PART NINE
ECONOMICS OF WELFARE

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WELFARE ECONOMICS

INTRODUCTION

Meaning

Welfare economics is that branch of economic science which lays down criteria on the basis of which policies can be adopted to maximize "social welfare". It lays down *prescriptions* for the achievement of one single objective, namely, the maximization of the economic welfare of the community. The main task of the welfare economist is to forge tools of analysis which can be immediately applied to economic policy. It analyses the efficiency of the economic system with *maximum social welfare* as the yardstick. It evaluates governmental policies strictly from the point of view of social welfare. As pointed out by Prof. M. Reder, "Welfare economics is the branch of economic science that attempts to establish and apply criteria of propriety to economic policies."[1] According to Prof. D. S. Watson, welfare economics is only another name for *normative price theory*. When price theory is adapted to the task of stating the norms and standards of an *ideal economy,* it becomes welfare economics, because an ideal economy provides the maximum of economic welfare – subjective satisfaction – obtainable from the economy's resources. Welfare economics has been defined by *Scitovosky* as "that part of the general body of economic theory which is concerned primarily with policy." It is thus a normative economics. *Its fundamental task is to define and elaborate the welfare optimum and prescribe policies which lead to its attainment by society.* "Welfare economics," according to Prof. Asimakopulos, "tries to establish general rules for choosing between different forms of economic organization and different forms of economic policies. One policy is preferred to another on economic grounds because it would lead to a better allocation of goods and resources, permitting some people to be made better off without making anyone worse off, or because it would lead to a better distribution of income among persons in the economy (even though some are made better off at the expense of others.)"[2]

The subject of 'welfare economics' is the well-being of persons as consumers and as producers and the possible ways of improving that well-being or welfare. Welfare economics has only a remote connection with what is called the "Welfare State". The term *Welfare State* refers to those social service activities of modern governments which are concerned with providing for the aged, the sick, the disabled, the unemployed, the indigent and other groups who cannot look after themselves. The welfare state embraces, thus, only selected groups of the population. In contrast, *Welfare Economics* studies the conditions of the economic welfare of *all* persons, considered as individuals.

One of the major tasks of welfare economics is to define an *ideal* economy – an economy that would give the maximum of satisfactions to individual from the resources available. The actual economy does not very often coincide with the ideal economy – The task of welfare economics is to suggest ways and means of bringing the *actual* closer to the *ideal*.

POSITIVE ECONOMICS AND WELFARE ECONOMICS

A somewhat loose, though not a clear-cut distinction, can be drawn between positive (or,

1 Reder, M. W., *Studies in the Theory of Welfare Economics*, p. 13.
2 Asimakopulos, A., *Microeconomics*, p. 418.

pure) economics and welfare economics. *Positive economics may be said to refer to the analysis of the theories or principles of economics, while welfare economics may be said to confine itself to an examination of economic policies.* Positive economics builds up analytical tools ; welfare economics applies such tools to specific economic situations to maximize economic welfare. Positive economics is merely *theoretical*; welfare economics is *prescriptive* in nature, *i.e.*, it prescribes remedies for specific economic situations. Further, the propositions of positive economics are capable of being tested by observation of the real world, while the propositions of welfare economics cannot be subjected to any such observational tests. For example, the law of demand is an important law of positive economics. It states, other things remaining constant, if the price of a commodity rises, its demand shall fall off. Now this law can be easily tested by observing the market behaviour. As against this, the propositions of welfare economics *cannot* be so tested through observation or direct scrutiny. For example, one of the propositions of welfare economics states that if the national income of a country increases, the economic welfare of the people will increase, other things remaining constant. Now it is difficult to find out whether the welfare of the country has increased when its national income increases. The difficulty is that welfare is not an observable quantity like a market price. The latter is observable, the former is not.

It should, however, be remembered that distinction between positive economics and welfare economics is a recent one. Until the latter part of the nineteenth century, positive and welfare economics went together. Economic treatises, before 1850, dealt not only with the analysis of economic theories and principles, but also with their application to policies.

The distinction between positive economics and welfare economics dates since the thirties when economists like Lionel Robbins deliberately fostered it. Prof. Robbins, as is well known, urged upon economists to direct their energies strictly to the formulation of *ethically neutral* laws and principles of economics. But the distinction between positive economics and welfare economics is rather artificial in character. Economics cannot be purged completely of its prescriptive functions. Just as medical science cannot be divorced from medical practice, in the same manner, positive economics cannot be separated from welfare economics. The two must go hand in hand. *The function of the economist is not only to explain and explore, but also to prescribe remedies for specific economic maladies.*

A related issue in this context concerns the place of *value judgments* in welfare economics.

Prof. Robbins, as already pointed out above, was dead set against the importation of value judgments into the body of economics. He was of the view that economic theory should be strictly neutral between ends. He wanted to eliminate all *ethical considerations* from economics. The Paretian concept of welfare also did not involve any explicit value judgments or ethical norms. In fact, Pareto was completely silent about the distribution of wealth in society. This naturally made the Paretian concept highly *restrictive* and *unrealistic* in nature, though it was claimed on behalf of Pareto that his conception was quite scientific in content. As a counterblast to this, Abraham Bergson, Samuelson and others of their way of thinking deliberately introduced a set of *value judgments* or *ethical norms* into their conception of welfare economics. They claimed that welfare economics would not lose its scientific status even if we include value judgments or ethical norms into it. The welfare economist as an individual may not agree with the ethical norms handed over to him, but he can still deduce the policy implications of such norms in a scientific manner. After a prolonged controversy, the majority of the economists have now come round to the view that welfare economics as an entity is just not possible without the incorporation of value judgments into it. According to Donald Dewey, most of us study Economics precisely because we wish to improve our capacity to make "good" judgments about economic issues.[1]

As regards the field covered by welfare economics, there is hardly any unanimity or agreement among economists. That is why it is not easy to delineate or define the boundaries of this branch of economics. At one end, there are economists who firmly believe that any matter concerning economic policy or involving value judgments falls within the purview of welfare economics. At the other end, there are economists who have narrowed down the scope of welfare economics to a mere discussion of the techniques of realizing the social optimum. The

1 Dewey, Donald, *Microeconomics*, (O. U. P. 1977), p. 213.

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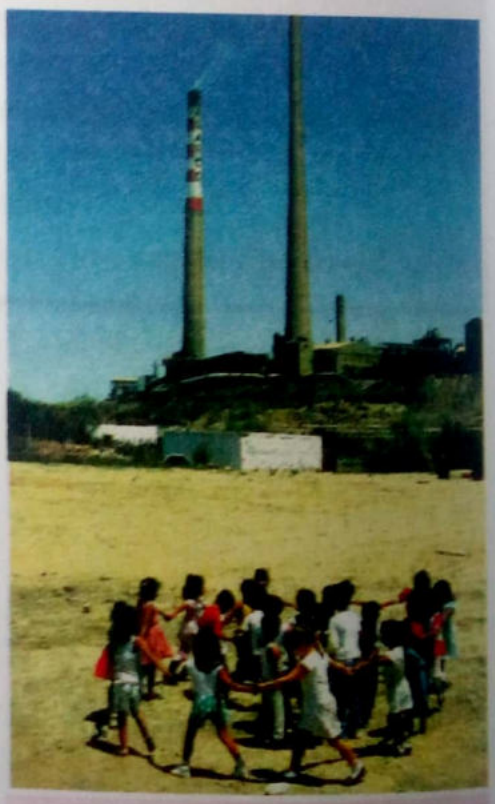
add different definitions.

We studied the nature of Economics in the beginning of the book. Economics in a nutshell refers to the prudent management of scarce resources. The economists are generally agreed that the scarce resources of the community should be so utilised as to maximise total satisfaction or welfare of the people. Economics has mainly concerned itself with welfare as some of the well-known definitions of Economics would incidate. For instance, according to Cannan, "The aim of Political Economy is the explanation of the general causes on which the material welfare of human being depends." According to Pigou, Economics studies "that part of social welfare that can be brought directly or indirectly into relation with the measuring rod of money." Thus, Economics in its origin, development and content has coincided, by and large, with welfare economics. But let us see what welfare economics means.

Definition of Welfare Economics

Welfare economics is a branch of Economics which is primarily concerned with the promotion of the welfare of a community as measured in the satisfaction derived from the economic goods at the disposal of the community. It is the function of welfare economics to help in the formulation of economic policies calculated to maximise social welfare. "The analysis of the efficiency of an economy with maximum total satisfaction as the yard-stick is known as welfare economics."[1] Quite a good definition would be : "Welfare economics is that branch of economic analysis which is concerned primarily with the establishment of criteria that can provide a positive basis for adopting policies which are likely to maximise social welfare."[2]

According to the definitions given above, we can say that the principal function of welfare economics is to provide standards of judgment by which one can judge economic policies and events from the point of view of social welfare. As Scitovsky observes : "Welfare economics is that part of the general body of economic theory which is concerned primarily with policy."[3] In short, welfare economics has to define what an economic optimum may be. It has to lay down conditions for maximising welfare and prescribe policies with that end in view.



Maximizing social welfare.

1. Bober, M.M.—*Intermediate Price and Income Theory* (First Edition), p. 483.
2. Syed Fakharul Hassan—*Introduction to Welfare Economics*, 1962, p. 1.
3. Scitovsky Tibor—*Papers on Welfare and Growth*, 1962, p. 174.

Economic and Non-Economic or General Welfare

A distinction may be drawn between economic welfare and general welfare. An individual's welfare may relate to his physical well-being, spiritual well-being or economic well-being. "The concept of welfare," according to Robbins, "embraces many states of mind, some of a merely 'sensual', some of more spiritual nature. . . . But the class 'economic' will not be one of them."[4] Obviously, economics is not concerned with physical or spiritual well-being. It is only concerned with that aspect of an individual's well-being which is derived from economic goods and services. In Pigou's words, "The range of our inquiry has become restricted to that part of social welfare that can be brought directly or indirectly into relation with the measuring rod of money. This part of welfare may be called economic welfare."[5]

Welfare refers to a state of mind or, as Pigou says, "The elements of welfare are states of consciousness." This is no doubt a subjective concept, but it can be imparted an element of objectivity by linking individual welfare to individual choice so that his welfare map is his preference map. For instance, if he chooses apples rather than oranges, he would increase his welfare by consuming apples rather than oranges. A person's choice is determined by a large number of variables some of which are economic and others not. Welfare economics ignores the non-economic variables. We might say that economic welfare refers to satisfaction derived from the consumption of economic goods, whereas general welfare refers to the satisfaction derived from both economic and non-economic goods.

