On the other hand, if all resources are put in the production of computers, OB units of computers would be produced in the economy. Joining points A and B, we get production possibility curve AB. In case, the economy decides to produce both the commodities by using the available resources, it can produce various combinations of cars and computers by staying on the curve AB, such as at E or F. At point E, it can produce OS units of cars and OT units of computers. Similarly, at F, ON units of cars and OM units of computers can be produced. Thus, the points E, F or any other point on curve AB show maximum feasible combinations of cars and computers which can be produced with the resources available. Point C in the figure is not attainable or feasible for the economy as it is above the production possibility curve AB, i.e., beyond the capacity of the economy. Again, it will not produce at point D which is though attainable but not desirable, because in that case the economy's resources will not be used most effectively.
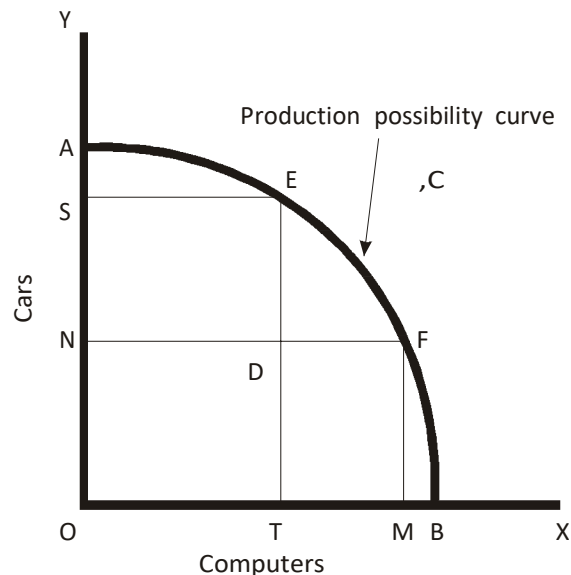

Fig. 2.1

It is, thus, seen that to produce more computers, some units of cars are to be sacrificed, i.e., cars can be transformed to computers. The rate at which one product is transformed into another is called **marginal rate of transformation** (MRT). Thus, MRT between cars and computers is the units of cars (in our case, 5000), which has to be sacrificed for the production of computers. MRT increases, as more of one commodity is produced and less of another. This makes Production Possibility curve concave to the origin.

Uses of Production Possibility Curve

The production possibility curve has a number of uses. It helps in finding the solution of the basic problems of production—what and how to produce and for whom to produce goods in the economy. Besides, whenever government decides to divert its resources, say, from necessaries to luxuries, it may utilize the concept of production possibility curve. It can also help in guiding the diversion of resources from current consumption goods to capital goods and increase productive capacity to attain higher levels of production.

OPPORTUNITY COST

Opportunity cost is a term which means the cost of something in terms of an opportunity foregone (and the benefits that could be received from that opportunity), or the most valuable foregone alternative. In other words, the opportunity cost of a given commodity is the next best alternative cost or transfer costs. As we know that productive resources are scarce, therefore, the production of one commodity means not producing another commodity. The commodity that is sacrificed is the real cost of the commodity that is produced. This is the opportunity cost. Let us explain this with an example. Suppose a producer can produce a car or a computer with the money at his disposal. If the producer decides to produce car and not computer, then the real cost of the car is equal to the cost of computer, i.e., the alternative foregone. Let us take another example to explain the concept. For example, if a company decides to build hotels on vacant land that it owns, the opportunity cost is some other thing that might have been done with the land and construction funds instead. In building the hotels, the company has forgone the opportunity to build, say, a sporting center on that land, or a parking lot, or a housing complex, and so on. In simpler terms, the opportunity cost of spending a day for picnic with your friends could be the amount of money you could have earned if you had devoted that time to working overtime.

Opportunity cost need not be assessed in monetary terms, but rather, is assessed in terms of anything that is of value to the person or persons doing the assessing. The consideration of opportunity costs is one of the key differences between the concepts of economic cost and accounting cost. Assessing opportunity costs is fundamental to assessing the *true cost* of any course of action. The simplest way to estimate the opportunity cost of any single economic decision is to consider, "What is the next best alternative choice that could be made?" The opportunity cost of paying for college fee could be the ability to buy some clothes. The opportunity cost of a vacation in the Goa could be the payment for buying a motorbike.

