer. The consumer's equilibrium position is only at point C where the price line is tangent to the highest attainable indifference curve IC^2 from below.

(2) Slope of the Price Line to be Equal to the Slope of Indifference Curve:

The second condition for the consumer to be in equilibrium and get the maximum possible satisfaction is only at a point where the price line is a tangent to the highest possible indifference curve from below. In fig. 3.11, the price line PT is touching the highest possible indifferent curve IC^2 at point C. The point C shows the combination of the two commodities which the consumer is maximized when he buys OH units of good X and OE units of good Y.

Geometrically, at tangency point C, the consumer's substitution ratio is equal to price ratio $\mathbf{P_x / P_y}$. It implies that at point C, what the consumer is willing to pay i.e., his personal exchange rate between X and Y $\mathbf{(MRS_{xy})}$ is equal to what he actually pays i.e., the market exchange rate. So the equilibrium condition being $\mathbf{P_x / P_y}$ being satisfied at the point C is:

Price of X / Price of Y = MRS of X for Y

The equilibrium conditions given above states that the rate at which the individual is willing to substitute commodity X for commodity Y must equal the ratio at which he can substitute X for Y in the market at a given price.

(3) Indifference Curve Should be Convex to the Origin:

The third condition for the stable consumer equilibrium is that the indifference curve must be convex to the origin at the point of equilibrium. In other words, we can say that the MRS of X for Y must be diminishing at the point of equilibrium. It may be noticed that in fig. 3.11, the indifference curve IC^2 is convex to the origin at point C. So at point C, all three conditions for the stable-consumer's equilibrium are satisfied.

Summing up, the consumer is in equilibrium at point C where the budget line PT is tangent to the indifference IC^2. The market basket OH of good X and OE of good Y yields the greatest satisfaction because it is on the highest attainable indifference curve. At point C:

$\mathbf{MRS_{xy} = P_x / P_y}$

Income Effect vs. Substitution Effect: What's the Difference?

Income Effect vs. Substitution Effect: An Overview

The income effect expresses the impact of increased purchasing power on consumption, while the substitution effect describes how consumption is impacted by changing relative income and prices. These economics concepts express changes in the market and how they impact consumption patterns for consumer goods and services.

Different goods and services experience these changes in different ways. Some products, called inferior goods, generally decrease in consumption whenever incomes increase. Consumer

spending and consumption of normal goods typically increases with higher purchasing power, which is in contrast with inferior goods.

Income Effect

The income effect is the change in consumption of goods based on income. This means consumers will generally spend more if they experience an increase in income, and they may spend less if their income drops. But the effect doesn't dictate what kind of goods consumers will buy. In fact, they may opt to purchase more expensive goods in lesser quantities or cheaper goods in higher quantities, depending on their circumstances and preferences.

The income effect can be both direct or indirect. When a consumer chooses to make changes to the way he or she spends because of a change in income, the income effect is said to be direct. For example, a consumer may choose to spend less on clothing because his income has dropped. An income effect becomes indirect when a consumer is faced with making buying choices because of factors not related to her income. For instance, food prices may go up leaving the consumer with less income to spend on other items. This may force her to cut back on dining out, resulting in an indirect income effect.

The marginal propensity to consume explains how consumers spend based on income. It is a concept based on the balance between the spending and saving habits of consumers. Marginal propensity to consume is included in a larger theory of macroeconomics known as Keynesian economics. The theory draws comparisons between production, individual income, and the tendency to spend more of it.

Substitution Effect

The substitution may occur when a consumer replaces cheaper or moderately priced items with ones that are more expensive when a change in finances occurs. For example, a good return on an investment or other monetary gains may prompt a consumer to replace the older model of an expensive item for a newer one.

The inverse is true when incomes decrease. Substitution in the direction of buying lower-priced items has a generally negative consequence on retailers because it means lower profits. It also means fewer options for the consumer.

Retailers who generally sell cheaper items typically benefit from the substitution effect.

While the substitution effect changes consumption patterns in favor of the more affordable alternative, even a modest reduction in price may make a more expensive product more attractive to consumers. For instance, if private college tuition is more expensive than public college tuition—and money is a concern—consumers will naturally be attracted to public colleges. But a small decrease in private tuition costs may be enough to motivate more students to begin attending private schools.

The substitution effect is not just limited to consumers. When companies outsource part of their operations, they are using the substitution effect. Using cheaper labor in a different country or by hiring a third-party entity results in a drop in costs. This nets a positive result for the corporation, but a negative effect for the employees who may be replaced.

Law of Variable Proportions: Meaning, Definition, Assumption and Stages

Article shared by : Supriya Guru <=""">

ADVERTISEMENTS:

Law of Variable Proportions: Meaning, Definition, Assumption and Stages!

Meaning:

Law of variable proportions occupies an important place in economic theory. This law examines the production function with one factor variable, keeping the quantities of other factors fixed. In other words, it refers to the input-output relation when output is increased by varying the quantity of one input.

ADVERTISEMENTS:

When the quantity of one factor is varied, keeping the quantity of other factors constant, the proportion between the variable factor and the fixed factor is altered; the ratio of employment of the variable factor to that of the fixed factor goes on increasing as the quantity of the variable factor is increased.

Since under this law we study the effects on output of variation in factor proportions, this is also known as the law of variable proportions. Thus law of variable proportions is the new name for the famous "Law of Diminishing Returns" of classical economics. This law has played a vital role in the history of economic thought and occupies an equally important place in modern economic theory. This law has been supported by the empirical evidence about the real world.

The law of variable proportions or diminishing returns has been stated by various economists in the following manner:

As equal increments of one input are added; the inputs of other productive services being held constant, beyond a certain point the resulting increments of product will decrease, i.e., the marginal products will diminish," (G. Stigler)

"As the proportion of one factor in a combination of factors is increased, after a point, first the marginal and then the average product of that factor will diminish." (F. Benham)

"An increase in some inputs relative to other fixed inputs will, in a given state of technology, cause output to increase; but after a point the extra output resulting from the same addition of extra inputs will become less." (Paul A. Samuelson)

Marshall discussed the law of diminishing returns in relation to agriculture. He defines the law as follows: "An increase in the capital and labour applied in the cultivation of land causes in general a less than proportionate increase in the amount of product raised unless it happens to coincide with an improvement in the arts of agriculture."

It is obvious from the above definitions of the law of variable proportions (or the law of diminishing returns) that it refers to the behaviour of output as the quantity of one factor is increased,

keeping the quantity of other factors fixed and further it states that the marginal product and average product will eventually decline.

Assumptions of the Law:

The law of variable proportions or diminishing returns, as stated above, holds good under the following conditions:

1. First, the state of technology is assumed to be given and unchanged. If there is improvement in the technology, then marginal and average products may rise instead of diminishing.

2. Secondly, there must be some inputs whose quantity is kept fixed. This is one of the ways by which we can alter the factor proportions and know its effect on output. This law does not apply in case all factors are proportionately varied. Behaviour of output as a result of the variation in all inputs is discussed under "returns to scale".

3. Thirdly the law is based upon the possibility of varying the proportions in which the various factors can be combined to produce a product. The law does not apply to those cases where the factors must be used in fixed proportions to yield a product.

When the various factors are required to be used in rigidly fixed proportions, then the increase in one factor would not lead to any increase in output, that is, the marginal product of the factor will then be zero and not diminishing. It may, however, be pointed out that products requiring fixed proportions of factors are quiet uncommon. Thus, the law of variable proportion applies to most of the cases of production in the real world.

The law of variable proportions is illustrated in Table 16.1.and Fig. 16.3. We shall first explain it by considering Table 16.1. Assume that there is a given fixed amount of land, with which more units of the variable factor labour, is used to produce agricultural output.

Table 16.1: Returns to Labour

Units of Labour	*Total Product (Quintals)*	*Marginal Product (Quintals)*	*Average Product (Quintals)*
L	Q	$\frac{\Delta Q}{\Delta L}$	$\frac{Q}{L}$
1	80	80	80
2	170	90	85
3	270	100	90
4	368	98	92
5	430	62	86
6	480	50	80
7	504	24	72
8	504	0	63
9	495	–9	55
10	480	–15	48

With a given fixed quantity of land, as a farmer raises employment of labour from one unit to 7 units, the total product increases from 80 quintals to 504 quintals of wheat. Beyond the employment of 8 units of labour, total product diminishes. It is worth noting that up to the use of 3 units of labour, total product increases at an increasing rate.

This fact is clearly revealed from column 3 which shows successive marginal products of labour as extra units of labour are used. Marginal product of labour, it may be recalled, is the increment in total output due to the use of an extra unit of labour.

It will be seen from Col. 3 of Table 16.1, that the marginal product of labour initially rises and beyond the use of three units of labour, it starts diminishing. Thus when 3 units of labour are employed, marginal product of labour is 100 and with the use of 4th and 5th units of labour marginal product of labour falls to 98 and 62 respectively.

Beyond the use of eight units of labour, total product diminishes and therefore marginal product of labour becomes negative. As regards average product of labour, it rises upto the use of fourth unit of labour and beyond that it is falling throughout.

Three Stages of the Law of Variable Proportions:

The behaviour of output when the varying quantity of one factor is combined with a fixed quantity of the other can be divided into three distinct stages. In order to understand these three stages it is better to graphically illustrate the production function with one factor variable.

This has been done in Fig. 16.3. In this figure, on the X-axis the quantity of the variable factor is measured and on the F-axis the total product, average product and marginal product are measured. How the total product, average product and marginal product a variable factor change as a result of the increase in its quantity, that is, by increasing the quantity of one factor to a fixed quantity of the others will be seen from Fig. 16.3.

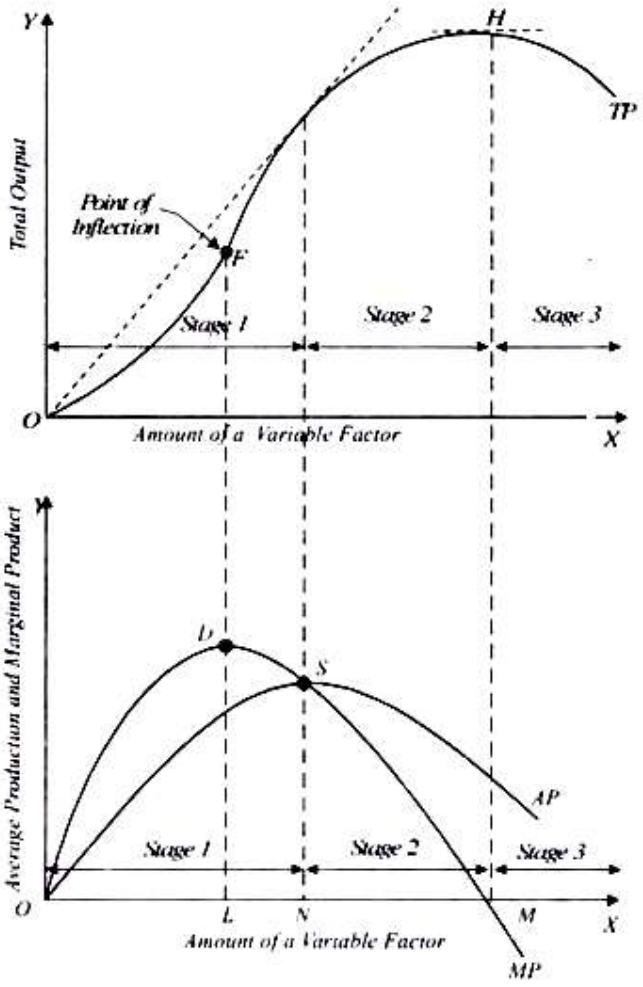


Fig. 16.3. *Three Stages of the Law of Variable Proportions*

In the top Danel of this figure, the total product curve TP of variable factor goes on increasing to a point and alter that it starts declining. In the bottom pane- average and marginal product curves of labour also rise and then decline; marginal product curve starts declining earlier than the average product curve.