But the two types of satisfactions are merged in a man's mind and cannot be clearly distinguished. Professor Little explains this by a metaphor thus : "The utilitarians imagined the mind to be like a well of known depth into which parcels of satisfaction, duly labelled economic or political or religious, were thrown. . . . On the later analysis it is imagined that the mind is like a well of unknown depth, partly filled with water, the level of which could be altered by turning on various taps labelled economic, political, *etc*. Once the water is in the well there is no way of saying which tap it came from and also it is impossible to say how much water there is in the well."[6] Hence, economic and non-economic welfare are not easily distinguishable.

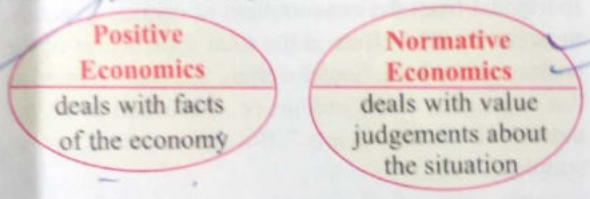
As Professor Cannan says, ". . . there is no precise line between economic and non-economic satisfaction and, therefore, province of economics cannot be marked out by a row of posts or a fence, like a political territory or a landed property."[7]

It is possible that some economic causes affect economic welfare and total or general welfare differently. But there is a strong presumption that qualitative conclusions about effects on economic welfare hold good also of effects upon total welfare.

Positive Economics and Welfare Economics

We should now be in a position to lay down a clear line of demarcation between positive economics and welfare economics. We may refer once again to what we have discussed in the beginning of the book regarding the scope of economics. There we drew a distinction between positive economics and normative economics. That distinction practically holds good here.

Positive economics explains an economic phenomenon and normative economics comments on the desirability or otherwise of that phenomenon. For instance positive economics explains why wealth in the community is unequally distributed and normative economics would say whether the unequal distribution of wealth is desirable or not. The question of desirability falls in the purview of welfare economics.



Again, positive economics would explain why the price of wheat has risen so high welfare economics would suggest price control measures to promote the greatest good of the greatest number. In short, positive economics formulates economic generalisation or laws, whereas welfare economics is concerned with economic policies.

The idea underlying the essential difference between positive economics and welfare economics can be explained in another way. The principle of the economics can be falsified and rejected if they cannot be verified and established in the light of actual experience in the real world. The propositions of welfare economics are rather different. They are based on assumptions some of which may or may not be realistic. From the assumptions, we deduce conditions for maximising welfare. Even if the conditions are fulfilled, the welfare may not increase, because the assumptions may turn out to be inappropriate.

Also, it is difficult to say whether welfare has actually increased since welfare is not an observable

4. Robbins, L.—*Robertson on Utility and Scope*, *Economics*, May, 1953.
5. Pigou, A.C.—*The Economics of Welfare*, 1948, p. 111.
6. Little I.M.D.—*A Critique of Welfare Economics*, 1960, p. 51.
7. *Wealth*, pp. 17–18.

point of view of social welfare. But unfortunately Pareto criterion does not help us in evaluating the changes in welfare if the movement as a result of redistribution is from the point Q to a point outside the segment RS; such as point E on the utility possibility curve CV. As a result of the movement from point Q to E, the utility of A decreases while that of B increases. In such circumstances, Pareto criterion can not tell us as to whether social welfare increases or decreases.

CONDITIONS OF PARETO EFFICIENCY

Pareto concluded from his criterion that competition leads the society to an optimum position but he had not given any mathematical proof of it, nor he derived the marginal conditions to be fulfilled for achievement of the optimum position. Later on, Lerner and Hicks derived the marginal conditions which must be fulfilled for the attainment of Pareto optimum. These marginal conditions are based on the following important assumptions :

1. Each individual has his own ordinal utility function and possesses definite amount of each product and factor.
2. Production function of every firm and the state of technology is given and remains constant.
3. Goods are perfectly divisible.
4. A producer tries to produce a given output with the least-cost combination of factors.
5. Every individual wants to maximise his satisfaction.
6. Every individual purchases some quantity of all goods.
7. All factors of production are perfectly mobile.

Given the above assumptions various marginal conditions (first-order conditions) required for the achievement of Pareto optimum or maximum social welfare are explained below :

1. Efficiency in Exchange: The Optimum Distribution of Products among the Consumers

The first condition relates to the optimum distribution of the goods among the different consumers composing a society at a particular point of time. The condition says : "*The marginal rate of substitution between any two goods must be the same for every individual who consumes them both.*"[2] The marginal rate of substitution of one good for another so as is the amount of one good necessary to compensate for the loss of a marginal unit of another so as to maintain a constant level of satisfaction. So long as the marginal rate of substitution (MRS) between two goods is not equal for any two consumers, they will enter into an exchange which would increase the satisfaction of both or of one without decreasing the satisfaction of the other.

This condition can be better explained with the help of the Edgeworth Box diagram. In Figure-41.5, goods X and Y, which are consumed by two individuals A and B composing a society are represented on the X and Y axes respectively. O_A and O_B are origins for A and B respectively. Ia_1, Ia_2, Ia_3 and Ib_1, Ib_2, Ib_3 are the indifference curves showing successively higher and higher satisfaction of consumers A and B respectively. CC' is the contract curve passing through various tangency points Q, R, S of the indifference curves of A and B. The marginal rates of substitution (MRS) between the two goods for individuals A and B are equal on the various points of the contract curve CC'. Any point outside the contract curve does not represent the equality of MRS between the two goods for two individuals A and B of the society.

Let us consider point K where indifference curves I_{a1} and I_{b1} of individuals A and B respectively intersect each other instead of being tangential. Therefore, at point K marginal rate of substitution between two goods X and Y (MRS_{xy}) of individual A is not equal to that of B. With the initial

2. M.W. Reder, *Studies in the Theory of Welfare Economics*, Columbia University Press, New York, 1947, p. 24.

distribution of goods as represented by point K, it is possible to increase the satisfaction of one individual without any decrease in that of the other or to increase the satisfaction of both by redistribution of the two goods X and Y between them. A movement from K to S increases the satisfaction of A without any decrease in B's satisfaction. Similarly, a movement from K to Q increases B's satisfaction without any decrease in A's satisfaction. The movement from K to R increases the satisfaction of both because both move to their higher indifference curves. Thus, a movement from K to Q or to S or to any other point on the segment SQ of the contract curve will, according to Pareto criterion, increase the level of social welfare.

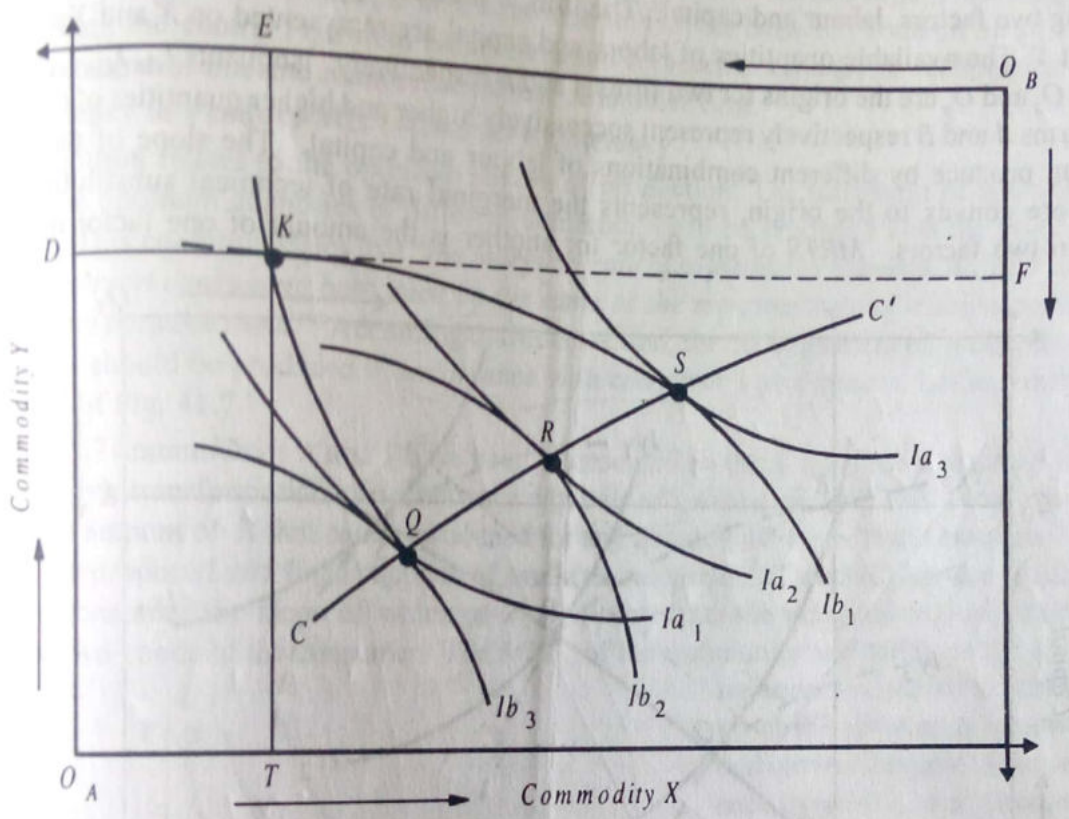


Fig. 41.5. *Exchange Efficiency : The Optimum Distribution of Products among Consumers*

From above it follows that movement from any point away from the contract curve to a point on the relevant segment of the contract curve will mean increase in social welfare. At any point away from the contract curve in the Edgeworth box, the indifference curves of the two individuals will intersect which will mean that MRS_{xy} of two individuals is not the same. And, as explained above, this indicates that through exchange of some units of goods between them, they can move to some point on the contract curve where the social welfare (that is, welfare of two individuals taken together) will be higher.