It is to be noted that opportunity cost is not the sum of the available alternatives, but rather of benefit of the best alternative of them.

The concept of opportunity cost can be explained with a diagram that depicts opportunity cost between any two given items produced by a given economy. It is known in economics as the production possibility curve, as shown in Fig. 2.1 above. In the imaginary economy discussed above which produces only cars and computers, the economy will be operating on the PPC if all resources (inputs) are fully utilized and used most appropriately (efficiently). The exact combination of cars and computers produced depends on the mechanisms used to decide the allocation of resources (i.e., some combination of markets, government, tradition, and community democracy).

The concept of opportunity cost has become very popular in the recent years. The modern analysis of cost-benefit analysis is based on the theory of opportunity cost only. The cost-benefit analysis is a guiding tool for entrepreneurial decisions in the modern economy. Although opportunity cost can be hard to quantify, its effect is universal and very real on the individual level. The principle behind the economic concept of opportunity cost applies to all decisions, not just economic ones.

Questions for Review

1. What do you mean by an economic problem? How does an economic problem arise?
2. What are the central problems of an economy?
3. What is a production possibility curve? Explain with the help of a diagram.
4. Give the meaning of the term opportunity cost.
5. Why is the production possibility curve concave to the origin?
6. What do you mean by marginal rate of transformation?
7. Define marginal opportunity cost along a production possibility curve. (NCERT)
8. Give two examples of underutilization of resources. (NCERT)
9. "An economy always produces on, but not inside, a PPC." Give reasons. (NCERT)
10. Name the factors that lead to the shift of the PPC? (NCERT)
11. Give two examples of growth of resources. (NCERT)
12. Why do technological advances or growth of resources shift the PPC to the right? (NCERT)
13. Name any two central problems facing an economy. (NCERT)
14. What does increasing marginal opportunity cost along a PPC mean? (NCERT)
15. What is the basic problem of an economy?
16. Distinguish between capital-intensive and labour-intensive technique of production.
17. What are the important uses of PPC?
18. Explain the concept of opportunity cost giving example.

3 CONSUMER BEHAVIOUR

CONSUMER'S EQUILIBRIUM–UTILITY MAXIMIZATION

The theory of demand starts with the examination of the behaviour of the consumers. In our everyday life we behave in different ways while buying and consuming a good or service. The simple calculations and human reasoning we undertake while doing any transactions have been transformed into principles which guide us to attain satisfaction or equilibrium in economic sense. When we go for shopping, we decide beforehand, what good to buy and how much to spend. It makes sense as we try to get most of what we are spending. In other words, we always want more of anything and for that purpose we negotiate and come to an agreed price which we are ready to pay happily. It is therefore, necessary to be first acquainted with the consumer behaviour, which forms the basis of the demand theory.

It is assumed that consumers are rational. Given his money income and the prices of commodities, a consumer always tries to maximize his satisfaction. That is, to get the maximum welfare (state of well-being) by spending the given money on various commodities. It is assumed that the satisfaction a consumer gets by consuming a good is measurable (measured in terms of money), though in real life it is not possible to measure satisfaction because it is psychological entity. We only feel the level of satisfaction and express the same in different ways. We show our satisfaction by our behaviour like laughing, jumping in excitement or in any other way. Thus, we cannot measure satisfaction in quantitative terms as we are capable of measuring time in seconds, weight in kilograms or length in meters. Further, each consumer is also assumed to be known of what he wants. Moreover, he has all information regarding market—the goods available, the prices of the goods at a particular point of time and so on. Every consumer uses this information in such a way as to maximize his total satisfaction.

To explain consumer's equilibrium i.e., how a consumer attains maximum satisfaction by spending his money income on certain units of commodities, it is worthwhile to be familiar with certain important terms used in explaining various concepts and theories of demand. These are explained as under:

Utility

Utility is defined as the power of a commodity or service to satisfy a human want. Economists have leveled the term satisfaction as utility. It is subjective concept and therefore varies from

person to person. As already stated, it resides in one's mind and therefore cannot be measured in quantitative terms. Though utility and satisfaction are used synonymously, we should note that utility is the expected satisfaction whereas satisfaction implies 'realized satisfaction'.