The behaviour of these total, average and marginal products of the variable factor as a result of the increase in its amount is generally divided into three stages which are explained below:

Stage 1:

In this stage, total product curve TP increases at an increasing rate up to a point. In Fig. 16.3. from the origin to the point F, slope of the total product curve TP is increasing, that is, up to the point F, the total product increases at an increasing rate (the total product curve TP is concave upward upto the point F), which means that the marginal product MP of the variable factor is rising.

From the point F onwards during the stage 1, the total product curve goes on rising but its slope is declining which means that from point F onwards the total product increases at a diminishing rate (total product curve TP is concave down-ward), i.e., marginal product falls but is positive.

The point F where the total product stops increasing at an increasing rate and starts increasing at the diminishing rate is called the point of inflection. Vertically corresponding to this point of inflection marginal product is maximum, after which it starts diminishing.

Thus, marginal product of the variable factor starts diminishing beyond OL amount of the variable factor. That is, law of diminishing returns starts operating in stage 1 from point D on the MP curve or from OL amount of the variable factor used.

This first stage ends where the average product curve AP reaches its highest point, that is, point S on AP curve or CW amount of the variable factor used. During stage 1, when marginal product of the variable factor is falling it still exceeds its average product and so continues to cause the average product curve to rise.

Thus, during stage 1, whereas marginal product curve of a variable factor rises in a part and then falls, the average product curve rises throughout. In the first stage, the quantity of the fixed factor is too much relative to the quantity of the variable factor so that if some of the fixed factor is withdrawn, the total product will increase. Thus, in the first stage marginal product of the fixed factor is negative.

Stage 2:

In stage 2, the total product continues to increase at a diminishing rate until it reaches its maximum point H where the second stage ends. In this stage both the marginal product and the average product of the variable factor are diminishing but remain positive.

At the end of the second stage, that is, at point M marginal product of the variable factor is zero (corresponding to the highest point H of the total product curve TP). Stage 2 is very crucial and important because as will be explained below the firm will seek to produce in its range.

Stage 3: Stage of Negative Returns:

In stage 3 with the increase in the variable factor the total product declines and therefore the total product curve TP slopes downward. As a result, marginal product of the variable factor is negative and the marginal product curve MP goes below the X-axis. In this stage the variable factor is too much relative to the fixed factor. This stage is called the stage of negative returns, since the marginal product of the variable factor is negative during this stage.

It may be noted that stage 1 and stage 3 are completely symmetrical. In stage 1 the fixed factor is too much relative to the variable factor. Therefore, in stage 1, marginal product of the fixed factor is negative. On the other hand, in stage 3 the variable factor is too much relative to the fixed factor. Therefore, in stage 3, the marginal product of the variable factor is negative.

The Stage of Operation:

Now, an important question is in which stage a rational producer will seek to produce. A rational producer will never choose to produce in stage 3 where marginal product of the variable factor is negative. Marginal product of the variable factor being negative in stage 3, a producer can always increase his output by reducing the amount of the variable factor.

It is thus clear that a rational producer will never be producing in stage 3. Even if the variable factor is free, the rational producer will stop at the end of the second stage where the marginal product of the variable factor is zero.

At the end point M of the second stage where the marginal product of the variable factor is zero, the producer will be maximising the total product and will thus be making maximum use of the variable factor. A rational producer will also not choose to produce in stage 1 where the marginal product of the fixed factor is negative.

A producer producing in stage 1 means that he will not be making the best use of the fixed factor and further that he will not be utilising fully the opportunities of increasing production by increasing quantity of the variable factor whose average product continues to rise throughout the stage 1. Thus, a rational entrepreneur will not stop in stage 1 but will expand further.

Even if the fixed factor is free (i.e., costs nothing), the rational entrepreneur will stop only at the end of stage 1 (i.e., at point N) where the average product of the variable factor is maximum. At the end point N of stage 1, the producer they will be making maximum use of the fixed factor.

It is thus clear from above that the rational producer will never be found producing in stage 1 and stage 3. Stage 1 and 3 may, therefore, be called stages of economic absurdity or economic non-sense. The stages 1 and 3 represent non-economic regions in production function.

A rational producer will always seek to produce in stage 2 where both the marginal product and average product of the variable factor are diminishing. At which particular point in this stage, the producer will decide to produce depends upon the prices of factors. The stage 2 represents the range of rational production decisions.

We have seen above how output varies as the factor proportions are altered at any given moment. We have also noticed that this input-output relation can be divided into three stages. Now, the question arises as to what causes increasing marginal returns to the variable factor in the beginning, diminishing marginal returns later and negative marginal returns to the variable factor ultimately.

Causes of Initial Increasing marginal Returns to a Factor:

In the beginning, the quantity of the fixed factor is abundant relative to the quantity of the variable factor. Therefore, when more and more units of a variable factor are added to the constant quantity of the fixed factor, the fixed factor is more intensively and effectively utilised.

This causes the production to increase at a rapid rate. When, in the beginning the variable factor is relatively smaller in quantity, some amount of the fixed factor may remain unutilised and therefore when the variable factor is increased fuller utilisation of the fixed factor becomes possible with the result that increasing returns are obtained.

The question arises as to why the fixed factor is not initially taken in an appropriate quantity which suits the available quantity of the variable factor. Answer to this question is provided by the fact that generally those factors are taken as fixed which are indivisible. Indivisibility of a factor means that due to technological requirements a minimum amount of that factor must be employed whatever the level of output.

Thus, as more units of variable factor are employed to work with an indivisible fixed factor, output greatly increases in the beginning due to fuller and more effective utilisation of the latter. Thus, we see that it is the indivisibility of some factors which causes increasing returns to the variable factor in the beginning.

The second reason why we get increasing returns to the variable factor in the initial stage is that as more units of the variable factor are employed the efficiency of the variable factor itself increases. This is because when there is a sufficient quantity of the variable factor, it becomes possible to introduce specialisation or division of labour which results in higher productivity. The greater the quantity of the variable factor, the greater the scope of specialisation and hence the greater will be the level of its productivity or efficiency.

Causes of Diminishing marginal Returns to a Factor:

The stage of diminishing marginal returns in the production function with one factor variable is the most important. The question arises as to why we get diminishing marginal returns after a certain amount of the variable factor has been added to a fixed quantity of the other factor.

As explained above, increasing returns to a variable factor occur initially primarily because of the more effective and fuller use of the fixed factor becomes possible as more units of the variable factor are employed to work with it.

Once the point is reached at which the amount of the variable factor is sufficient to ensure the efficient utilisation of the fixed factor, then further increases in the variable factor will cause marginal and average products of a variable factor to decline because the fixed factor then becomes inadequate relative to the quantity of the variable factor.

In other words, the contributions to the production made by the variable factor after a point become less and less because the additional units of the variable factor have less and less of the fixed factor to work with. The production is the result of the co-operation of various factors aiding each other. Now, how much aid one factor provides to the others depends upon how much there is of it.

Eventually, the fixed factor is abundant relative to the number of the variable factor and the former provides much aid to the later. Eventually, the fixed factor becomes more and more scarce in relation to the variable factor so that as the units of the variable factor are increased they receive less and less aid from the fixed factor. As a result, the marginal and average products of the variable factor decline ultimately.

The phenomenon of diminishing marginal returns, like that of increasing marginal returns, rests upon the indivisibility of the fixed factor. As explained above, the important reason for increasing returns to a factor in the beginning is the fact that the fixed factor is indivisible which has to be employed whether the output to be produced is small or large.

When the indivisible fixed factor is not being fully used, successive increases in a variable factor add more to output since fuller and more efficient use is made of the indivisible fixed factor. But there is generally a limit to the range of employment of the variable factor over which its marginal and average products will increase.

There will usually be a level of employment of the Variable factor at which indivisible fixed factor is being as fully and efficiently used as possible. It will happen when the variable factor has increased to such an amount that the fixed indivisible factor is being used in the "best or optimum proportion" with the variable factor.

Once the optimum proportion is disturbed by further increases in the variable factor, returns to a variable factor (i.e., marginal product and average product) will diminish primarily because the indivisible factor is being used too intensively, or in other words, the fixed factor is being used in non-optimal proportion with the variable factor.

Just as the marginal product of the variable factor increases in the first stage when better and fuller use of the fixed indivisible factor is being made, so the marginal product of the variable factor diminishes when the fixed indivisible factor is being worked too hard.

If the fixed factor was perfectly divisible, neither the increasing nor the diminishing returns to a variable factor would have occurred. If the factors were perfectly divisible, then there would not have been the necessity of taking a large quantity of the fixed factor in the beginning to combine with the varying quantities of the other factor.

In the presence of perfect divisibility, the optimum proportion between the factors could have always been achieved. Perfect divisibility of the factors implies that a small firm with a small machine and one worker would be as efficient as a large firm with a large machine and many workers.

The productivity of the factors would be the same in the two cases. Thus, we see that if the factors were perfectly divisible, then the question of varying factor proportions would not have arisen and hence the phenomena of increasing and diminishing marginal returns to a variable factor would not have occurred. Prof. Bober rightly remarks: "Let divisibility enter through the door, law of variable proportions rushes out through the window."

Joan Robinson goes deeper into the causes of diminishing returns. She holds that the diminishing marginal returns occur because the factors of production are imperfect substitutes for one another. As seen above, diminishing returns occur during the second stage since the fixed factor is now inadequate relatively to the variable factor. Now, a factor which is scarce in supply is taken as fixed.

When there is a scarce factor, quantity of that factor cannot be increased in accordance with the varying quantities of the other factors, which, after the optimum proportion of factors is achieved, results in diminishing returns.

If now some factors were available which perfect substitute of the scarce fixed factor was, then the paucity of the scarce fixed factor during the second stage would have been made up by the increase in supply of its perfect substitute with the result that output could be expanded without diminishing returns.

Thus, even if one of the variable factors which we add to the fixed factor were perfect substitute of the fixed factor, then when, in the second stage, the fixed factor becomes relatively deficient, its deficiency would have been made up the increase in the variable factor which is its perfect substitute.

Thus, Joan Robinson says, “What the Law of Diminishing Returns really states is that there is a limit to the extent to which one factor of production can be substituted for another, or, in other words, that the elasticity of substitution between factor is not infinite.

If this were not true, it would be possible, when one factor of production is fixed in amount and the rest are in perfectly elastic supply, to produce part of the output with the aid of the fixed factor, and then, when the optimum proportion between this and other factors was attained, to substitute some other factor for it and to increase output at constant cost.” We, therefore, see that diminishing returns operate because the elasticity of substitution between factors is not infinite.

Explanation of Negative Marginal Returns to a Factor:

As the amount of a variable factor continues to be increased to a fixed quantity of the other factor, a stage is reached when the total product declines and the marginal product of the variable factor becomes negative.

This phenomenon of negative marginal returns to the variable factor in stage 3 is due to the fact that the number of the variable factor becomes too excessive relative to the fixed factor so that they obstruct each other with the result that the total output falls instead of rising.

Besides, too large a number of the variable factor also impairs the efficiency of the fixed factor. The proverb “too many cooks spoil the broth” aptly applies to this situation. In such a situation, a reduction in the units of the variable factor will increase the total output.

Isoquants:

Definition and Meaning:

The word ***'iso'*** is of Greek origin and means equal or same and ***'quant'*** means quantity. An ***isoquant*** may be defined as:

"A curve showing all the various combinations of two factors that can produce a given level of output. The isoquant shows the whole range of alternative ways of producing the same level of output".

The modern economists are using isoquant, or "ISO" product curves for determining the optimum factor combination to produce certain units of a commodity at the least cost.

Schedule:

The concept of isoquant or equal product curve can be better explained with the help of schedule given below:

Combinations	Factor X	Factor Y	Total Output
A	1	14	100 METERS
B	2	10	100 METERS

C	3	7	100 METERS
D	4	5	100 METERS
E	5	4	100 METERS

In the table given above, it is shown that a producer employs two factors of production X and Y for producing an output of 100 meters of cloth. There are five combinations which produce the same level of output (100 meters of cloth).

The factor combination A using 1 unit of factor X and 14 units of factor Y produces 100 meters of cloth. The combination B using 2 units of factor X and 10 units of factor Y produces 100 meters of cloth. Similarly combinations C, U and E, employing 3 units of X and 7 units of Y, 4 units of X and 5 units of Y, 5 units of X and 4 units of Y produce 100 units of output, each. The producer, here., is indifferent as to which combination of inputs he uses for producing the same amount of output.