Since the slope of an indifference curve represents the marginal rate of substitution (MRS_{xy}) at any point of the contract curve, which represents tangency points of the indifference curves, MRS_{xy} of the two individuals are equal. Therefore, points on the contact curve represent the maximum social welfare. However, a movement along the contract curve in either direction will make one individual better off and the other worse off since it will put one individual on his successively higher indifference curves and the other on his successively lower indifference curves. Thus, every point on the contract curve denotes maximum social welfare in the Paretian sense but we can not say anything about the best of them with the help of Pareto criterion.

2. Production Efficiency : The Optimum Allocation of Factors among Firms

The second condition for economic efficiency or Pareto optimum requires that the available

factors of production should be utilised in the production of products in such a manner that it is impossible to increase the output of one firm without a decrease in the output of another or to increase the output of both the products by any re-allocation of factors of production between firms. *This situation would be achieved if the marginal technical rate of substitution between any pair of factors must be the same for any two firms producing the same or two different products and using both the factors to produce the products.*[3]

This condition too can be explained with the help of Edgeworth Box diagram relating to production. This is depicted in Fig. 41.6. Let us assume two firms *A* and *B* producing the two products by using two factors, labour and capital. The firm, *A* produces product X and the firm *B* produces product *Y*. The available quantities of labour and capital are represented on *X* and *Y* axes respectively. O_x and O_y are the origins for two firms *A* and *B* respectively. Isoquants I_{x1}, I_{x2}, I_{x3} and I_{y1}, I_{y2}, I_{y3} of firms *A* and *B* respectively represent successively higher and higher quantities of output which they can produce by different combinations of labour and capital. The slope of the iosquants, which are convex to the origin, represents the marginal rate of technical substitution (*MRTS*) between two factors. *MRTS* of one factor for another is the amount of one factor necessary to

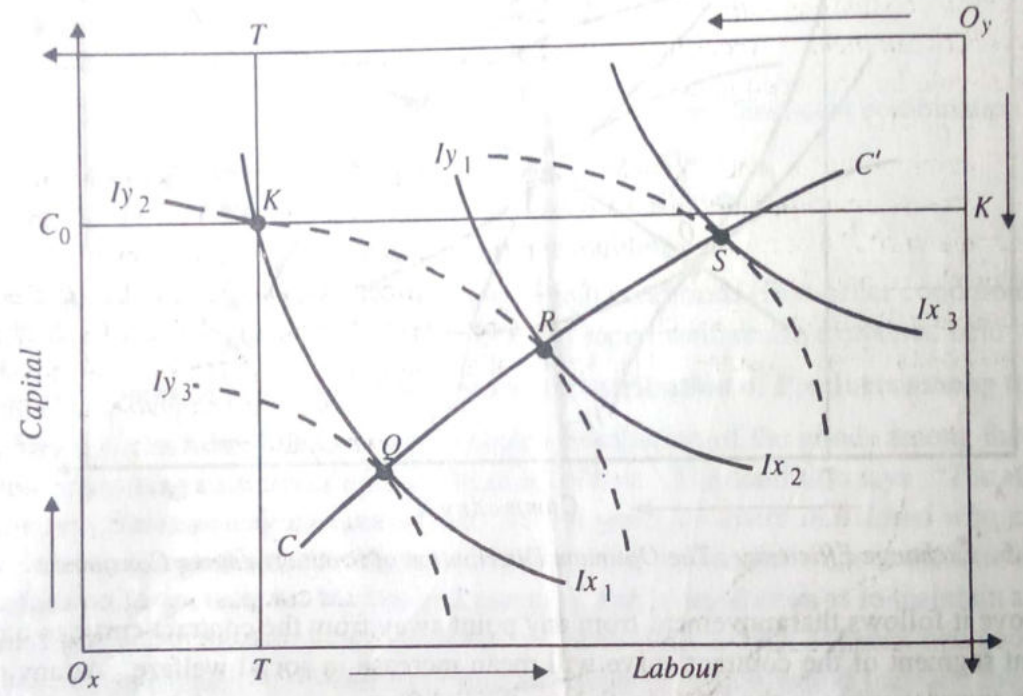


Fig. 41.6. *Production Efficiency : The Optimum Allocation of Factors among Firms*

compensate for the loss of the marginal unit of another so that the level of output remains the same. So long as the *MRTS* between two factors for two firms is not equal, total output of a product can be increased by transfer of factors from one firm to another.

In terms of the above diagram any movement from *K* to *R* or to *Q* raises the output of one product without any decrease in the output of the other. Thus total output of the two firms increases when through redistribution of factors between the two firms, a movement is made from the point *K* to the point *Q* or *R* on the contract curve. A glance at Figure 41.6 will reveal that movement from point *K* outside the contract curve to the point *R* on the contract curve will raise the output product X of firm A without reducing the output of firm B. Therefore, it follows that corresponding to a point off the contract curve there will be some points on the contract curve production at which will ensure greater total output of the one firm without reducing the output of the other firm or it will be increasing the output of both the products if we move from point *K* to any point between *Q* and *R* of the contract curve. As the contract curve is the locus of the tangency points of the isoquants of two

3. M.W. Reder, *op. ci*, p. 29.

firm, the marginal rate of substitution between the factors of the two firms is the same at every point of the contract curve CC'. It, therefore, follows that on the contract curve at every point of which $MRTS$ between the two factors of two firms producing the two products is the same, the allocation of factors between the two firms or products is optimum. When the allocation of factors between the two firms is such that they are producing at a point on the contract curve, then no re-allocation of factors between them will increase the total output of the two firms taken together.

But it is worth mentioning that there are several points on the contract curve and each of them represents the optimum allocation of labour and capital as between the two firms producing different products. But which one of them is best cannot be said on the basis of Pareto criterion because movement along the contract curve in either direction represents such factor reallocation which increases the output of one and reduces the output of another firm.

3. Efficiency in Product-Mix : Allocative Efficiency

This condition relates to the optimum pattern of production. The fulfilment of this condition determines the optimum quantities of different commodities to be produced with the given factor endowments. This condition states that "*the marginal rate of substitution between any pair of products for any person consuming both must be the same as the marginal rate of transformation (for the community) between them.*"[4] According to this condition, for the attainment of maximum social welfare goods should be produced in accordance with consumer's preferences. Let us explain this with the help of Fig. 41.7.[5]

In Fig. 41.7 commodities X and Y have been represented on the X and Y-axes respectively. AB is a community's transformation curve between any pair of goods X and Y. This curve represents the maximum amount of X that can be produced for any quantity of Y, given the amounts of other goods that are produced and fixed supplies of available resources. IC_1 and IC_2 are the indifference curves of a consumer the slope of which at a point represents the marginal rate of substitution between the two goods of the consumer. The MRT_{xy} of the community and MRS_{xy} of the consumer are equal to each other at point R at which the community's transformation curve is tangent to the indifference curve IC_2 of a representative consumer. Point R represents optimum composition of production in which commodities X and Y are being produced and consumed in OM and ON quantities. This is because of all the points on the community's transformation curve, point R lies at the highest possible indifference curve IC_2 of the consumer. For instance, if a combination of goods X and Y represented by S is being produced and consumed, the consumer would be at a lower level of welfare because S lies on his lower indifference curve IC_1 which intersects the community's transformation curve instead of being tangential to it. As a result, at point S, MRS_{xy} of the consumer is not equal to the MRT_{xy} of the community. With the situation at S there is a possibility of moving the consumer to a higher indifference curve

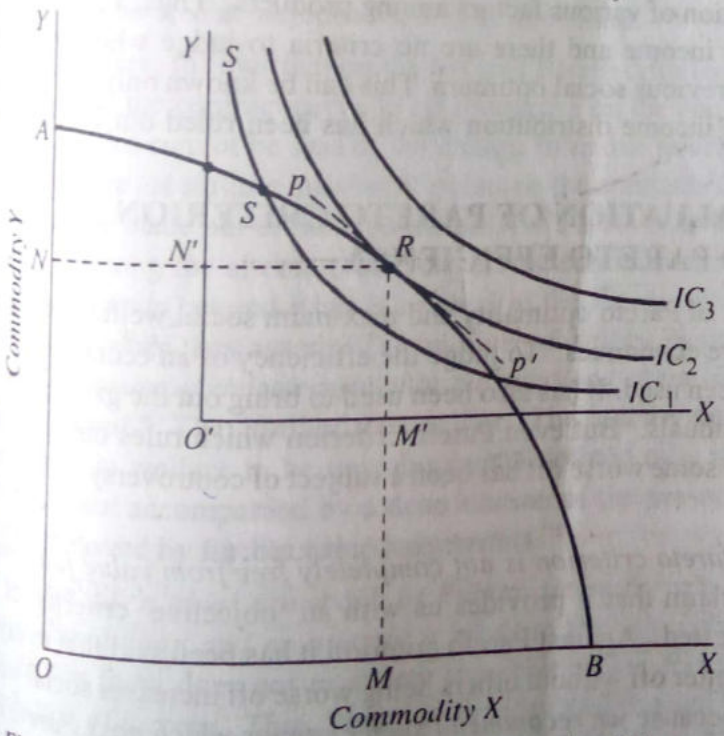


Fig. 41.7. *Allocative Efficiency : Optimum Product Mix.*

4. Reder, *op. cit.*, p. 30.
5. Reder, *op. cit.*, p. 37.

by changing the direction (*i.e.* composition) of production *i.e.* by increasing the production of X and reducing the production of Y. Thus, the optimum direction of production is established at point R where community's transformation curve is tangent to the indifference curve of a consumer in the society.

The Second-Order and Total Conditions of Pareto Optimality

The marginal or the first order conditions explained above are '*necessary*' but not sufficient for the attainment of maximum social welfare because the marginal conditions by themselves do not guarantee maximum welfare. The marginal conditions can be fulfilled even at the level of minimum welfare. To attain the maximum social welfare position second-order conditions together with the marginal conditions must be satisfied. *The second order conditions require that all indifference curves must be convex to the origin and all transformation curves concave to it in the neighbourhood of any portion where marginal conditions are satisfied.*

But even the satisfaction of both (first and second order conditions) does not ensure the largest maximum welfare because even when marginal conditions (first and second order) are fulfilled, it may still be possible to move to a position where social welfare is greater. To attain the maximum social welfare, another set of conditions which are called by J.R. Hicks as the '*total conditions*' must also be satisfied. The total conditions state, "that if welfare is to be a maximum, it must be impossible to increase welfare by producing a product not otherwise produced or by using a factor not otherwise used."[5] If it is possible to increase welfare by such activities the optimum position is not determined by marginal conditions alone.