Total Utility

It is the amount of utility (satisfaction); a consumer gets by consuming all the units of a commodity. If there are n units of the commodity then the total utility is the sum of the utilities of all n units of the commodity. Thus, if there are four units of a commodity, then total utility is,

$$U = U_1(n_1) + U_2(n_2) + U_3(n_3) + U_4(n_4)$$

Where U = total utility; U_1.......U_4 are the utilities of n_1.....n_4 units of the commodity.

Thus, if by consuming first apple, a consumer gets 12 utils of satisfaction, 10 utils from the second apple, 9 utils from the third and 7 utils from the fourth apple; then his total utility is,

$$U = 12 + 10 + 9 + 7 = 38$$

Thus utilities of various goods are additive. This means that utilities of different commodities are independent of one another. The utility derived from one commodity does not affect that of another.

Marginal Utility

Marginal utility is defined as the change in the total utility due to a unit change in the consumption of a commodity per unit of time. It can also be defined as the addition made to the total utility by consuming an additional unit of a commodity. For example, if total utility of 3 cups of tea is 18 utils and on consuming the 4th cup it rises to 20; then marginal utility 20-18 = 2 utils. Thus, by consuming one more cup of tea, the additional utility, a consumer gets is 2 utils. Marginal utility can be expressed as,

$$MU = \frac{\Delta TU}{\Delta Q}$$

Where MU = marginal utility; ΔTU = change in total utility; ΔQ = change in the quantity consumed. 'Utils' is the term used by Marshall as a measuring unit of utility. The following expression can also be used to find marginal utility:

$$MU = TU_n - TU_{n-1}$$

Where, TU_n is the total utility of nth unit of the commodity and TU_{n-1} utility from the n-1th commodity. Thus, if TU from the second unit (nth unit) of apple is 13 and TU from the previous unit (n-1) is 7, then MU is $13 - 7 = 6$.

The concept of total utility and marginal utility is shown in the utility schedule below:

Units of apples	Total utility	Marginal utility
1	7	7 – 0 = 7
2	13	13 – 7 = 6
3	18	18 – 13 = 5
4	22	22 – 18 = 4

Contd....

5	25	25 – 22 = 3
6	27	27 – 25 = 2
7	28	28 – 27 = 1
8	28	28 – 28 = 0

When the consumer takes 1st apple, his total utility is 7 and from the 2nd apple he gets 13 and so on. The third column shows marginal utility, which diminishes as the consumer increases units of apples. It is seen that when total utility is maximum, marginal utility is zero at 8th unit of apple. It is also seen that total utility is the sum of the marginal utilities of the 1st, 2nd, 3rd, and so on. Thus, at 8th unit of apple,

$$TU = MU_1 + MU_2 + MU_3 + MU_4 + \ldots\ldots + MU_{n(8)}$$
$$28 = 7 + 6 + 5 + 4 + \ldots\ldots + 0$$

LAW OF DIMINISHING MARGINAL UTILITY

One of the very important laws in regard to the satisfaction of human wants is known as law of diminishing marginal utility. The law explains common feeling of every consumer. Suppose a person starts consuming apples one after another. The first apple gives him the maximum satisfaction as he might be in mood of taking some food at that time for meeting his appetite. As he takes the second apple, he gets less satisfaction because by this time he has already met some level of appetite. The third and more apples yield him lesser satisfaction or utility. It means that every time the consumer increases his consumption, he gets less and less satisfaction. The satisfaction also tends to be zero when the consumer feels totally disgusted to take any more apples. If he takes more, his satisfaction turns negative or utility now becomes disutility.

Thus law of diminishing marginal utility states that additional satisfaction a person derives by consuming a commodity goes on declining as he consumes more and more of a that commodity. According to Marshall, *"The additional benefit which a person derives from a given increase of his stock of a thing diminishes with every increase in stock that he already has."*

Two important reasons for diminishing marginal utility are the following:

(a) *Each particular want is satiable (can be satisfied):* Though there are unlimited wants, a single want can be satisfied. Thus, when a consumer consumes more and more of a commodity, his want is satisfied and he does not wish to have any further increase in the commodity. As such his marginal utility falls when consumption increases.

(b) *Goods are imperfect substitutes for one another i.e., one good cannot be exactly used in place of another:* Satisfaction from any two goods is not same. Different goods satisfy different wants. If a good could be perfectly substituted for another, it would have satisfied other wants. Hence, its marginal utility would not have fallen but increased.