Diagram/Graph:

The alternative techniques for producing a given level of output can be plotted on a graph.

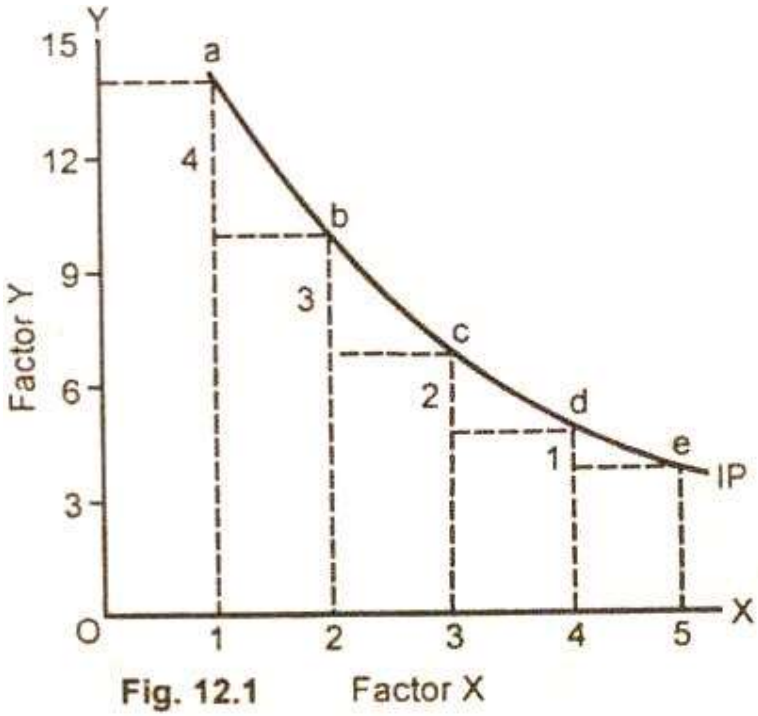


Fig. 12.1

The figure 12.1 shows y the 100 units isoquant plotted to ISO product schedule. The five factor combinations of X and Y are plotted and are shown by points a, b, c, d and e. if we join these points, it forms an 'isoquant'.

An isoquant therefore, is the graphic representation of an iso-product schedule. It may here be noted that all the factor combinations of X and Y on an iso-product curve are technically efficient combinations. The producer is indifferent as to which combination he uses for

producing the same level of output. It is in this way that an iso product curve is also called 'production indifference curve'. In the figure 12.1, ISO product IP curve represents the various combinations of the two inputs which produce the same level of output (100 meters of cloth).

Isoquant Map:

An ***isoquant map*** shows a set of iso-product curves. Each isoquant represents a different level of output. A higher isoquant shows a higher level of output and a lower isoquant represents a lower level of output.

Diagram/Graph:

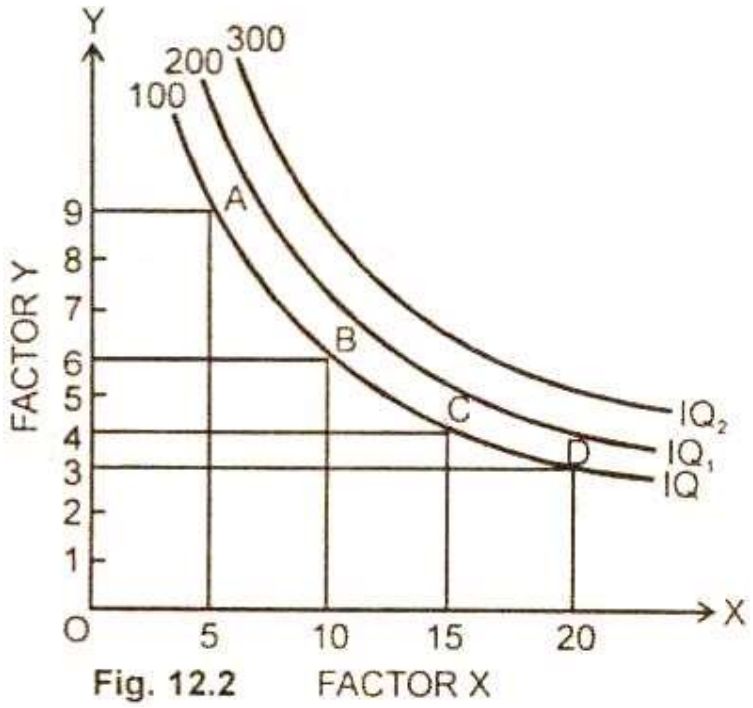


Fig. 12.2

In the figure 12.2, a family of three iso-product curves which produce various level of output is shown. The iso product IQ^1 yields 100 units of output by using quantities of inputs X and Y. So is also the case with isoquant IQ^3 yielding 300 units of output.

We conclude that an isoquant map includes a series, of iso-product curves. Each isoquant represents a different level of output. The higher the isoquant output, the further right will be the isoquant.

Law of Returns to Scale

: Definition,

Law of Returns to Scale : Definition, Explanation and Its Types!

In the long run all factors of production are variable. No factor is fixed. Accordingly, the scale of production can be changed by changing the quantity of all factors of production.

Returns to scale are of the following three types:

1. Increasing Returns to scale.

2. Constant Returns to Scale

3. Diminishing Returns to Scale

Explanation:

In the long run, output can be increased by increasing all factors in the same proportion. Generally, laws of returns to scale refer to an increase in output due to increase in all factors in the same proportion. Such an increase is called returns to scale.

Suppose, initially production function is as follows:

$P = f(L, K)$

ADVERTISEMENTS:

Now, if both the factors of production i.e., labour and capital are increased in same proportion i.e., x, product function will be rewritten as.

$$P_1 = f(x\,L, x\,K)$$

1. If P_1 increases in the same proportion as the increase in factors of production i.e., $\frac{P_1}{P} = x$, it will be constant returns to scale.

2. If P_1 increases less than proportionate increase in the factors of production *i.e.*, $\frac{P_1}{P} < x$, it will be diminishing returns to scale.

3. If P_1 increases more than proportionate increase in the factors of production, *i.e.*, $\frac{P_1}{P} > x$, it will be increasing returns to scale. Returns to scale can be shown with the help of table 8.

Table 8. Showing different stages of return to scale

Units of Labour	Units of capital	%age increase in Labour & Capital	Total Product	%age increase in TP	Returns to scale
1	3	–	10	–	
2	9	100%	30	200%	Increasing
3	9	50%	60	100%	
4	12	33%	80	33%	Constant
5	15	25%	100	25%	
6	18	20%	120	10%	Decreasing
7	21	16.6%	130	8.3%	

The above stated table explains the following three stages of returns to scale:

1. Increasing Returns to Scale:

Increasing returns to scale or diminishing cost refers to a situation when all factors of production are increased, output increases at a higher rate. It means if all inputs are doubled, output will also increase at the faster rate than double. Hence, it is said to be increasing returns to scale. This increase is due to many reasons like division external economies of scale. Increasing returns to scale can be illustrated with the help of a diagram 8.

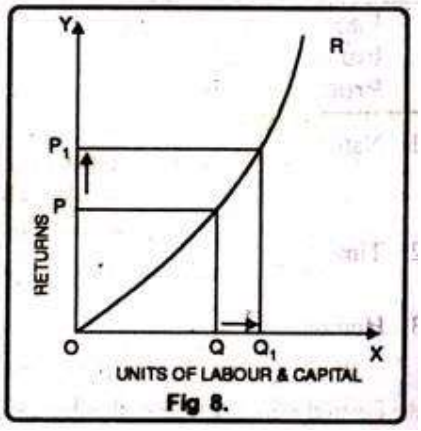


Fig 8.

In figure 8, OX axis represents increase in labour and capital while OY axis shows increase in output. When labour and capital increases from Q to Q_1, output also increases from P to P_1 which is higher than the factors of production i.e. labour and capital.

2. Diminishing Returns to Scale:

Diminishing returns or increasing costs refer to that production situation, where if all the factors of production are increased in a given proportion, output increases in a smaller proportion. It means, if inputs are doubled, output will be less than doubled. If 20 percent increase in labour and capital is followed by 10 percent increase in output, then it is an instance of diminishing returns to scale.

The main cause of the operation of diminishing returns to scale is that internal and external economies are less than internal and external diseconomies. It is clear from diagram 9.

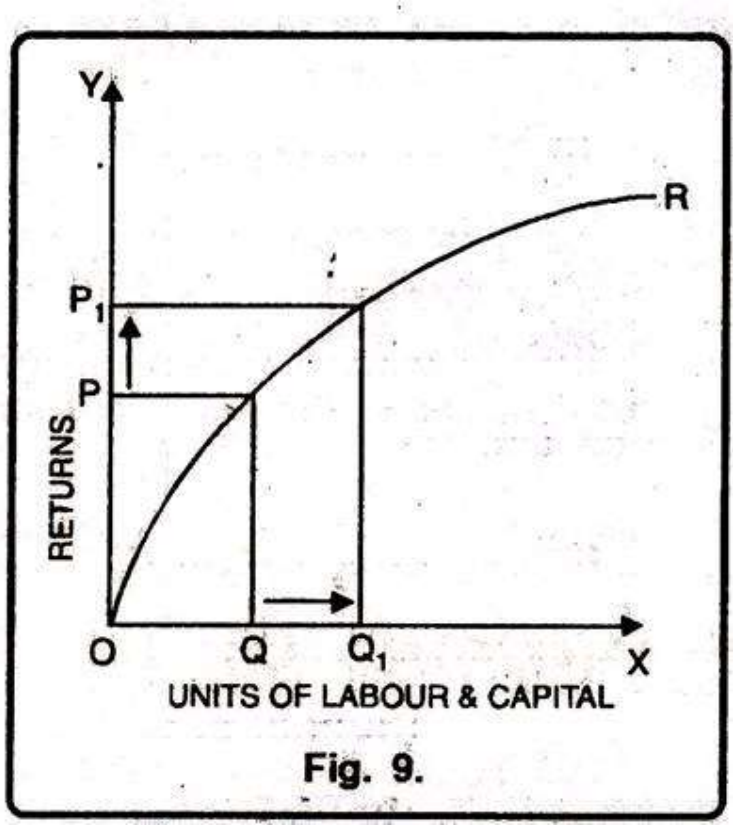


Fig. 9.

In this diagram 9, diminishing returns to scale has been shown. On OX axis, labour and capital are given while on OY axis, output. When factors of production increase from Q to Q_1 (more quantity) but as a result increase in output, i.e. P to P_1 is less. We see that increase in factors of production is more and increase in production is comparatively less, thus diminishing returns to scale apply.

3. Constant Returns to Scale:

Constant returns to scale or constant cost refers to the production situation in which output increases exactly in the same proportion in which factors of production are increased. In simple terms, if factors of production are doubled output will also be doubled.

In this case internal and external economies are exactly equal to internal and external diseconomies. This situation arises when after reaching a certain level of production, economies of scale are balanced by diseconomies of scale. This is known as homogeneous production function. Cobb-Douglas linear homogenous production function is a good example of this kind. This is shown in diagram 10. In figure 10, we see that increase in factors of production i.e. labour and capital are equal to the proportion of output increase. Therefore, the result is constant returns to scale.