Therefore, welfare will be really maximum if the marginal as well as total conditions are satisfied. *But such a social optimum too is not a unique one. It is one of a large number of optima.* The whole analysis of conditions of Pareto optimality *assumes a given distribution of income.* With a change in the distribution of income Pareto optimality will be achieved with different output-mix of various products and different allocation of various factors among products. Thus, a new optimum will emerge due to redistribution of income and there are no criteria to judge whether the new optimum is better or worse than the previous social optimum. This can be known only with the help of some value judgements regarding income distribution which has been ruled out by the Pareto criterion.

A CRITICAL EVALUATION OF PARETO CRITERION AND PARETO EFFICIENCY

Pareto criterion and the concept of Pareto optimality and maximum social welfare based on it occupies a significant place in welfare economics. To judge the efficiency of an economic system, the notion of Pareto optimality has been used. It has also been used to bring out the gains of trading or exchange of goods between individuals. But even Pareto criterion which rules out comparing those changes in policies which make some worse off has been a subject of controversy and has been criticised on several grounds.

First, it has been alleged that *Pareto criterion is not completely free from value judgements.* The supporters of Pareto criterion claim that it provides us with an 'objective' criterion of efficiency. However, this has been contested. Against Pareto criterion it has been said that to say that a policy change which makes some better off without others being worse off increases social welfare is itself a value judgement. This is because *we recommend such changes which pass Pareto criterion.* The implication of this assertion will become obvious when the persons who gain as a result of policy change are the rich and those who remain where they were before are poor. Therefore, to say on the basis of Pareto criterion that whenever any policy change which, without harming anyone, benefits some people regardless of whoever they may be, increases social welfare is a value judgement which may not be accepted by all.

Second, an important limitation of Pareto criterion is that *it cannot be applied to judge the social desirability of those policy proposals which benefit some and harm others.* Such policy changes are quite rare which do not harm at least some individuals in the society. Thus, Pareto criterion is of limited applicability as it cannot be used to pronounce judgements on a majority of policy proposals which involve a conflict of preferences of two individuals. Thus, according to Prasanta K. Patnaik, "Pareto criterion fails seriously when it comes to comparing alternatives. *Whenever there is conflict of preferences of two individuals with respect to two alternatives, the criterion fails to rank those two alternatives no matter what the preferences of the rest of individuals in the society might be*".[6] To evaluate social desirability of those policy changes which benefit some and harm others, we need to make interpersonal comparison of utility which Pareto criterion refuses to do. Thus, "Pareto criterion works by sidestepping the crucial issue of inter-personal comparison and income distribution, that is, by dealing only with cases where no one is harmed so that the problem does not arise".[7]

Another shortcoming of Pareto criterion and notion of maximum social welfare based on it is that *it leaves a considerable amount of indeterminacy in the welfare analysis* since every point on the contract curve is Pareto-optimal. For instance, in Fig. 41.3, every point such as P, Q, R, S on the contract curve is Pareto-superior to any point such as K and H which lies outside the contract curve. Movement from one point on the contract curve to another as a result of change in economic policy, that is, through re-allocation of resources that makes one individual better off and the other worse off, that is, one gains at the expense of the other. This means that on the basis of Pareto criterion, social alternatives lying on the contract curve cannot be compared since with any movement on the contract curve one individual gains and the other loses, that is, it involves redistribution of income or welfare. Therefore, to compare various alternatives lying on the contract curve and to choose between them, inter-personal comparison and value judgements regarding proper distribution of income need to be made. However, Pareto refused to make value judgements and sought to put forward a value-free or objective criterion of welfare.

It, therefore, follows that on the basis of Pareto criterion where the change from an alternative lying outside the contract curve to an alternative on the contract curve is judged to increase social welfare but this cannot be said of the change from one position on the contract curve to another on it. But as there are infinite number of points on the contract curve all of which are Pareto optimal, no choice can be made out of them on the basis of Pareto criterion. To remove this indeterminacy and to choose among the alternatives lying on the contract curve one needs to make some additional value judgements beyond what is implied in the Pareto criterion. Henderson and Quandt hold a similar view when they assert, "*The analysis of welfare in terms of Pareto optimality leaves a considerable amount of indeterminacy in the solution : there are infinite number of points which are Pareto optimal.*" They further remark that, 'The indeterminacy is the consequence of considering an increase in welfare to be unambiguously defined only if an improvement in one individual's position is not accompanied by a deterioration of the position of another. The indeterminacy can only be removed by further value judgements."[8]

Above all, *a chief drawback of Pareto-optimality analysis is that it accepts the prevailing income distribution and no attempt is made to find an optimal distribution of income*, since it is thought that there does not exist any objective, value-free and scientific way of finding optimal distribution of income. Thus, Pareto optimality analysis remains either silent or biased in favour of status quo on the issue of income distribution. Further, Pareto optimality analysis may lead to

6. Prasanta K. Patnaik, Some Aspects of Welfare Economics, *The Indian Economic Journal*, Conference Number, 1974, p. 68C.
7. W. J. Baumol, *Economic Theory and Operations Analysis*, 4th edition, 1977 Prentice Hall, p.527.
8. J. M. Henderson, and R. E. Quandt, *Microeconomic Theory*, 2nd edition, 1971, p. 265.
9. Baumol, *op.cit.* p. 503.

recommend the prevailing income distribution where a majority of the population lives on the subsistence level or below the poverty line while a few live a life of affluence. Thus, "Ultimately, the Paretian approach can be considered the welfare economists' instrument par excellence for the circumvention of the issue of income distribution."[9]

It may also be mentioned that for any initial distribution of income (that is, for any given distribution of goods) between the individuals, there will be several Pareto optimal positions. Consider Figure 39.1. Corresponding to point, K, the points on the segment RS on the contract curve CC' will all represent Pareto optimal positions. Likewise, corresponding to a given distribution of income (*i.e.* distribution of goods) as represented by point H, the points on the segment PQ of the contract curve CC' will be Pareto-optimal. Thus corresponding to a different distribution of income, there will be different Pareto optima. In the Paretian analysis there is no way of evaluating whether one pattern of income distribution is better than the other.

Prof. Amartya Sen's Critique of Pareto Optimality

Further, criticising Pareto criterion Prof. Amartya Sen has pointed out that the success that the criterion of Pareto optimality has achieved in judging the desirability of a social state or a policy change is very limited. To quote him, "A Social state is described as Pareto optimal if and only if no-one's utility can be raised without reducing the utility of someone else. This is a very limited kind of success and in itself may or may not guarantee much. *A state can be Pareto optimal with some people in extreme misery and others rolling in luxury, so long as the miserable cannot be made better off without cutting into the luxury of the rich.*"[10] So, according to him, this is not a good and adequate criterion for juding social welfare.

Further, Prof. Sen has criticised Pareto optimality on the basis that *it identifies well-being with utility* and captures the efficiency aspects only of utility-based accounting. It may be noted that utility is interpreted in two ways, Firstly, it is said to mean '*happiness*'. Secondly, it is interpreted in the sense of '*desire-fulfilment*'. He is of the view that utility does not always reflect well-being. To quote him, "*To judge the well-being of a person exclusively in metric of happiness or desire-fulfilment has some obvious limitations*. These limitations are particularly damaging in the context of interpersonal comparison of well-being. Since the extent of happiness reflects what one would expect and how the social 'deal' seems in comparison with that."[11] He is of the view that *people living a life of great misfortune with little hope and opportunities may get more utility or happiness even from small gains*. But that should not be interpreted that there is a significant improvement in their well-being. The measure of utility in the sense of happiness may not reveal the true picture about the state of his deprivation. He thus writes The hopeless beggar, precarious landless labourers, the dominated housewife, the hardened unemployed or the over-exhausted coolie may all take pleasure in small mercies, and manage to suppress intense suffering for the necessity of continued survival, but it would be ethically deeply mistaken to attach correspondingly small value to the loss of their well-being because of their survival strategy."[12]

According to Prof. Sen, even in case of desire-fulfilment, the same problem arises, because "*the hopelessly deprived lack the courage to desire much, and their deprivations are muted and deadened in scale of desire-fulfilment.*" The sum and subsistence of Sen's criticism is that the concept of utility used in for indjudging Pareto optimality whether it is interpreted in terms of happiness or desire-fulfilment is seriously inadequate and insufficient for judging a person's well-being. To quote him, well-being is ultimately a matter of valuation, and while happiness and fulfilment of desire may well be valuable for the person's well being, they cannot on their own or even together adequately

10. Amartya Sen, *On Ethics and Economics*, Oxford University Press, 1990, pp. 31-32
11. *Ibid*
12. Amartya Sen, *op. cit.*, pp. 45-46

CHAPTER 43*

KALDOR-HICKS' WELFARE CRITERION : COMPENSATION PRINCIPLE

Pareto laid the foundation of the new welfare economics by formulating the concept of social optimum which is based on the concept of ordinal utility and is free from interpersonal comparisons of utilities and value judgements. He aimed at formulating a value-free objective criterion designed to test whether a proposed policy change increases social welfare or not. Pareto critrion states simply that an economic change which harms no one and makes someone better off indicates an increase in social welfare. Thus, this criterion does not apply to those economic changes which harm some and benefit others. In terms of Edgeworth box diagram Pareto criterion fails to say as to whether or not social welfare increases as movement is made in either direction along the contract curve because it rejects the notion of interpersonal comparison of utility. As we have seen in the previous chapter, every tangency point of the two indifference curves on the contract carve represents a Pareto optimum. There is thus no any unique optimum position. This criterion does not tell us about changes in the level of social welfare if one moves on the contract curve from one tangency point to another because such movement harms one and benefits the other. Thus, the analysis of welfare in terms of Pareto optimality leaves a considerable amount of indeterminacy, for there are numerous Pareto optimum points on the contract curve.

Kaldor-Hicks Welfare Criterion : Compensation Principle

Economists like Kaldor, Hicks and Scitovsky further developed new welfare economics and have made efforts to evaluate the changes in social welfare resulting from any economic reorganisation which harms somebody and benefits the others. These economists have sought to remove indeterminacy in the analysis of Pareto optimality. They have put forward a criterion known as the '*compensation principle*' on the basis of which they claim to evaluate those changes in economic policy or organisation which makes some individual better off and others worse off. The 'compensation principle' is based on the following assumptions.

Assumptions

1. The satisfaction of an individual is independent of the others and he is the best judge of his welfare.
2. There exist no externalities of consumption and production.
3. The tastes of the individuals remain constant.
4. The problems of production and exchange can be separated from the problems of distribution. Compensation principle accepts the level of social welfare to be a function of the level of production. Thus it ignores the effects of a change in distribution on social welfare.
5. Utility can be measured ordinally and interpersonal comparisons of utilities are not possible.

Given the above assumptions, a criterion of compensation principle can be discussed. Kaldor, Hicks and Scitovsky have claimed to formulate a value-free objective criterion of measuring the changes in social welfare with the help of the concept of 'compensating payments'.

Nicholas Kaldor was the first economist to give a welfare criterion based on compensating

* This chapter is meant for B.A. (Honours) classes in Economics and Commerce.

payments. Kaldor's criterion helps us to measure the welfare implications of a movement in either direction on the contract curve in terms of Edgeworth box diagram. According to Kaldor's welfare criterion, if a certain change in economic organisation or policy makes some people better off and others worse off, *then a change will increase social welfare if those who gain from the change could compensate the losers and still be better off than before*. In the words of Prof. Baumol, "Kaldor's criterion states that a change is an improvement if those who gain evaluate their gains at a higher figure than the value which the losers set upon their losses."[1] Thus, if any policy change benefits any one section of the society (gainers) to such an extent that it is better off even after the payment of compensation to the other sections of the society (losers) out of the benefits received, then that change leads to increase in social welfare. In Kaldor's own words, "*In all cases.... where a certain policy leads to an increase in physical productivity and thus of aggregate real income.... it is possible to make everybody better off without making anybody worse off. It is quite sufficient.... to show that even if all those who suffer as a result are fully compensated for their loss, the rest of the community will still be better off than before.*"[2]

Prof. J.R. Hicks supported Kaldor for employing compensation principle to evaluate the change in social welfare resulting from any economic reorganisation that benefits some people and harms the others. This criterion states that, "if *A* is made so much better by the change that he could compensate *B* for his loss and still have something left over, then the reorganisation is unequivocal improvement."[3] In other words, *a change is an improvement if the losers in the changed situation cannot profitably bribe the gainers not to change from the original situation*. Hicks has given his criterion from the losers' point of view, while Kaldor had formulated his criterion from gainers' point of view. Thus the two criteria are really the same though they are clothed in different words. That is why they are generally called by a single name 'Kaldor-Hicks criterion'.

Kaldor-Hicks criterion can be explained with the help of the utility possibility curve. In Fig. 43.1 ordinal utility of two individuals *A* and *B* is shown on *X* and *Y* axes respectively. *DE* is the utility possibility curve which represents the various combinations of utilities obtained by individuals *A* and *B*. As we move downward on the curve *DE*, utility of *A* increases while that of *B* falls. On the other hand, if we move up on the utility curve *ED*, utility of *B* increases while that of *A* falls.

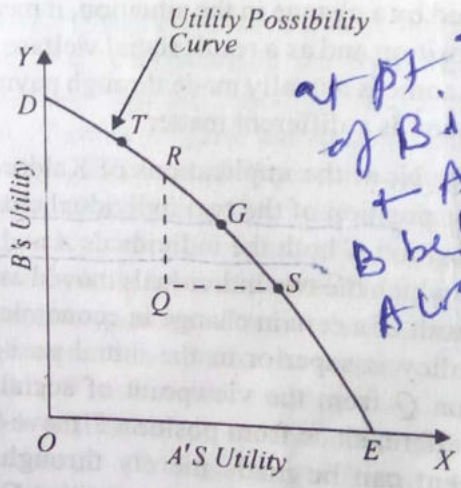


Fig. 43.1. *Kaldor-Hicks Criterion Explained with Utility Possibility Curve*

Suppose the utilities obtained by *A* and *B* from the distribution of income or output between them are represented by point *Q* inside the utility possibility curve *DE*. Let us assume that as a result of some change in economic policy, the two individuals move from point *Q* to point *T* on the utility possibility curve *DE*. As a result of this movement, utility of individual *B* has increased while the utility of *A* has declined, that is, *B* has been become better off and *A* has become worse off than before. Therefore, this movement from point *Q* to point *T* cannot be evaluated by means of Pareto criterion. Of course, points such as *R*, *G*, *S* or any other point on the segment *RS* of utility-possibility curve *DE* are socially preferable to point *Q* on the basis of Pareto criterion.

1. W. J. Baumol, *Economic Theory and Operations Analysis*, 3rd Ed. 1972, p. 402.
2. N. Kaldor, "Welfare Propositions of Economics and Interpersonal Comparison of Utility", *Economic Journal*, Sept. 1939.
3. J.R. Hicks, The Foundations of Welfare Economics, *Economic Journal*, Vol. XIX, December 1939.

However, the compensation principle propounded by Kaldor-Hicks enables us to say whether or not social welfare has increased as a result of movement from Q to T in Fig. 43.1. According to Kaldor-Hicks criterion, we have to see whether the individual A who gains with the movement from position Q to position T could compensate the individual A who is loser and still be better off than before. Now, it will be seen from Figure 43.1 that utility possibility curve DE passes through points R, G and S. This means that by mere redistribution of income between the two individuals, that is, if individual B gives some compensation to individual A for the loss suffered, they can move from position T to the position R. It is evident from the figure that at position R individual A is as well off as at the position Q but individual B is still better off as compared to the position Q. It means due to a policy change and consequent movement from position Q to position T, the gainer (individual B) could compensate the loser (individual A) and is still better off than at Q. Therefore, according to Kaldor-Hicks criterion, social welfare increases with the movement from position Q to position T, because from T they could move to the position R through mere redistribution of income (*i.e.* compensation).

It is noteworthy that, according to Kaldor-Hicks criterion, compensation may not be actually paid to judge whether or not social welfare has increased. It is enough to know whether the gainer *could* compensate the loser for the loss of welfare and still be better off. Whether redistribution of income (that is, payment of compensation) should be actually made following the change in policy is left for the Government to decide. If it is *possible* for the gainer to compensate the loser and still be better off, the economists can say that social welfare has increased. It may be noted that gainer can compensate the losers and still be better off only when the change in economic policy leads to the increase in output or real income. That is why Kaldor and Hicks claim that they have been able to distinguish between *change* in output from *change in distribution*. When their criterion is satisfied by a change in the situation, it means that the economy has moved to a potentially more efficient position and as a result social welfare can be said to have increased. Now, whether redistribution of income is actually made through payment of compensation by the gainers to the losers, according to them, is a different matter.

Now, the implications of Kaldor-Hicks criterion become more clear if through redistribution the position of the two individual changes from T to G (see Fig. 43.1). It is quite manifest that at position G both the individuals A and B are better off than at the position Q. Thus, the position T to which the two individuals moved as result of a certain change in economic policy is superior to the initial position Q from the viewpoint of social welfare, since from position T movement can be made merely through redistribution of income to position G where both are better off as compared to the position Q.

It may be noted that in the situation depicted in Figure 43.1, the change in economic policy brings about a movement from a position *inside* the utility possibility curve to a *point on it*. Now let us see what happens to social welfare if as a result of the adoption of a certain economic policy the utility possibility curve moves outward and the two individuals move from a

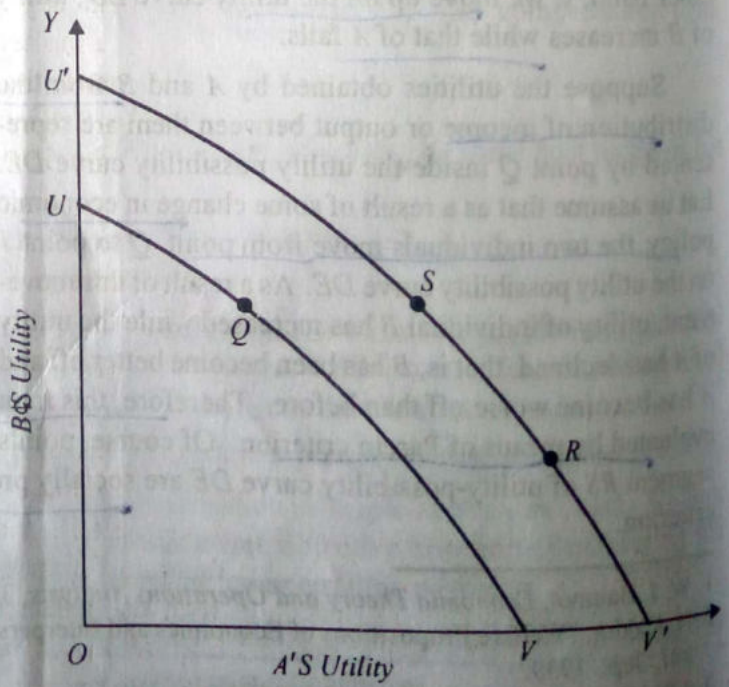


Fig. 43.2. *Kaldor-Hicks Welfare Criterion*

point on a lower utility possibility curve to a point on a higher utility possibility curve. It can be shown that, according to Kaldor-Hicks criterion, such a movement causes an improvement in social welfare. Consider Figure 43.2. UV is the original utility possibility curve and Q represents the position at which the two individuals are initially placed. Now, suppose utility possibility curve shifts outward to the new position, $U'V'$, and the two individuals are placed at point R on it. In movement from Q on the utility possibility curve UV to point R on the utility possibility curve $U'V'$ the utility of A has increased and that of B has declined. But position R denotes greater social welfare on the basis of Kaldor's criterion when compared to the position Q on the original utility possibility curve UV because with $U'V'$ as the utility possibility curve it is possible to move through mere redistribution of income from position R to position S where the individual B has been fully compensated for his loss of utility, the individual A is still better off as compared to position Q. To conclude, any change in the economy that moves the individuals from a position on a lower utility possibility curve to a position on a higher utility possibility curve increases social welfare.