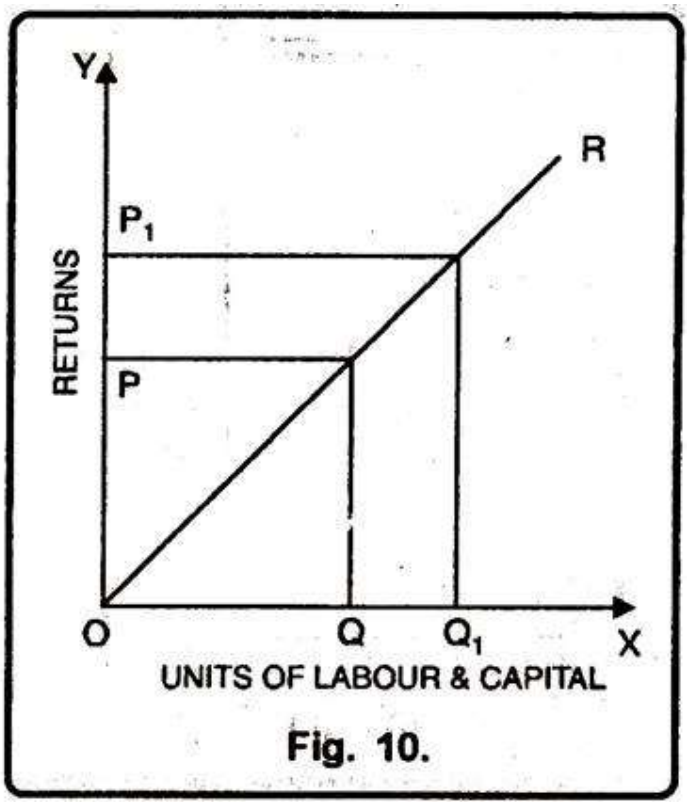


Fig. 10.

Analysis of Short Run Cost of Production:

Definition of Short Run:

Short run is a period of time over which at least one factor must remain fixed. For most of the firms, the fixed resource or factors which cannot be increased to meet the rising demand of the good is capital i.e., plant and machinery.

Short run, then, is a period of time over which output can be changed by adjusting the quantities of resources such as labor, raw material, fuel but the size or scale of the firm remains fixed.

Definition of Long Run:

In the long run there is no fixed resource. All the factors of production are variable. The length of the long run differs from industry to industry depending upon the nature of production.

For example, a balloon making firm can change the size of firm more quickly than a car manufacturing firm.

Categories/Types of Costs in the Short Run:

The total cost of a firm in the short run is divided into two categories (1) Fixed cost and (2) Variable cost. The two types of economic costs are now discussed in brief.

(1) Total Fixed Cost (TFC):

Total fixed cost occur only in the short run. Total Fixed cost as the name implies is the cost of the firm's fixed resources, Fixed cost remains the same in the short run regardless of how many units of output are produced. We can say that fixed cost of a firm is that part of total cost which does not vary with changes in output per period of time. Fixed cost is to be incurred even if the output of the firm is zero.

For example, the firm's resources which remain fixed in the short run are building, machinery and even staff employed on contract for work over a particular period.

(2) Total Variable Cost (TVC):

Total variable cost as the name signifies is the cost of variable resources of a firm that are used along with the firm's existing fixed resources. Total variable cost is linked with the level of output. When output is zero, variable cost is zero. When output increases, variable cost also increases and it decreases with the decrease in output. So any resource which can be varied to increase or decrease with the rate of output is variable cost of the firm.

For example, wages paid to the labor engaged in production, prices of raw material which a firm. incurs on the production of output are variable costs. A firm can reduce its variable cost by lowering output but it cannot decrease its fixed cost. These expenses remain fixed in the short run. In the long run there are no fixed resources. All resources are variable. Therefore, a firm has no fixed cost in the long run. All long run costs are variable costs.

(3) Total Cost (TC):

Total cost is the sum of fixed cost and variable cost incurred at each level of output. Total cost of production of a firm equals its fixed cost plus its:

Formula:

TC = TFC + TVC

Where:

TC = Total cost.

TFC = Total fixed cost.

TVC = Total variable cost.

Explanation:

Short run costs of a firm is now explained with the help of a schedule and diagrams.

Schedule:

(in Dollars)

Units of Output (in Hundred)	Total Fixed Cost	Total Variable Cost	Total Cost
0	1000	0	1000
1	1000	60	1060
2	1000	100	1100
3	1000	150	1150
4	1000	200	1200
5	1000	400	1400
6	1000	700	1700
7	1000	1100	2100

The short run cost data of the firm shows that total fixed cost TFC (column 2) remains constant at $1000/- regardless of the level of output.

The column 3 indicates variable cost which is associated with the level of output. Total variable cost is zero when production is zero. Total variable cost increases with the increase in output. The variable does not increase by the same amount for each increase in output. Initially the variable cost increases by a smaller amount up to 3rd unit of output and after which it increases by larger amounts.

Column (4) indicates total cost which is the sum of TFC + TVC. The total cost increases for each level of output. The rise in total cost is more sharp after the 4th level of output. The concepts of costs, i.e., (1) total fixed cost (2) total variable cost and (3) total cost can be illustrated graphically.

(i) Total Fixed Cost Curve/Diagram:

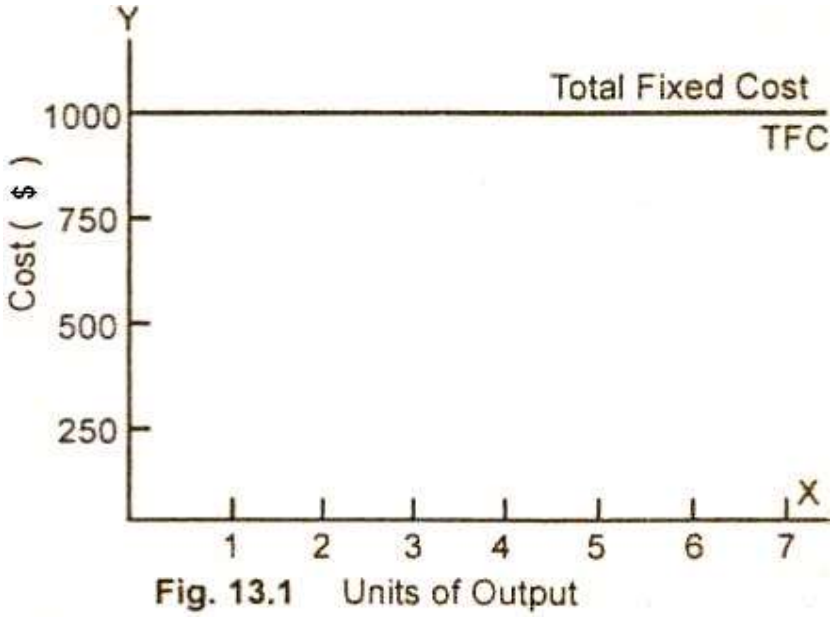


Fig. 13.1 Units of Output

In this diagram (13.1) the total fixed cost of a firm is assumed to be $1000 at various levels of output. It remains the same even if the firm's output is zero.

(ii) Total Variable Cost Curve/Diagram:

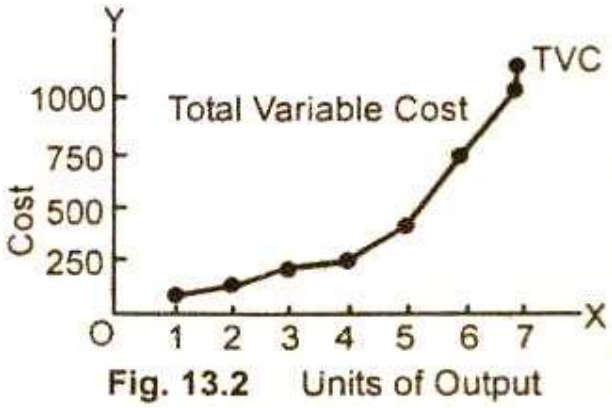


Fig. 13.2 Units of Output

In the figure (13.2), the total variable cost curve (TVC) increases with the higher level of output. It starts from the origin. Then increases at a diminishing rate up to the 4th units of output. It then begins to rise at an increasing rate.

Total Cost Curve Curve/Diagram:

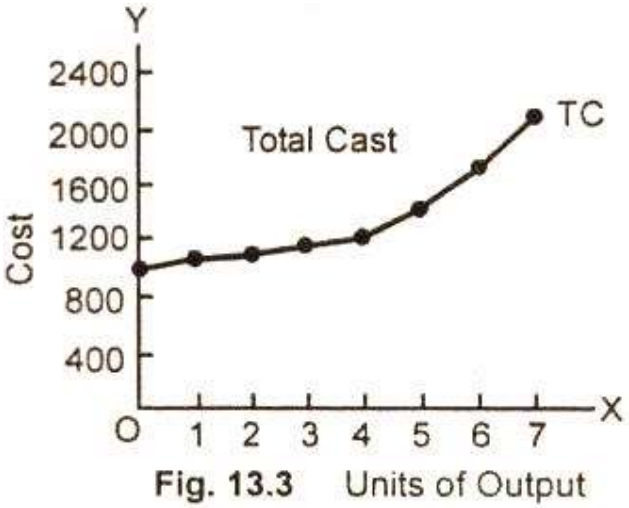


Fig. 13.3 Units of Output

In the figure (13.3), total cost curve which is the sum of the total fixed cost and variable cost at various levels of output has nearly the same shape. The difference between the two is by only a fixed amount of $1,000. The total variable cost curve and the total cost curve begin to rise more rapidly as production is increased. The reason for this is that after a certain output, the business has passed its most efficient use of its fixed costs machinery, building etc., and its diminishing return begins to set in.

Analytical Importance of Fixed and Variable Costs:

In the time of distinction between fixed cost and variable cost is a matter of degree, it all depends upon the contracts of a firm and .the period of time under consideration.

For example, if a firm makes contract with the labor for a certain period, then the firm has to bear the cost of the labor irrespective of the total produce. Under such conditions, the wages paid to the labor will be classified as fixed cost and not variable cost, as discussed under the heading of variable cost. Secondly, when the period of time is short, the distinction between fixed cost and variable cost can be made rigid but not in a longer period of time all fixed costs change into variable cost in the long run.

Long Run Cost and It's Types (With Diagram)

:

In the long run, all the factors of production used by an organization vary. The existing size of the plant or building can be increased in case of long run.

There are no fixed inputs or costs in the long run. Long run is a period in which all the costs change as all the factors of production are variable.

There is no distinction between the Long run Total Costs (LTC) and long run variable cost as there are no fixed costs. It should be noted that the ability of an organization of changing inputs enables it to produce at lower cost in the long run.

1. Long Run Total Cost:

Long run Total Cost (LTC) refers to the minimum cost at which given level of output can be produced. According to Leibhafasky, "the long run total cost of production is the least possible cost of producing any given level of output when all inputs are variable." LTC represents the least cost of different quantities of output. LTC is always less than or equal to short run total cost, but it is never more than short run cost.

The LTC curve is shown in Figure-10:

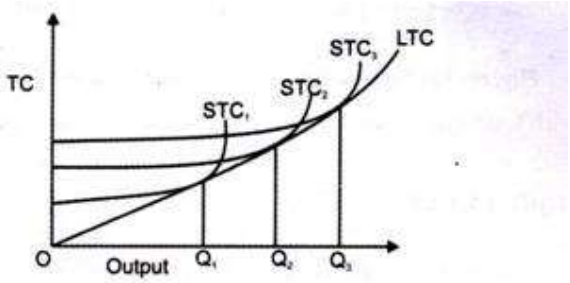


Figure-10: LTC Curve

As shown in Figure-10, short run total costs curves; STC1, STC2, and STC3 are shown depicting different plant sizes. The LTC curve is made by joining the minimum points of short run total cost curves. Therefore, LTC envelopes the STC curves.

2. Long Run Average Cost:

Long run Average Cost (LAC) is equal to long run total costs divided by the level of output. The derivation of long run average costs is done from the short run average cost curves. In the short run, plant is fixed and each short run curve corresponds to a particular plant. The long run average costs curve is also called planning curve or envelope curve as it helps in making organizational plans for expanding production and achieving minimum cost.

Figure-11 shows the derivation of LAC curve:

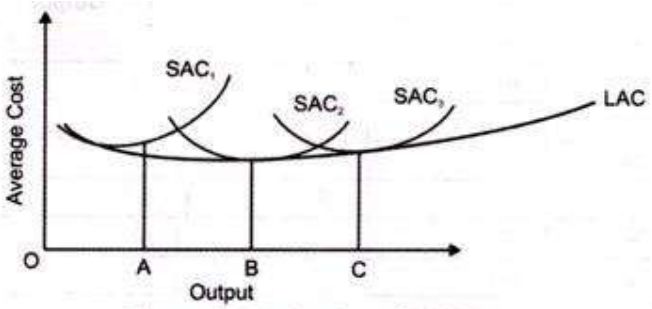


Figure-11: Derivation of LAC Curve

Suppose there are three sizes of the plant and no other size of the plant can be built. In short run, the plant sizes are fixed thus, organization increase or decrease the variable factors. However, in the long run, the organization can select among the plants which help in achieving minimum possible cost at a given level of output.

From Figure-11, it can be noted that till OB amount of production, it is beneficial for the organization to operate on the plant SAC^2 as it entails lower costs than SAC^1. If the plant SAC^2 is used for producing OA, then cost incurred would be more. Thus, in the long run, it is clear that the producer would produce till OB on plant SAC^2. On SAC^2, the producer would produce till OC amount of output. If an organization wants to exceed output from OC, it will be beneficial to produce at SAC^3 than SAC^2.

Thus, in the long run, an organization has a choice to use the plant incurring minimum costs at a given output. LAC depicts the lowest possible average cost for producing different levels of output. The LAC curve is derived from joining the lowest minimum costs of the short run average cost curves.

It first falls and then rises, thus it is U- shaped curve. The returns to scale also affect the LTC and LAC. Returns to scale implies a change in output of an organization with a change in inputs. In the long run, the output changes with respect to change in all inputs of production.

In case of increasing returns to scale (IRS), organizations can double the output by using less than twice of inputs. LTC increases less than the increase in the output, thus, LAC falls. In case of constant returns to scale (CRS), organizations can double the output by using inputs twice.

LTC increases proportionately to the output; therefore, LAC becomes constant. On the other hand, in case of decreasing returns to scale (DRS), organizations can double the output by using inputs more than twice. Thus, LTC increases more than the increase in output. As a result, LAC increases.

Figure-12 shows the effect on LAC because of returns to scale:

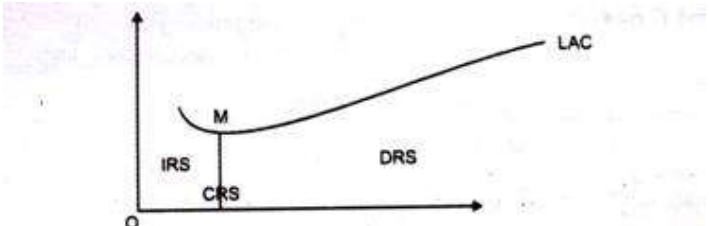


Figure-12: Derivation of LAC curve under Returns to Scale

As shown in Figure-12, up to M, LAC slopes downward. This is because at this stage IRS is applied. On the other hand, at M, LAC becomes constant. After M, LAC slopes upwards implying DRS.

3. Long Run Marginal Cost:

Long run Marginal Cost (LMC) is defined as added cost of producing an additional unit of a commodity when all inputs are variable. This cost is derived from short run marginal cost. On the graph, the LMC is derived from the points of tangency between LAC and SAC.

LMC curve can be learned through Figure-13:

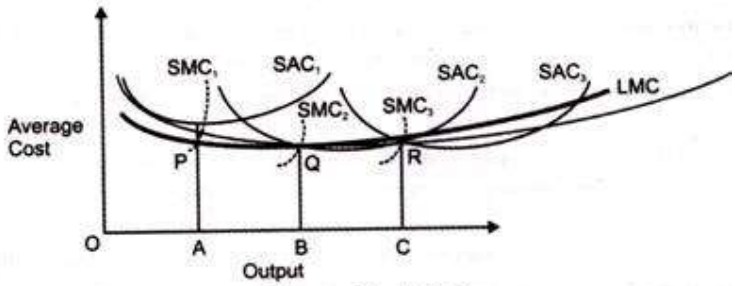


Figure-13: LMC Curve

If perpendiculars are drawn from point A, B, and C, respectively; then they would intersect SMC curves at P, Q, and R respectively. By joining P, Q, and R, the LMC curve would be drawn. It should be noted that LMC equals to SMC, when LMC is tangent to the LAC.

Break-Even Analysis : Methods, Margin of Safety and Uses

Economies and Diseconomies of Scale

Definition

A process that companies undergo to determine the best output and price levels in order to maximize its return. The company will usually adjust influential factors such as production costs, sale prices, and output levels as a way of reaching its profit goal. There are two main profit maximization methods used, and they are Marginal Cost-Marginal Revenue Method and Total Cost-Total Revenue Method. Profit maximization is a good thing for a company, but can be a bad thing for consumers if the company starts to use cheaper products or decides to raise prices.

Use profit maximization in a sentence

" We had to do some **profit maximization** because it was important to us and our financial well being for the future. "

Unit four

Definition of 'Perfect Competition'

Definition: Perfect competition describes a market structure where competition is at its greatest possible level. To make it more clear, a market which exhibits the following characteristics in its structure is said to show perfect competition:

1. Large number of buyers and sellers

2. Homogenous product is produced by every firm

3. Free entry and exit of firms

4. Zero advertising cost

5. Consumers have perfect knowledge about the market and are well aware of any changes in the market. Consumers indulge in rational decision making.

6. All the factors of production, viz. labour, capital, etc, have perfect mobility in the market and are not hindered by any market factors or market forces.

7. No government intervention

8. No transportation costs

9. Each firm earns normal profits and no firms can earn super-normal profits.

10. Every firm is a price taker. It takes the price as decided by the forces of demand and supply. No firm can influence the price of the product.

Description: Ideally, perfect competition is a hypothetical situation which cannot possibly exist in a market. However, perfect competition is used as a base to compare with other forms of market structure. No industry exhibits perfect competition in India.

3 Different Forms of Imperfect Competition | Market Situation

Article Shared by Saqib Shaikh<=""">

ADVERTISEMENTS:

The following points highlight the three different forms of imperfect competition.

The different forms are: 1. Oligopoly 2. Duopoly 3. Monopolistic Competition.

Imperfect Competition Form # 1. Oligopoly:

Oligopoly is a market situation in which there are a few firms selling homogeneous or differentiated products.

It is difficult to pinpoint the number of firms in the Oligopolist market. There may be three, four or five firms.

It is also known as competition among the few. An oligopoly industry produces either a homogeneous product or heterogeneous products. The former is called pure or perfect oligopoly and the latter is called imperfect or differentiated oligopoly.

Characteristics of Oligopoly:

Following are the characteristics of Oligopoly:

1. Few Sellers:

In oligopoly there are few sellers or producers. Each seller produces a major share of the product.

2. Mutual Inter-dependence:

There is recognised inter-dependence among the sellers in the oligopolistic market. Each oligopolist firm knows that changes in its price advertising, products etc. may lead to counter-moves by rivals. When the sellers are less in number, each produces a considerable fraction of the total output of the industry and can have a noticeable effect on market conditions.

3. Entry and Exit of Firms Difficult:

Because there is keen competition in an oligopolistic industry, there are no barriers to entry into or exit from it. However, in the long rim there are some types of barriers to entry which tend to restrain new firms from entering the industry.

4. Heavy Expenditure on Advertisement:

Oligopolist firms spend much on advertisement and customer services. As Professor Baumol has written—"Under oligopoly adverting can become a life and death matter."

For example:

If all oligopolists continue to spend a lot on advertising their products and one seller does not match up with them, he will find his customers gradually going in for his rival's product. Further, it can be said that "the different firms of an oligopolistic industry are all in the same boat. If one rocks the boat, others will be affected and in all probability will know the identity of the responsible firms and can retaliate."

Imperfect Competition Form # 2. Duopoly:

Duopoly means such type of business in which there are two sellers, selling either a homogeneous product or a differentiated product. These two sellers enjoy among themselves a monopoly in the sale of the product produced by them. Both the sellers are completely independent and no agreement exists between them.

Even though they are independent, a change in the price and output of one will affect the other, and may set a chain of reactions. A seller may however assume that his rival is unaffected by what he does, in that case he takes only his own direct influence on the price.

Imperfect Competition Form # 3. Monopolistic Competition:

The word Monopoly has been derived from Greek word Mono + Poly. Mono means single and Poly means producer. Therefore, Monopoly means single producer.

It has been defined as:

"Monopoly is that market form in which a single producer controls the whole supply of a single commodity which has no close substitutes."

As Prof. Benham has defined:

"A monopolist is literally a sole seller …. and monopoly power is based entirely on control over supply." Monopolistic competition refers to a market situation in which there are many producers producing goods which are close substitutes of one another or where output is differentiated.

Here no firm can have any perceptible influence on the price-output policies of the other sellers nor can it be influenced much by their actions. Thus, monopolistic competition refers to competition among a large number of sellers producing close but not perfect substitutes for each other.

UNIT FIVE

Demand for Factors of Production| Economics

Demand for Factors of Production!

The type of factors of production employed is influenced by the type of product produced, the productivity of the factors and their cost. A firm producing a standardised model of car is likely to be very capital intensive whereas a beauty salon is likely to be labour intensive.

When factors of production are substitutes, a rise in the productivity or fall in the cost of one of them may result in a change in the combination of resources being employed. A fall in the price of capital goods, for example, might lead to the replacement of some workers with machines.

In other cases where factors of production are complements, a fall in the price of one or a rise in its productivity may increase the employment of all factors in a firm. For instance, a fall in the price of aircraft may make it possible for an airline to fly to more destinations. If so, they will also employ more pilots, more cabin crew and obtain more take-off and landing slots at airports.

Altering Factors of Production:

If a firm wants to change the quantity of resources employed by it, it will find it easier to do this with some factors than others. In the short run, there is likely to be at least one fixed factor of production. This means the quantity cannot be altered quickly. The most obvious example is the size of the factory or office. It will take time for a firm desiring expansion, to extend its buildings or build new ones.

Similarly, one wanting to reduce output is unlikely to be able to stop renting or sell off its buildings quickly. In contrast, it is likely to be easier to change the quantity of labour. Even in the very short run, it may be possible to alter the quantity of labour by changing the amount of overtime available.

It may also be possible to change orders for raw materials and capital equipment but it will depend on the length of contracts and, in the case of increasing demand, the availability of spare capacity with firms producing them.

Combining the Factors of Production:

It is important to achieve the right combination of factors of production. For instance, it would not make sense for a hairdressing salon to have ten hair dryers and two hairdressers or a farmer to have a large amount of land and only a few cattle. In the first case, labour would be underutilized and in the second case, there would be an insufficient number of livestock to make full use of land.

While deciding the combination of resources, firms seek to achieve the highest possible productivity. For instance, table 1 show that the most appropriate number of workers to be employed (in terms of productivity) with five machines is seven, since this is where output per worker is highest. It is interesting to note that the combination is not always one machine per worker.

This is because workers may work in shifts, some workers may be undertaking training and, of course, in some cases one worker may use more than one piece of machinery.

Table 1 Combining labour with machines:

Table 1 Combining labour with machines

No. of machines	No. of workers	Total output (units)	Output per worker (average product) (units)
5	1	50	50
5	2	120	60
5	3	210	70
5	4	320	80
5	5	450	90
5	6	600	100
5	7	770	110
5	8	800	100
5	9	810	90

Demand for Labour:

Productivity is a key factor influencing demand for land. In terms of agricultural land, the most fertile land will be in highest demand and receive the highest rent. City centre sites are also very productive as firms have the potential to attract a high number of customers.

If a shop in the centre of New York becomes vacant, it is likely that a number of retail firms would compete for it in the expectation that they could earn high revenue there. The competition pushes up the rent that can be charged for a favourable site.

One natural resource, which is experiencing an increasing world demand, is water. Water is used for domestic, agricultural, industrial and energy production purposes. As countries become richer, they make heavier demands on scarce water supplies. Global use of water has increased six times in the last hundred years and is predicted to double again by 2050.

Factors of Production and Sectors of Production:

The demand for factors of production can alter as an economy changes its industrial structure. As we know, the distribution of resources among different sectors changes with economic development. In most cases, agricultural reform permits resources to move to low cost manufacturing.

Then, resources move to higher value added manufacturing and then finally the service sector becomes the most important one. This is the case with, for instance, China where currently most of its resources are concentrated in the secondary sector and where the secondary sector is the main engine of economic growth. Not all economies, however, conform to this pattern.