Scitovsky Paradox

Scitovksy pointed out an important limitation of Kaldor-Hicks criterion that it might lead to contradictory results. He showed that, if in some situation, position B is shown to be an improvement over position A on Kaldor-Hicks criterion, it may be possible that position A is also shown to be an improvement over B on the basis of the same criterion. For getting consistent results when position B has been revealed to be preferred to position A on the basis of a welfare criterion, then position A must not be preferred to position B on the same criterion. According to Scitovsky, Kaldor-Hicks criterion involves such contradictory and inconsistent results. Since Scitovsky was the first to point out this paradoxical result in Kaldor-Hicks criterion, it is known as '*Scitovsky Paradox*'.

How Kaldor-Hicks criterion may lead to contradictory results in some situation is depicted in Figure 43.3. In this figure JK and GH are the two utility possibility curves which intersect each other. Now suppose that the initial position is at point C on JK. Further suppose that due to a certain policy change, utility possibility curve changes and takes the position GH and the two individuals find themselves at position D. Position D is superior to position C on the basis of Kaldor-Hicks criterion because from position D movement can be made through mere redistribution to position F at which individual B has been fully compensated but individual A is still better off as compared to the original position C. Thus movement from position C to position D satisfies Kaldor-Hicks criterion.

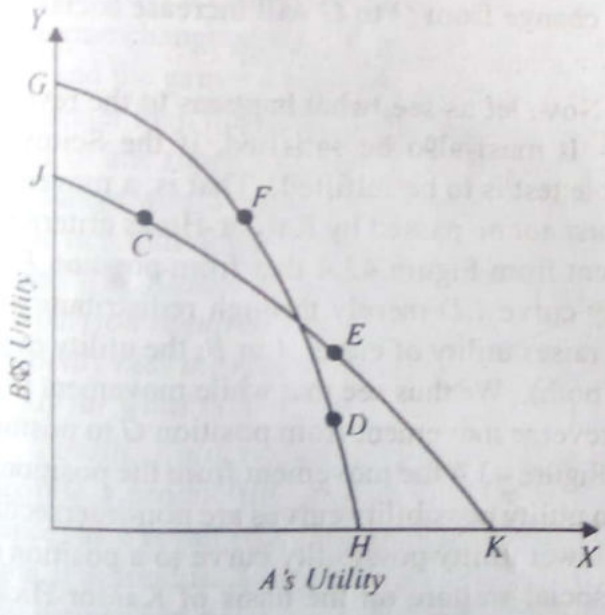


Fig. 43.3. *Scitvosky Paradox*

But, as has been pointed out by Scitovsky, reverse movement from position D on the new utility possibility curve GH to the position C on the old utility possibility curve JK also represents an improvement on Kaldor-Hicks criterion, that is, C is socially better than D on the basis of Kaldor-Hicks criterion. This is because from position C movement can be made by mere redistribution of income to position E on the utility possibility curve JK on which position C lies and which also passes through the position E. And, as will be observed from Fig. 43.3, that at position E while A is as well of as at position D, the individual B is still better off than at D. We thus see that the movement from position C to the position D due to a policy change is passed by the Kaldor-Hicks criterion and also the movement back from position D

to position C is also passed by the Kaldor-Hicks criterion. This implies that D is socially better than C on this criterion and C is also socially better than D on the same criterion. So Kaldor-Hicks criterion leads us to contradictory and inconsistent results. It is mentionworthy that these contradictory results are obtained by Kaldor-Hicks criterion when following a policy change new utility possibility curve intersects the former utility possibility curve. After bringing out the possibility of contradictory results in Kaldor-Hicks criterion Scitovksy formulated his own criterion which is generally known as Scitovsky's Double Criterion.

Scitovsky's Double Criterion of Welfare

To rule out the possibility of contradictory results in Kaldor-Hicks criterion Scitovsky formulated a double criterion which requires the fulfilment of Kaldor-Hicks criterion and also the fulfilment of the reversal test. It means that a change is an improvement if the gainers in the changed situation are able to persuade the losers to accept the change and simultaneously losers are not able to persuade the gainers to remain in the original situation. Scitovsky's double criterion can also be explained with the help of utility possibility curve. In Figure 43.4, CD and EF are the two utility possibility curves which do not intersect each other at any point. Suppose there is a change from position Q on the utility possibility curve CD to the position G on the utility possibility curve EF as a result of the adoption of a new economic policy. Such a movement is an improvement according to Kaldor-Hicks criterion because G lies on the utility possibility curve EF passing through point R. From the position G, movement can be made to the position R simply by redistributing income between the two individuals. And R is better than Q because the utility of both the individuals is greater at R as compared to the position Q. Thus the Kaldor-Hicks criterion is satisfied and therefore change from Q to G will increase social welfare.

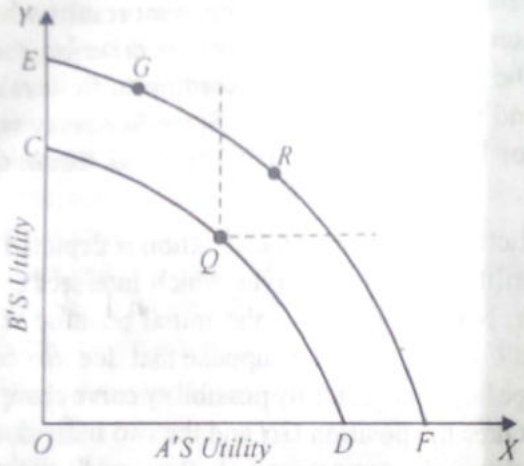


Fig. 43.4. *Scitovsky's Double Criterion*

Now, let us see, what happens to the reversal test. It must also be satisfied, if the Scitovsky double test is to be fulfilled. That is, a movement from the position G back to the original position Q *must not be* passed by Kaldor-Hicks criterion if Scitovsky's reversal test is to be satisfied. It is evident from Figure 43.4 that from position R we cannot move to any position on the utility possibility curve CD merely through redistribution of income which is socially better than G (that is, which raises utility of either A or B, the utility of the other remaining constant or which raises the utility of both). We thus see that while movement from position Q to G is passed by Kaldor-Hicks criterion, reverse movement from position G to position Q is not passed by Kaldor-Hicks criterion. Hence, in Figure 43.4 the movement from the position Q to G satisfies Scitovsky's criterion. Thus when the two utility possibility curves are non-intersecting and change involves movement from a position on a lower utility possibility curve to a position on a higher utility possibility curve, the change raises social welfare on the basis of Kaldor-Hicks-Scitovsky criterion. This happens only when a change brings about increase in aggregate output or real income.

A CRITIQUE OF THE COMPENSATION PRINCIPLE

The compensation principle as developed by Kaldor, Hicks and Scitovsky, has been a topic of much discussion in welfare economics since 1939. Prof. Kaldor was the first to give a criterion to judge the changes in social welfare when an economic change benefits some people and harms the others. Later Hicks also supported this criterion in 1940, though he put it in different words. Scitovsky

tried to improve the Kaldor-Hicks criterion by formulating his own double criterion. These welfare economists have claimed that they have succeeded in developing a welfare criterion based on ordinal concept of utility and also which is free from any value judgements. But compensation principle has been bitterly criticised by the various welfare economists.

First, Little has pointed out that Kaldor did not formulate a new welfare criterion at all because he assumed welfare to be a function of increase in production or efficiency irrespective of the changes in distribution. Thus, according to Little, Kaldor has given only a definition of 'increase in wealth' or 'increase in efficiency'. Kaldor himself has interpreted the compensation principle in this sense as he says that, "when the production of wealth goes up, some income distribution could be found which makes some people better off, and no one worse off than before". However, as *desired income distribution via compensation is only hypothetical, therefore, according to Little, it is not a welfare test but a definition of 'economic efficiency' in terms of over-compensation.*

Second, compensation principle is *not free value judgements* as is claimed by its propounders. It involves, implicit value judgements. Prof. Baumol and Little are of the opinion that the contention of Prof. Kaldor that the changes which enable the gainers to compensate the losers and still be better off are good changes, is itself a value judgement. According to Little, to say that a policy which meets the Kaldor-Hicks criterion increases the output or "efficiency" of society is, in effect, to recommend it. According to him, Kaldor and Hicks have coined a *definition of* "efficiency" whose implicit ethical implications or value judgements will hardly find favour with many people. Compensation is after all only hypothetical; it is consistent with making the poor yet poorer. Thus, according to Little, if the value judgements implicit in Kaldor-Hicks criterion are made explicit, then the claim of Kaldor and Hicks that they have discovered a criterion of detecting increases in wealth, production or efficiency free from value judgements is hardly acceptable.

Third, likewise, Baumol is also of the view that *Kaldor-Hicks criterion is based upon unacceptable implicit value judgements*. "By using a criterion involving potential money compensations, they set up a concealed interpersonal comparison on a money basis"[4]. If an individual *A* evaluates his gain from a change worth Rs. 500 whereas another individual *B* evaluates his loss due to that economic change at Rs. 75, we cannot conclude that social welfare has increased; for if the loser is poor and the gainer a rich one, it may be possible that loss of satisfaction of the poor from Rs. 75 is far greater than the addition to the satisfaction of the rich by Rs. 500 because the marginal significance of one rupee to a poor is far greater than that of the rich. Thus without actual compensation, the change would mean a major loss of welfare to the poor individual *B* and a trivial gain of welfare to the rich individual *A* even if it passes the Kaldor criterion with flying colours. To quote Baumol again, "*The Kaldor and Scitovsky criteria have thus ducked the basic problem of the interpersonal comparison required to evaluate a policy change which harms X but aids Y. They duck it by saying implicitly that the recommendation should be based on X's and Y's relative willingness and ability to pay for what they want*".[5]

Fourth, *Kaldor-Hicks* have claimed that through compensation principle they have been able to separate a production change from the distribution change by which it is accompanied. For instance, as a result of a policy change output of Coca-Cola increases and that of whisky decreases. Now, if individual *X* prefers Cola Cola but *Y* prefers whisky, the question whether there has occurred any increase in production is inseparably connected with the distribution of these beverages between *X* and *Y*. In many cases it is, therefore, difficult to say whether or not production has increased without considering how the output or real income is being distributed.