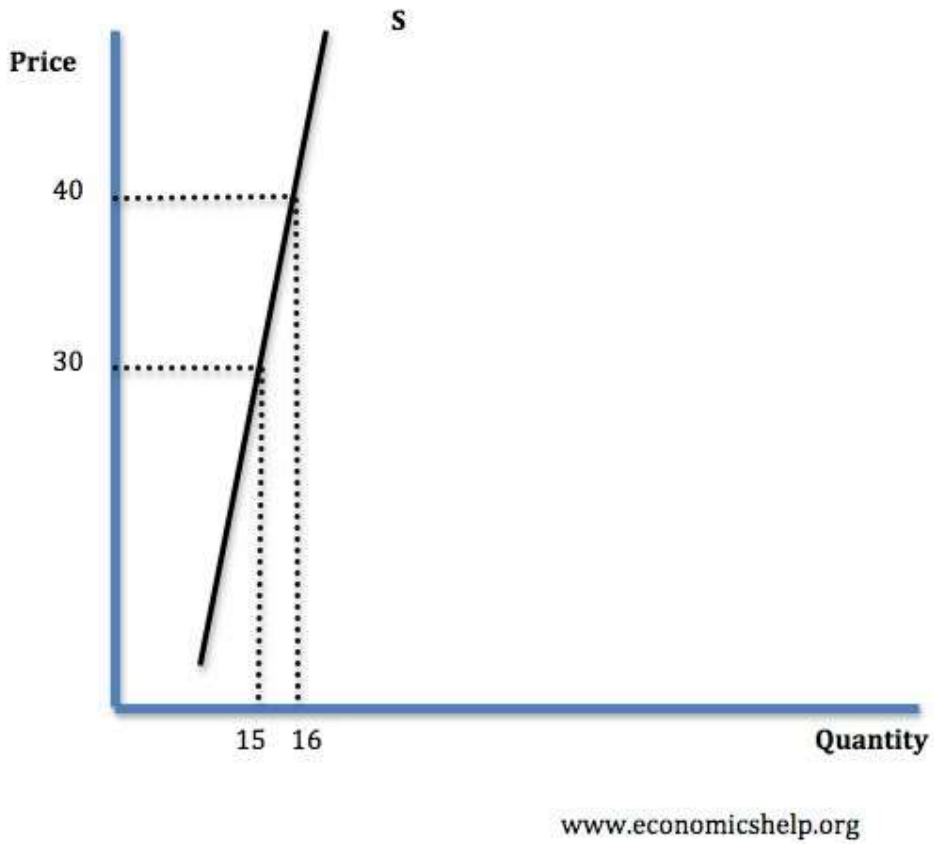
India's service sector has expanded before it has built up a sizeable manufacturing sector. In fact, in 2006, India's service sector accounted for 51% of the country's output. Different industries make use of different factors of production. The chemical industry, for instance, is very capital intensive and agriculture is land intensive (along with being water intensive).

Factors affecting Supply

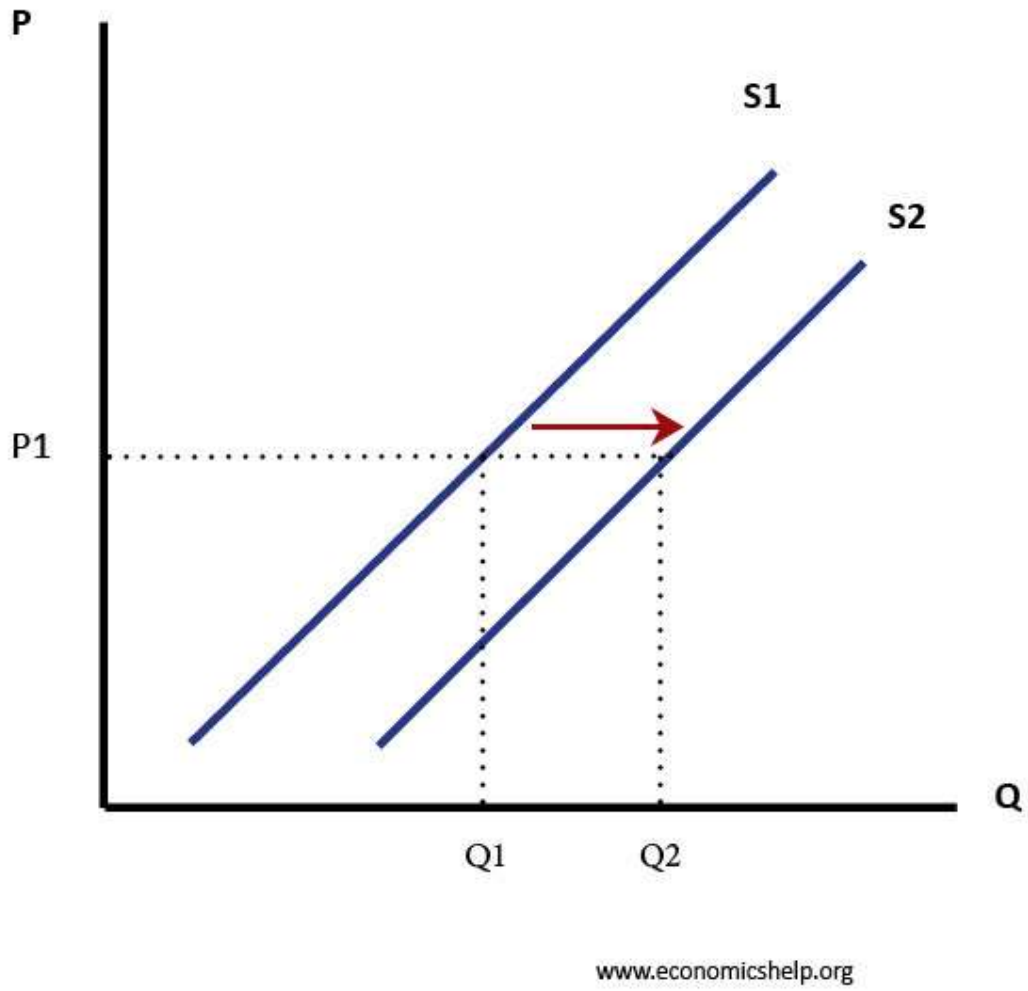
Supply refers to the quantity of a good that the producer plans to sell in the market.

- As price increases firms have an incentive to supply more because they get extra revenue (income) from selling the goods.
- If price changes, there is a movement along the supply curve, e.g. a higher price causes a higher amount to be supplied.

Movement along the supply curve

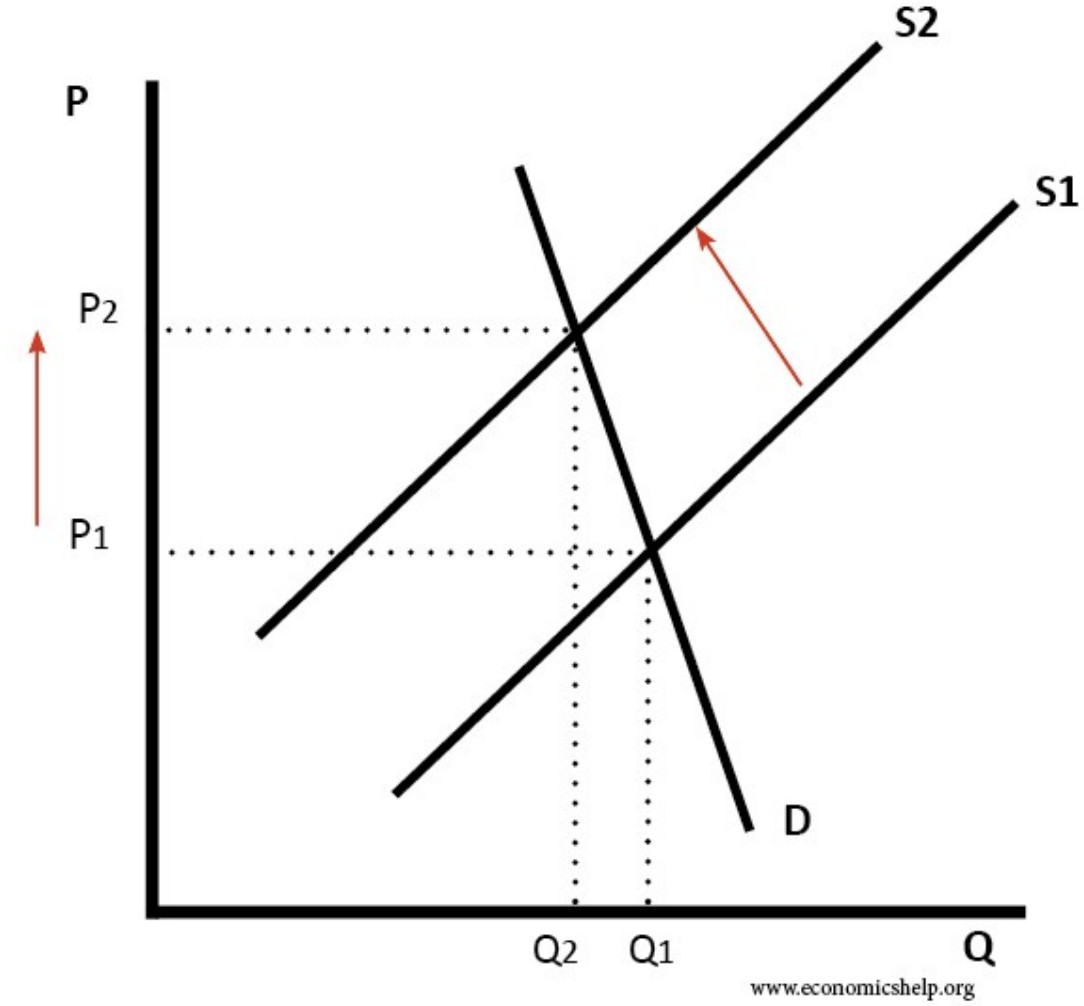


Shifts in the Supply curve



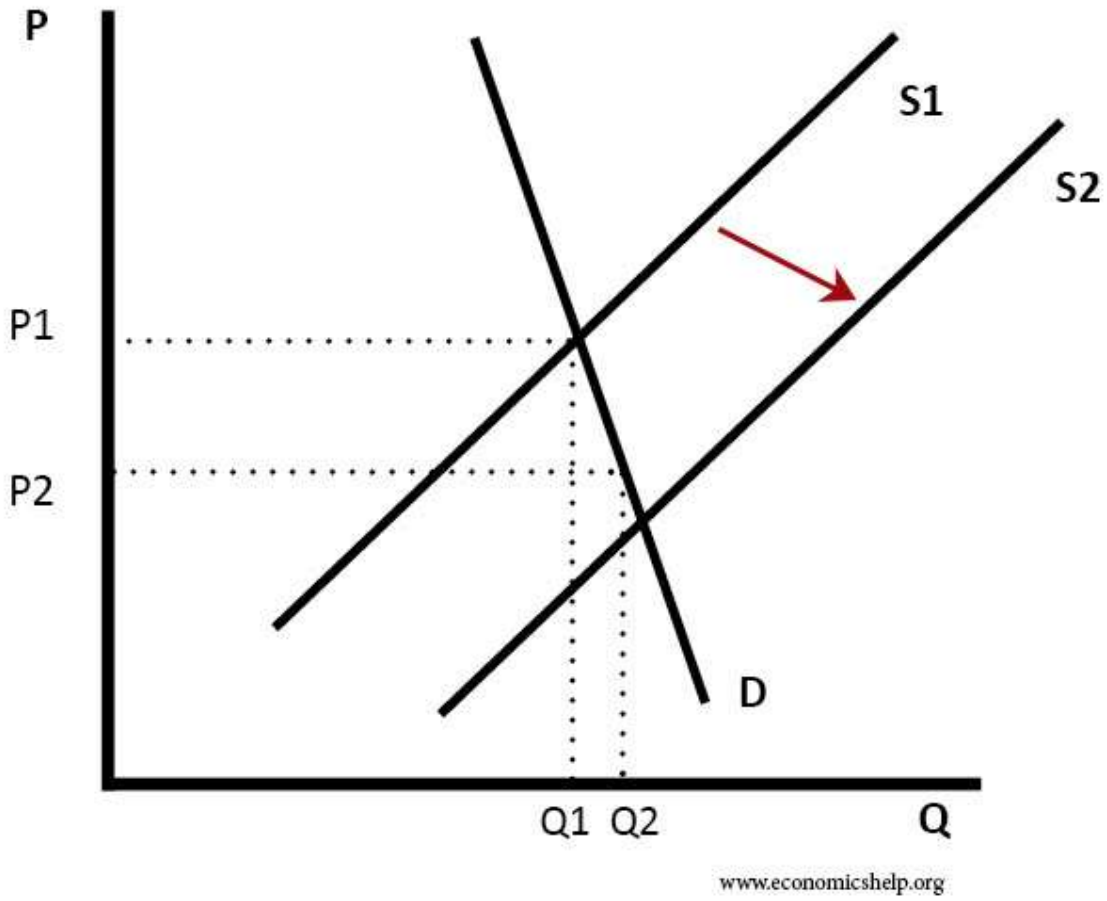
This occurs when firms supply more goods – even at the same price.

Shift in supply to the left



In this case, there is a fall in supply. The supply curve shifts to the left. This causes a higher price

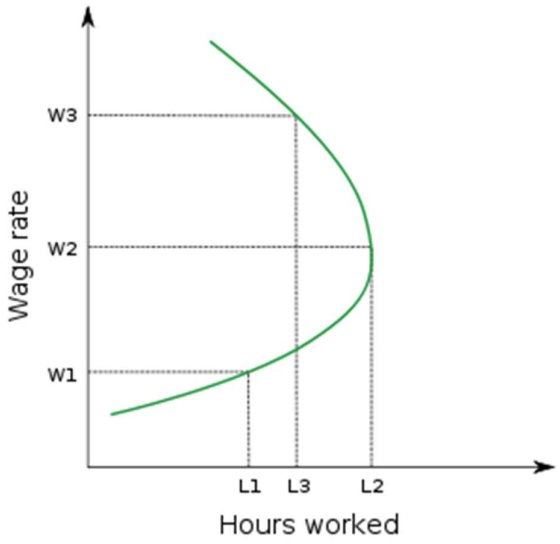
Factors that cause shift in supply to the right



An increase in supply occurs when more is supplied at each price, this could occur for the following reasons:

1. **A decrease in costs of production**. This means business can supply more at each price. Lower costs could be due to lower wages, lower raw material costs
2. **More firms**. An increase in the number of producers will cause an increase in supply.
3. **Investment in capacity**. Expansion in capacity of existing firms, e.g. building a new factory
4. **Related supply**. An increase in supply of a related good e.g. beef and leather
5. **Weather**. Climatic conditions are very important for agricultural products
6. **Technological improvements**. Improvements in technology, e.g. computers, reducing firms costs
7. **Lower taxes**. Lower direct taxes (e.g. tobacco tax, VAT) reduce the cost of goods
8. **Government subsidies**. Increase in government subsidies will also reduce the cost of goods, e.g. train subsidies reduce the price of train tickets.

Backward bending supply curve of labour



The labour supply curve shows how changes in real wage rates might affect the number of hours worked by employees.

In economics, a **backward-bending supply curve of labour**, or **backward-bending labour supply curve**, is a graphical device showing a situation in which as real (inflation-corrected) wages increase beyond a certain level, people will substitute leisure (non-paid time) for paid worktime and so higher wages lead to a decrease in the labour supply and so less labour-time being offered for sale.[1]

The "labour-leisure" tradeoff is the tradeoff faced by wage-earning human beings between the amount of time spent engaged in wage-paying work (assumed to be unpleasant) and satisfaction-generating unpaid time, which allows participation in "leisure" activities and the use of time to do necessary self-maintenance, such as sleep. The key to the tradeoff is a comparison between the wage received from each hour of working and the amount of satisfaction generated by the use of unpaid time.

Such a comparison generally means that a higher wage entices people to spend more time working for pay; the substitution effect implies a positively sloped labour supply curve. However, the backward-bending labour supply curve occurs when an even higher wage actually entices people to work less and consume more leisure or unpaid time.

As wages increase above the subsistence level (discussed below), there are two considerations affecting a worker's choice of how many hours to work per unit of time (usually day, week, or month). The first is the substitution or incentive effect. With wages rising, the tradeoff between working an additional hour for pay and taking one extra hour of unpaid time changes in favor of working. Thus, more hours of labour-time will be offered at the higher wage than the lower one. The second and countervailing effect is that the hours worked at the old wage rate now all gain more income than before, creating an income effect, which encourages more leisure to be chosen because it is more affordable. Most economists assume that unpaid time (or "leisure") is a normal good and so people want more of it as their incomes (or wealth) rise. Since a rising wage rate raises incomes, all else constant, the attraction of unpaid time rises, eventually neutralising the substitution effect and causing the backward bend.

The graph shows that if real wages were to increase from W1 to W2, the substitution effect for an individual worker outweighs the income effect; therefore, the worker would be willing to increase hours worked for pay from L1 to L2. However, if the real wage increased from W2 to W3, the number of hours offered to work for pay would fall from L2 to L3 since the strength of the income effect now exceeds that of the substitution effect; the utility to be gained from an extra hour of unpaid time is now greater than the utility to be gained from extra income that could be earned by working the extra hour.

The above examines only the effect of changing wage rates on workers already subject to those rates; only those individuals' labour supply response was considered. The additional labour supplied by workers working in other sectors (or unemployed), who are now more attracted to the jobs in the sector because it is paying higher wages, was not considered. Thus, for a given market, the wage at which the labour supply curve bends backward may be higher than the wage at which a given worker's curve bends back.

On the other hand, for the *aggregate* labour market, a labour market without "other sectors" for workers, the original story of the backward-bending labour-supply curve applies except that some workers suffer from involuntary unemployment.

Assumptions[edit]

It is essential to understand that with the supply curve of labour, there must be assumptions set which takes the curve's inevitable backward bending form. The assumptions for the theory of labour supply are listed as follows:

- Workers choose whether they will work, and how many hours they will work. This is important to understand because workers are the focus of the labour supply theory. Labour supply depends on the notion that workers choose how many output of time they will work. If the workers choose not to work, that is essentially working leisure, in terms of time.
- There are no contractual obligations to work a certain number of hours. This is important to understand because contractual obligations will involve the labour supply curve to be set, and not on the basis of time worked.
- Workers are utility-maximising agents. In terms of the economy, workers always want to achieve the most amount of money or output they can receive.
- Work provides a disutility, which must be compensated for by paying wages.
- Unpaid leisure time is a "normal" good.
- The labour market is competitive, and both firms and workers are price-takers.
- Wage received is a form of a reservation wage, as workers will have a certain required amount of wage that can take them

Personal Distribution and Functional Distribution

In this article we will discuss about Personal Distribution and Functional Distribution.

The term ‘distribution’ in economics refers to personal distribution and functional distribution of income. Personal distribution relates to the forces governing the distribution of income and wealth among the various individuals of a country. Under personal distribution, we study the pattern of the distribution of national income and the shares received by the different classes.

What is the share of the wage-earning class, of the entire class, and of the entrepreneurial class in the national income?

Why is the share of the wage-earning class in the national income lower than the other classes?

Why is the wage of one person higher (or lower) than the other?

Why is the rent of one piece of land or house higher (or lower) than the other?

These and other similar problems are studied under personal distribution of income. In other words, under personal distribution of income we study the problem of inequality of income and wealth, its effects, and measures to remove or lessen inequalities.

In the words of Jan Pen:

“Personal distribution (or: the ‘size distribution of income’) relates to individual persons and their incomes. The way in which that income was acquired often remains in the background. What matters is how much someone earns, not so much whether that income consists of wage, interest, profit, pension or whatever. And further special attention is paid to income recipients as a collective body, in which regular patterns are sought.”

Functional distribution or ‘factor share distribution’ explains the share of total national income received by each factor of production. In other words, it relates to the distribution of rewards for the services of the factors of production. Rent, wages, interest and profit are the rewards for the services of land, labour, capital and organisation respectively.

Algebraically, it can be stated as: P = f (A, B, C, D,), where the total output P is a function ‘f’ of A land, B labour, C capital, and D organisation.

Thus functional distribution studies the forces underlying the determination of the prices and shares of the various factors of production.

To quote Jan Pen again:

“In functional distribution, we are no longer concerned with individuals and their individual incomes, but with factors of production: labour, capital, land and something else that may best be called ‘entrepreneurial activity’. The theory examines how these factors of production are remunerated. It is primarily concerned with the price of a unit of labour, a unit of capital, a unit of land, and being therefore an extension of price theory. It is sometimes called the theory of factor prices.”

Despite these apparent differences between personal distribution and functional distribution, there is a close relation between the two. The personal distribution in a country is ultimately affected by its functional distribution of income. If the rewards to the factors of production are

just and equitable, the distribution of personal income is also just and equitable. As a result, individual incomes are high.

There is great demand for products and services leading to more investment, more employment, and to increased production and national income. Higher personal incomes mean higher standard of living and greater efficiency in production.

On the other hand, if the functional distribution of income is unjust and is based on the exploitation of factors of production, the personal distribution of income is also unjust and inequitable.

As a result, the majority of people will be poor. There will be diminution of economic and social welfare, and loss of peace and prosperity in the country due to a continuous struggle between the rich and the poor.

Ricardian Theory of Rent (With Diagram)

The classical theory of rent is associated with the name of David Ricardo. He begins with a group of new settlers in a new country.

Let us suppose ourselves to be the settlers in a hitherto unknown island which we shall call jawahar Island after our late beloved leader.

As we study the natural resources of Jawahar Island, we find the land to be of four grades. For convenience, we call them A, B, C and D in the order of their fertility. We shall settle down in Tarapur in 'A' part of the island (See Fig. 33.1).

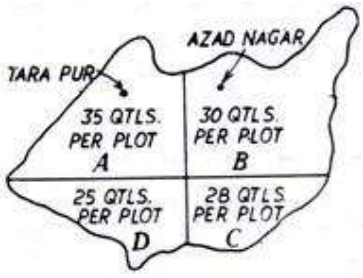


Fig. 33.1

This is the most fertile land and gives us the largest produce per acre. Enough land is available of this quality to satisfy all our needs at the moment. Therefore, it is u free good and will not command any price, i.e., rent. But as time passes, the mouths to be fed increase in number. This may be due to more immigrants, who have heard of our good luck, or due to an increase in population.

Rent in Extensive Cultivation:

A time comes when all land of the best quality has been taken up. But some demand still remains unsatisfied. We have then to resort to 'B' quality land. It is inferior to 'A' and yields

only 30 quintals of wheat per plot as compared with 35 quintals of 'A' with the same expenditure of labour and capital. Naturally plots in 'A' now acquire a greater value as compared with 'B'. A tenant will be prepared to pay up to 5 quintals of wheat in order to get a plot in the 'A' zone, or take 'B' quality land free of charge.

This difference, paid to the owner (if the cultivator is a tenant) or kept to himself (if he is the owner), is economic rent. In the first case (i.e., when the cultivator is a tenant) it is contractual rent; and in the latter (i.e., when the cultivator is the owner) it is known as implicit rent. 'B' plots do not pay any rent. To go a step further, we see that after all land of 'B' quality has also been taken up, we begin cultivating 'C' plots. Now even 'B' quality land comes to have differential surplus over 'C'. Rent of 'A' increases still further.

When the demand increases still more, we are pushed to the use of the worst land, which is of 'D' quality yielding 25 quintals per plot. 'D' quality land is now no-rent land or marginal land while 'A', 'B', 'C all earn rent. This growing demand shows itself in rising prices. They raise high enough to cover the expenses of cultivation on the lowest grade land, i.e., 'D' quality.

Let us suppose that one unit of productive effort is equal to Rs. 3,500. When only A' quality land, where a plot produces 35 quintals is under the plough, the price of wheat will be Rs. 100 per quintal. When owing to increased demand, the price of wheat rises to Rs.-110 then and only then will 'B' quality land be cultivated which produces 30 quintals of wheat. And when that happens 'A' land will have a surplus of 5 quintals X Rs. 110 = Rs. 550 per plot. This becomes rent.