Moreover, Kaldor and Hicks think that the *level of production is the main determinant of social welfare and the distribution a secondary one*. But this is quite untenable. A lower total output equitably distributed ensures greater social welfare than larger output, inequitably distributed. They

4. Baumol, *op. cit*, p. 530.
5. *Op.cit*, p.530

CHAPTER 44*
SOCIAL WELFARE FUNCTION

The concept of 'Social Welfare Function' was propounded by A. Bergson in his article '*A Reformulation of Certain Aspects of Welfare Economics*' in 1938. Prior to it various concepts of social welfare had been given by different welfare theorists but they failed to provide a satisfactory solution to the problem of maximisation of social welfare and measurement. Bentham talked of welfare in terms of '*the greatest happiness of the greatest number.*' Neo-Classical welfare theorists discussed the problem of social welfare on the basis of cardinal measurability of utility and interpersonal comparison of utility. Analysis of Pareto optimality maximises social welfare by satisfying various marginal conditions of production, distribution and allocation of resources among products. But unfortunately they are not fulfilled due to the existence of various externalities and imperfections in the market. Moreover, Pareto optimality analysis fails to measure the changes in welfare resulting from any change which benefits one section of society and harms the other. Compensation principle as given by Kaldor-Hicks-Scitovsky attempts to measure the changes in social welfare resulting from such economic changes which harm some and benefit others through hypothetical compensating payments. Compensation theorists claimed to give a value-free objective criterion based on ordinal concept of utility but, as seen in a previous chapter, this is based upon implicit value judgements and does not evaluate changes in social welfare satisfactorily.

By providing the concept of social welfare function Bergson and Samuelson have attempted to provide a new approach to welfare economics and have succeeded in rehabilitating welfare economics. They have put forward the concept of social welfare function that considers only the ordinal preferences of individuals. They agree to Robbins' view that interpersonal comparison of utility involves value judgements but they assert that without making some value judgements, economists cannot evaluate the impact of changes in economic policy on social welfare. Thus, according to them, welfare economics cannot be separated from value judgements. According to them, welfare economics is essentially a normative study. But the approach to study it must be scientific despite the fact that the use of value judgements in it is unavoidable.

BERGSON-SAMUELSON SOCIAL WELFARE FUNCTION

Social welfare function is an ordinal index of society's welfare and is a function of the utility levles of all individuals constituting the society. Bergson-Samuelson social welfare function can be written in the following manner :

$$W = W(U_1, U_2, U_3 \ldots\ldots, U_n)$$

where W represents the social welfare $U_1, U_2, U_3, \ldots\ldots, U_n$ represent the ordinal utility indices of different individuals of the society. The ordinal utility index of an individual depends upon the goods and services he consumes and the magnitude and kind of the work he does. The important thing to note about social welfare function is that in its construction *explicit value judgements* are introduced. Value judgements determine a form of the social welfare function; with a different set of value judgements, the form of social welfare function would be different. Value judgemtns are es-

* This Chapter is meant for B.A. (Hons.) Classes in Economics and Commerce.

sentially ethical notions which are introduced from outside economics. The value judgements required to construct a social welfare function may be obtained through democratic process with voting by individuals or it may have to be imposed on the society in a dictational manner. Whatever the case may be, the form of social welfare function depnds upon the value judgements of those who decide about them since it expresses their views regarding the effect which the utility level of each individual has on the social welfare. In the worlds of Prof. Scitovsky. "The social welfare function can be thought of as a funtion of each individual's welfare which in turn depends both in his personal well being and on his appraisal of the distribution of wlefare among all members of the community".[1]

Since the value judgements requaired for the formation of social welfare function are not of the economist himself and instead they are introduced from outside economics they are not obtained through any scientific method. It has been claimed that social welfare function has solved the basic problem of welfare economics, since it thinks unnecessary for the economists themselves to make value judgements concerning what is a desirable distribution of welfare as between indindividuals constituting the society. In other words, economist need not himself decide about what is the most desirable distribution of wlefare. He can take value judgements regarding distribution as given from outside economics.

Bergson's social welfare function is supposed to be dependent on changes in economic events that have a direct effect on individual welfares. The ordinal utility level of an individual is a function of his own consumption of goods and services and not of others. Morever, the utility level of an individual depends on his own value judgments regarding the composition of different goods and services consumed which depends upon his tastes. An individual may derive more utility from the consumption of liquor whereas another individual may derive very nominal utility or no utility at all from it.

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Social Welfare Function and Value Judgements

So far we have been mainly concerned with the value judgements of individuals regarding their utility levels. From the view point of social welfare function, the value judgements regarding the welfare of the society as a whole are relevant. The formulation of a welfare function for the society as a whole is a very difficult task because utility being a mental phenomenon cannot be measured or estimated accurately by any person or institution entrusted to furnish value judgements regarding the changes in social welfare, Moreover, addition and substraction of utilities of different individuals by an authorised person or institution too is a very difficult task.

The social welfare function and its form depends upon the value judgements of the person or institution whom the society has authorised to decide. The authorised person or institution may be any body but for true value judgements regarding the social welfare *he must be unbiased* because changes in social welfare will depend upon his value judgements. "These judgements as to what constitutes justice and virtue in distribution may be those of the economist himself or those set up by the legislature, by some other governmental authority or by some other unspecified person or group."[2] A social welfare function can be attained by common consensus or it may be forced upon the society by a dictator.

Since the forms of social welfare functions are known by value judgements about social welfare, therefore there arises the problem of finding an authority who could give purely unbiased value judgemtents. Bergson and Samuelson have assumed a "Superman" who provides a value judgements about changes in social welfare. Superman alone can take decisions about the solution of

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1. T. Scitovsky, *The State of Welfare Economics*, printed in his *Papers on Welfare and Growth*, George Allen and Unwin Ltd., 1964, p.184
2. W. J. Baumol, *Economic Theory and Operations Analysis*, p. 531.

various problems of the economy. What goods and services should be produced and supplied in the society ? How much of various goods should be produced ? What should be the quality and kind of goods ? What should be capital intensity of producing a particular type of good ? What should be the pattern of distribution of national income among different sections of the society ? Which wants should be satisfied at present and which at a future date and so on. All these questions can be answered by the superman alone in accordance with his views about the determinants of social welfare. The society would have to accept the solutions of all these questions provided by him assumpting that he will give any value judgements which aim to achieve maximum social welfare rather than maximum self-interest. Thus we are free from the addition, substraction, measurement and interpersonal comparisons of utilities by assumpting the existence of a superman.

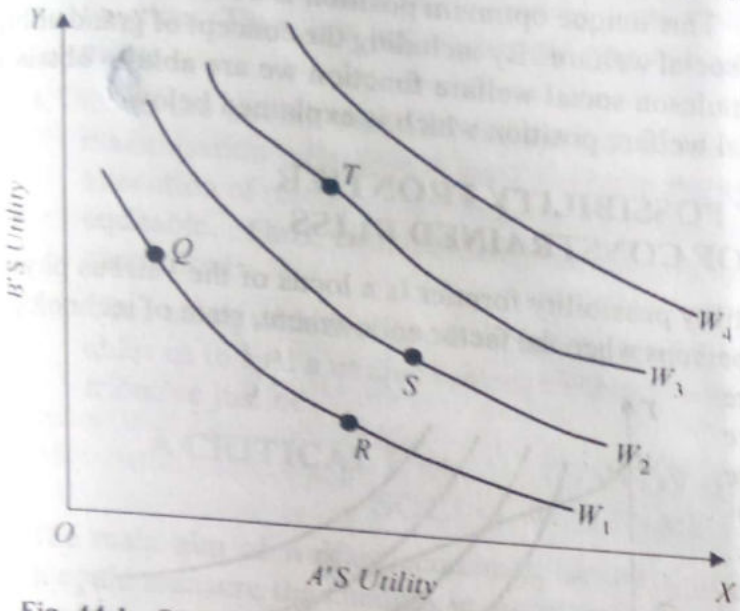

Fig. 44.1. *Social Indifference Curves depicting Social Welfare Function*

In modern age of democratic governments people elect their representatives who constitue the Government. The political party in majority forms the Government and rules the country. The representatives' Government formed by the majority rule formulates various policies on the basis of value judgements and it is expected that all the policy decisions by the Government will aim at maximising social welfare rather than maximising the welfare of an individual or a particular section of the soceity.

Bergson and Samuelson expressed the view that *all value judgements used to construct the social welfare function must be consistent which implies* that if in a given situation A is perferred to B and B is preferred to C then A must be preferred to C. This is nothing new to the students of economics as this is the well know assumption of transitivity in social choice among various alternatives. We can explain the social welfare function wilth the help of *social indifference curves or welfare frontiers*. Let us assume a society of two persons. In such a case social welfare function can be represented with the help of social indifference curves.

In Fig. 44.1 the utilities of individuals A and B have been represented on the horizontal and vertical axes respectively. W_1, W_2 and W_3 are the social indifference curves representing successively higher levels of social welfare. A social indifference curve is a locus of various combinations of utilities of A and B which result in an equal level of social welfare. The properties of social indifference curves are just like that of individual consumer's indifference curves. Given a family of social indifference curves, the effect of a proposed change in policy on social welfare can be evaluated. In terms of Fig. 44.1 any policy change that moves the economy from Q to T is an improvement. Similarly, a movement from Q to S or from R to S also represents an improvement in social welfare, and a movement from T to Q or T to S represents a decrease in social welfare. A movement along the same social indifference curve represents no change in the level of social welfare.

Analysis of Pareto optimality failed to provide a 'unique optimum solution' which represents maximum social welfare. There are a large number of solutions which are optimum on the basis of Pareto criterion. In terms of Edgeworth-box diagram every point on the contract curve represents the optimum position. In terms of Grand Utility Possibility Frontier, all points on it are Pareto

optimal or economically efficient. But Pareto criterion does not tell us the best of them. Thus, Paretian analysis leaves us with a lot of indeterminacy in the choice of maximum social welfare point. Now, the significance of social welfare function is that it enables us to obtain a unique optimum position regarding social welfare. This unique optimum position is best of all the Pareto optima and therefore ensures the maximum social welfare. By including the concept of grand utility possibility frontier along with Bergson-Samuleson social welfare function we are able to obtain a unique optimum position or maximum social welfare position which is explained below.