The difference, in other words, between the return from a plot of land above the margin and the marginal plot (i.e., the one just paying its way) is called rent or economic rent.

Rent in Intensive Cultivation:

The settlers in Jawahar Island realize that there is another way too of increasing the produce. Why not apply more labour and capital to superior lands, and resort to intensive cultivation? This is done but it is seen that the law of diminishing returns sets in. Look at Fig. 33.1 again. Now consider that A, B, C and D are the different doses of labour and capital (instead of different grades of land) applied to the same grade of land. The first dose yields 35 quintals.

The second unit of labour and capital used on 'A' plot will almost definitely give us less than the first. We suppose it gives us only 30 quintals. So we have the choice of either taking new plots in 'B' land, or cultivating 'A' lands more intensively. If we adopt the latter course, the first unit of labour and capital will be yielding a surplus over the second unit—which unit produces just enough to cover the expenses. This surplus, again, is rent. As more and more units of labour and capital are applied, the return per unit will go on falling.

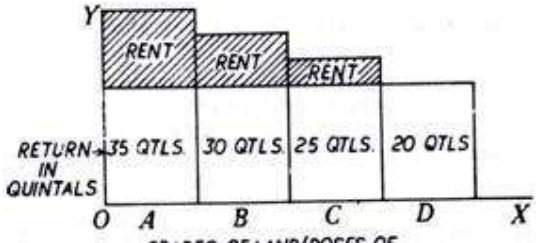
Rent Due to Differential Advantages:

With the passage of time, however, a new factor emerges. A locality in the A' zone—marked Tarapur in Fig. 33.1—develops into a market and Azadnagar in 'B' into a railway junction, and produce has to be sent to those two flourishing localities for their final disposal. Now the plots situated in the neighbourhood of Tarapur and Azadnagar come to have an advantage. They have either no transport charges or much smaller charges than in the case of lands in 'C' and D' areas.

Transport charges are a part of the cost of production, because production is complete only when the commodity reaches the hands of consumers. The better-situated plots, which have to bear less transport charges, will enjoy a surplus over the distant ones. This surplus will be another cause of rent. Hence, economic rent is a surplus which arises on account of natural differential advantages, whether of fertility or of situation, possessed by the land in question over the marginal land.

No-rent or Marginal Land:

The cases described above show that rent is earned due to a certain paces being better suited for cultivation or being better situated in regard to markets. But better than what? Of course better than some other plot of land. This 'some other' plot is marginal land which just covers its expenses and no more. This land is called 'no-rent land'. All rents are measured from it upwards.



Quality of Land or Doses of Capital and Labour
Fig. 33.2

In fig. 33.2 'D' quality and land which produces 20 quintals per plot is the marginal land. Here the return and cost are equal. It is just worthwhile cultivating this land, since it just covers expenses of cultivation and yields no surplus to the cultivator.

It is quite possible that we may not be able to spot the 'no-rent land' because:

(a) It may be paying scarcity rent, or

(b) The owner might have invested some capital in it and the interest thereon might be mistaken for rent, or

(c) The no-rent land may be in some other country or

d) The no-rent tracts may form part of a rent-paying area and be concealed in it.

Scarcity Rent:

In our new home-country, Jawahar Island, we at last come to a situation when all the lands have been brought under the plough, and are being cultivated intensively too. But the price rises still further under the pressure of demand. Population has been increasing fast. Our country has become old and no more land is available as we are an island country. Prices of agricultural produce go up and, therefore, incomes from land go up.

Hence, all land (including the no-rent 'D' quality land) begins to get surplus above expenses. This surplus above costs in the 'D' quality land, our previous no-rent land, is scarcity rent. Superior lands will be paying this surplus over and above differential gain.

Conclusion:

Summing up, we can say that, according to the Ricardian theory, rent is a differential surplus and arises from the fact that land possesses certain peculiarities as a factor of production. It is limited in area and its fertility varies. Besides, its situation is fixed.

Thus rent results because:

(a) Fertility is more or less fixed by nature;

b) The total stock of land is fixed and cannot be increased.

On this basis, Ricardo defines rent as "that portion of the produce of the earth which is paid to the landlord for the original and indestructible powers of the soil." According to him fertility, situation and limited total stock—these qualities, which are original as well as permanent, give, rise to rent.

Criticism of Ricardian Theory:

The Ricardian theory of rent has been widely criticised as under:

(i) It is pointed out that fertility of land is not original:

Much of the present productive capacity of land is the result of human efforts, use of manures and other improvements. Thus, it is not possible to say which qualities of land are original and which of them are man's creation.

Situation is something which man cannot change. Obviously it is not possible to move a plot of land to another place. But man can improve the means of transport so much that the distance between two places matters little Thus he can manage to change the character of a place. The planned cities and factory towns of today are the product of man's brain. Although this criticism has a leg to stand upon, it cannot be denied that certain original qualities do matter. No human effort will change Rajasthan into Kashmir.

(ii) The idea of indestructibility is objected to:

Area, it is said, is everlasting but not fertility. Continued cultivation exhausts fertility. We observe this in the case of land in India. Lands are reported to be less fertile and, therefore, less productive per hectare today than they were in the past.

Ricardo's doctrine, however, cannot be wholly rejected. Land which is naturally fertile regains its fertile qualities more easily, if it is manures or left fallow. Creation of fertility in a barren land is more difficult. Besides no amount of use will entirely kill the fertility of land.

(iii) Certain American economists like Carey have criticised the classical theory of rent on historical grounds. They say that cultivation did not begin with the most fertile lands when the

first settlers arrived in America, nor did it pass on to the less fertile lands in that order. The reason was that some of the most fertile lands were covered with thick forests while others were open to enemy attack. The settlers naturally preferred less fertile areas which were open and could be defended.

This criticism answers itself. Not necessarily the most fertile, but the land offering the best reward for a definite effort is occupied first. Moreover, the order of cultivation is not so important. Even if the order is changed, when two types of land are being cultivated, the more fertile or better situated plot will produce a surplus above the cost.

The surplus will arise whichever land is cultivated before the other. Rent will still arise even if all the lands were of uniform quality. It will arise in the intensive form.

(iv) It is said that rent is not due to differential advantages only. Even if all lands were of uniform quality, rent would still arise. Rent arises from scarcity.

(v) Ricardian theory does not say why rent is paid; it only tells us that superior lands command higher rent.

(vi) The concept of marginal land is said to be imaginary, theoretical and not realistic.

(vii) It is also urged that no special theory of rent is necessary. Demand and supply theory, which explains all values, can explain rent also.

(viii) Modern economists think that it is only from the point of view of economy as a whole that land has perfectly inelastic supply and earns a surplus or rent. This surplus is not included in cost and hence does not enter into price. But from the point of view of individual farmer or industry, a payment has to be made to prevent land from being transferred to some other use.

The payment, called transfer earnings, is an element of cost and hence enters into price. For the individual farmer the whole of rent is cost. “This concept of transfer earnings helps to bring the simple Ricardian Theory—where transfer earnings are zero because it is the whole economy which is being studied—into a closer relation with reality.”— (Stonier and Hague).

Rent as Payment for the Use of Land: Modern View:

So far as the use of land is concerned, the modern economists have offered a better explanation of rent. This payment is obviously determined by the demand for and the supply of land.

Demand Side:

The demand for land is a derived demand. It is derived from the demand for the products of land. If the demand for these products rises or falls, the demand for the use of land will correspondingly rise or fall leading to increase or decrease of rents. For instance, if the population of a country increases, the demand for food will increase, resulting in increased demand for land and rise m its rent, and vice versa.

The demandfor a factor of production depends on its marginal revenue productivity (or in short, marginal productivity). This productivity is subject to the law of diminishing marginal productivity. That is why, as in the case of other factors, the demand curve DD shown in the

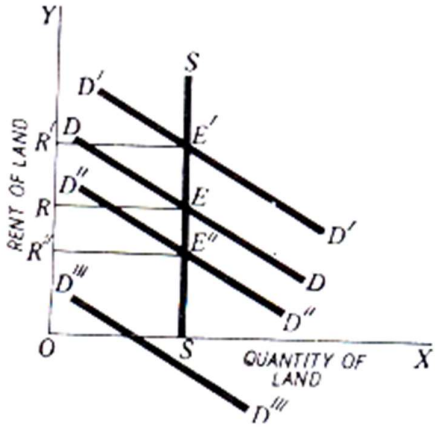
following figures slopes down from the left to the right. Thus, on the side of demand, rent of land is determined by its productivity, not total productivity, but marginal productivity.

Supply Side:

The supply of land is fixed so far as the community is concerned, although individuals can increase their own supply by acquiring more land from others or decrease its supply by parting with land. In spite of reclamation projects, the effect of which on the total supply is negligible, the supply of land remains practically fixed.

It is a case of perfectly inelastic supply, which means that whatever the rent (the rent may rise or fall), the supply remains the same. That is why it is said that land has no supply price. In other words, the supply of land in general is absolutely inelastic and as such its supply is independent of what it earns.

Interaction of Demand and Supply:



Determination of Rent Under Inelastic Supply of Land
Fig. 33.3

We have analysed the demand and the supply sides of land. The interaction of these forces is shown in Fig. 33.3. We assume that land is homogeneous and it is used for raising one crop only. Then there can be one demand curve and one supply curve. We also assume perfect competition. SS supply curve, a vertical straight line, represents fixed supply. We start with DD as the total demand curve for land. These two curves intersect at E.

In this position OR (=SE) is the rent. If rent is less (i.e., OR) the demand for land will increase; but the supply is fixed, hence rent will again rise to OR. Suppose rent rises above OR (i.e., to OR'), then the demand for land will decrease and bring the rent back to OR.

Suppose now that, on account of increase in population or otherwise, the demand for land has increased from DD to D'D'. The supply curve is still the same SS. The new point of intersection will be E' and therefore the rent will be OR'. If demand falls to D"D", the demand and supply curves intersect at E", and the rent will be OR". If the country is entirely new and land of good quality is surplus, then there will be no rent. The condition is shown by D' "D".

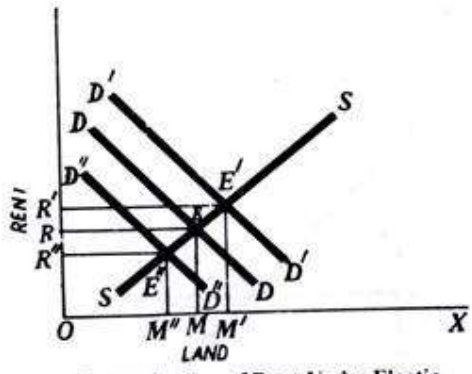
If the land is of different qualities, then each quality will have a separate demand curve and they will command different rents. Hence the theory explains differential rent too. Thus, the rent of land, like the remuneration of other factors, is determined by the equilibrium between demand for and supply of land.

In other words, it is scarcity in relation to demand that determines rent. Fundamentally speaking, rent is paid for land because the produce of land is scarce in relation to its demand. The scarcity of land is in fact derived from the scarcity of its products. It is this scarcity which explains all values and rent is no exception.

Land for a Particular Use:

We have analysed above total demand and total supply of land for the community as a whole. Let us now consider it from the point of view of a particular industry or use. For a particular use or industry, the supply of land cannot be regarded as fixed. By offering more rent, it can be increased; the supply will decrease if the rent in this particular case goes down.

The supply is thus elastic and the supply curve will rise upwards from left to right, as is shown in Fig. 33.4. DD is the demand curve to start with. E is the point of intersection, hence OR (= EM) is the rent and OM is the land used.



Determination of Rent Under Elastic Supply of Land
Fig. 33.4

Suppose demand increases to D'D'. Now the two curve? Intersect at E' and the rent will be OR' and the land used OM'. This means that since for this particular use, the rent of land has gone up, MM' land has been withdrawn from other uses and put to this use. Similarly, if demand decreases to D"D", the rent will come down to OR" and the quantity of land used to OM", which means MM" land has gone out of this particular use, sine: the rent has fallen.