GRAND UTILITY POSSIBILITY FRONTIER AND POSITION OF CONSTRAINED BLISS

As shall be explained below, a grand utility possibility forntier is a locus of the vairous physically attainable utility combinations of two persons when the factor endowment, state of technology and preference orders of the individuals are given.[3] In other words, *every point on the grand utility posibility curve represents the optimum position with regard to the allocation of the products among the consumers, allocation of factors among different products and the direction of production.* Thus every point on the grand utility possibility curve represents a Pareto optimum and as we move from one point to another on it the utility of one individual increases while that of the other falls.

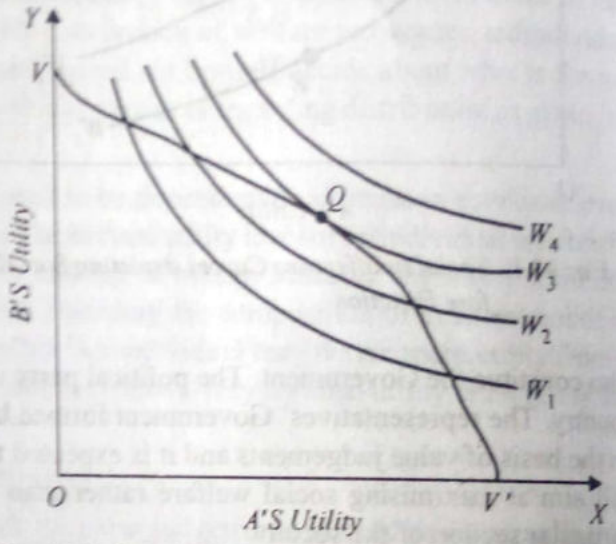

Fig. 44.2. *Social Welfare Function and Position of Constrained Bliss.*

Now, let us superimpose grant utility possibility curve on the social indifference curves representing social welfare function to find a unique optimum position of social welfare. In Fig. 44.2 social indifference curves W_1, W_2, W_3 and W_4 representing the social welfare function have been drawn along with the grand utility possibility curve VV'. Social indifference curve W_3 is tangent to the grand utility possibility curve VV' at point Q. Thus, point Q represents the maximum possible social welfare given the factor endowments, state of technology and preference scales of the individuals. Point Q is known as the point of **constrained bliss** since, given the constraints regarding factor endowments and the state of technology. Q is the highest possible state of social welfare which the society can attain. Social welfare represented by the social indifference curve W_4 is higher than social indifference curve W_3 passing through Q but it is not possible to attain it, given the technology and factor endowment. Thus, from among a large number of Pareto optimum points on the grand utility possibility curve, we have a unique optimum point Q at which the social welfare is the maximum. The point of constrained bliss represents the *unique* pattern of production of goods, *unique* distribution of goods between the individuals and unique combination of factors employed to produce the goods.

The following features of the Bergson-Samuelson Social Welfare function are worth noting :

1. The Bergson-Samuelson social welfare function is based on explicit value judgements and involves interpersonal comparisons of utility in ordinal terms.
2. Bergson-Samuelson social welfare function, the maximum social welfare position is com-

3. How Grand Utility Possibility Curve is derived see Author's book *Advanced Economic Theory*, 15th edition, 2005, S. Chand & Co.

A CRITICAL EVALUATION OF BERGSON-SAMUELSON SOCIAL WELFARE FUNCTION

The main aim of welfare economics has been to find an acceptable social welfare function which could measure the changes in social welfare resulting from a change in economic and non-economic variables. Bergson and Samuelson solved this problem by formulating a social welfare function which is based on explicit value jdugements. This function can incorporate the various economic and non-economic determinants of the welfare of individuals. In this function utility or welfare is conceived and measured in ordinal terms. Preferences or utilities of different individuals of the society and decisions about them are taken through a democratic method or by an authorised institution on the basis of its own value judgements. Even according to its bitter critic Little, the *concept of social welfare function is a brilliant theoretical construct which completes the formal mathematical system of welfare economics.*

Pareto optimality analysis does not help us in providing a unique solution to the problem of maximising social welfare. As seen above, with the help of social welfare function we can measure the changes in social welfare even when one individual becomes better off and another worse off by making some distributional value judgements in the form of social welfare function. The Bergson-Samuelson's social welfare function incorporating explicit value judgements is an improvement over earlier attempts such as compensation principle advanced by Kaldor, Hicks and Scitovsky. However, economists have pointed out some important drawbacks in the concept of social welfare function.

Limited Practical Significance. Little, Streeten and Baumol have pointed out that social welfare function is of limited practical significance. According to Little, the social welfare function can neither be used in a democratic state, nor even in a totalitarian one because in them there would be as many vague social welfare functions as there are individuals. Social welfare function, to quote Little is only "a formal device necessary to a perfectly general abstract system of `welfare', which is devoid of any practical significance."[4]

Likewise, Paul Streeton also thinks that *social welfare function is a highly formal concept which has hardly any relation with the important facts of social life and choice.* To quote him, "No political programme or individual value standard would fit the model of a social welfare function of the required type"[5] Prof. Baumol is also of the opinion that the concept of social welfare is of limited

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4. I.M.D. Little, *A Critique of Welfare Economics*, p. 122
5. Paul Streeton, Appendix to Gunnar Myrdal's *The Political Elements in the Development of Economic Theory*.

practical value as it does not tell us how to get the value judgements which it requires for its construction. Though Bergson criterion of social welfare function, writes Baumol, "provides us with a highly useful frame of reference, unfortunately it does not come equipped with a kit and a set of instructions for collecting the welfare judgements which it requires. Thus it still leaves us with the difficult part of the job unsolved"[6]

Welfare depends on a wider range of variables than those associated with utility. Social welfare function approach is based on the utility which an individual derives from economic variables such as consumption of goods and services. Apart from these economic variables, welfare or well-being of individuals depends on a whole range of political and environmental variables such as enjoyment of human rights, political freedom, pollution-free environment. Thus, "in comparing different economic systems or in comparing different ways of organising a given economy, the possibility that some of these variables might be affected cannot be ignored. Thus a reorganisation that gives everyone more income and leisure *might not improve the welfare of the community if at the same time it limits individual freedom or requires the abandonment of cherished cultural traditions."*[7]

Impossibility of Constructing a Social Welfare Function from Individual Preferences. A highly damaging drawback of social welfare function has been pointed out by K.J. Arrow who has shown that social welfare function cannot be constructed on the basis of value judgements arrived at through democratic process of majority rule in group decision-making. Arrow has proved that the *majority rule leads to contradictory results or intransitivity of social choices when individuals are asked to make a choice from among more than two alternatives available to them.* Therefore, Prof. Arrow concludes that a social welfare function which is based on mere ordinal preferences cannot in principle be constructed from the preferences of all the individuals comprising a society. Of course, social welfare function can be set up on the basis of value judgements of an individual who can impose his will on the society but that will reflect the aims and aspirations of an absolute dictator.[8]

Prof. Amartya Sen's Critique : Judging Welfare or Well-being in terms of Utility is of Limited Significance.

Prof. Amartya Sen has criticised modern welfare economics covering both Pareto efficiency and social welfare function on the ground that utility is not a true indicator of well-being. To quote him, "A difficulty with welfarism arises from the particular interpretation of well-being that utility provides. To judge the well-being of a person exclusively in the metric of happiness or desire-fulfilment has some obvious limitations. These limitations are particularly damaging in the context of interpersonal comparisons .of well-being."[9] He further adds, "A person who has had a life of misfortune, with very little opportunities, and rather little hope, may be more easily reconciled to deprivation than others reared in more fortunate and affluent circumstances. *The metric of happiness may, therefore, distort the extent of deprivation, in a specific and biased way.* The hopeless beggar, the precarious landless labourer, the dominated housewife, the hardened unemployed or the over-exhausted coolie may all take pleasures in small mercies and manage to suppress intense suffering for the necessity of continuing survival, but *it would be ethically deeply mistaken to attach a correspondingly small value to the loss of their well-being because of the survival strategy*".[10]

It follows from above that Amartya Sen has criticised the concept of social welfare based on utility which means psychological satisfaction of individuals from goods and services which they

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6. Baumol, *op. cit.*, p. 531.
7. P. Else and P. Curwin, *Principles of Microeconomics*, Unwin Hyman, London, 1990. p. 324 (Italics added).
8. K.J. Arrow, *Social Choice and Individual Values.*
9. Amartya Sen, *On Ethics and Economics*, Oxford University Press, Delhi, 1990. pp. 45-46. (italics added).
10. *Ibid.*

consume. Further, Prof. Sen shifts the focus on promoting *positive freedoms* of individuals for assessing the change in their welfare following a change in organisation or public policy. He defines freedom as '*capabilites to function*' as to what persons can do or cannot do. It is capabilities to function that reflect freedom in the positive sense and determine well-being or welfare of the people.[11]

QUESTIONS FOR REVIEW

1. Show diagramtically how socially optimum allocation of consumption and resources can be obtained from the *Bliss Point*. What is the underlying assumption.

   B.A. (Hons) D.U. 2001

2. What is Grand Utility Possibility Frontier ? Along with Social Welfare function how it explain the attainment of maximum social welfare. *B.A. (Hons) D.U. 1990*
3. What is social welfare function ? It is analogous to an individual's utility function ?
4. What is Bergson-Samuelson's social function ? How does it incorporate value judgements to evaluate changes in social wlefare.
5. How does Bergson-Samuelson's concept of Social welfare function helps us to solve the problem of indeterminacy of optimality found in Pareto's analysis of social welfare ? Explain.
6. What is meant by the point of *constrained bliss*. How do the concepts of grand utility possibility curve and social welfare function help us to achieve it ?
7. Explain the concepts of Grand Utility Possibility Frontier and Social Welfare Function. How does the achievement of economic efficiency with equity can be explained with their help ?