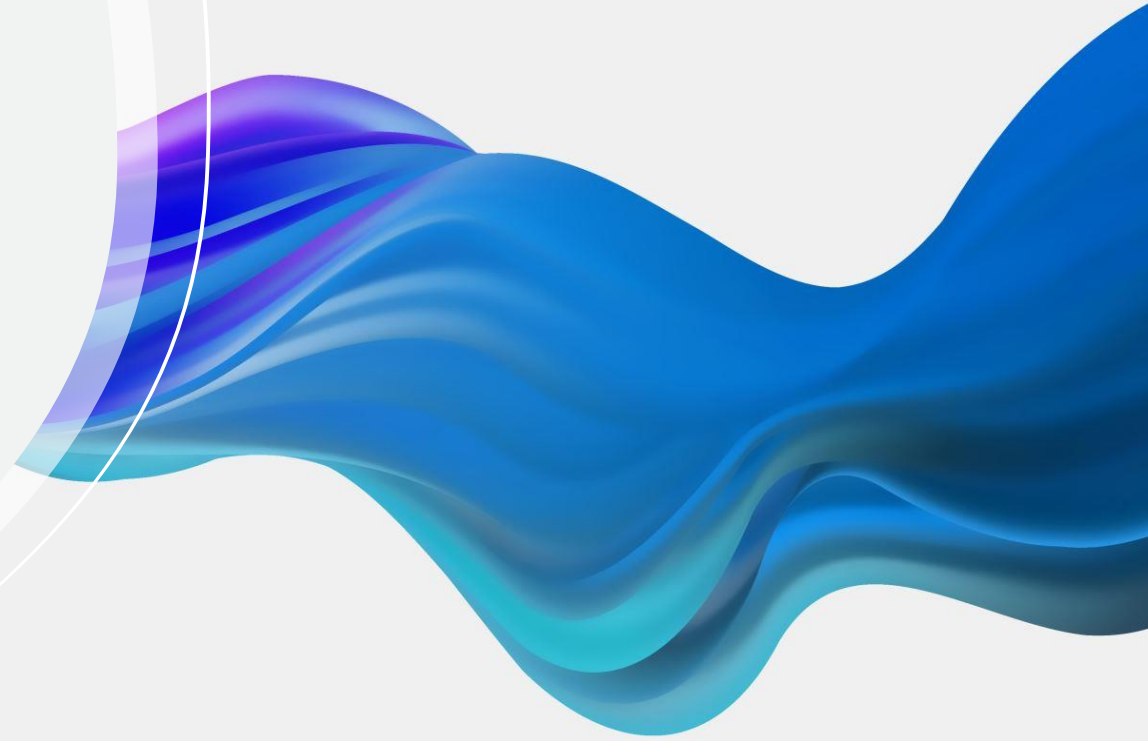# Welfare Economics

What is Welfare Economics?

Welfare economics is concerned with the evaluation of alternative economic situations (states, configurations) from the point of view of the society's well-being.

To illustrate this definition, assume that the total welfare in a country is W, but given the factor endowments (resources) and the state of technology, suppose that this welfare could be larger, for example W^*. The tasks of welfare economics are (a) to show that in the present state $W < W^*$, and (b) to suggest ways of raising W to W^*.

1. GROWTH OF GNP AS A CRITERION OF WELFARE

Adam Smith implicitly accepted the growth of the wealth of a society, that is, the growth of the gross national product, as a welfare criterion.

He believed that economic growth resulted in the increase of social welfare because growth increased employment and the goods available for consumption to the community. To Adam Smith, economic growth meant bringing W closer to W^*.

2. BENTHAM'S CRITERION

- Jeremy Bentham, an English economist, argued that welfare is improved when 'the greatest good (is secured) for the greatest number'.

- To illustrate the pitfalls in Bentham's criterion let us assume that the society consists of three individuals, A, B, and C, so that $W = U_A + U_B + U_C$

- According to Bentham, $\Delta W > 0, if\ (\Delta U_A + \Delta U_B + \Delta U_C) > 0$

- However, assume that the change which resulted in the changes in the individual utilities is such, that A's and B's utility increases, while Cs utility decreases, but $(\Delta U_A + \Delta U_B) > \Delta U_C$

- In other words, two individuals are better-off while the third is worse-off after the change has taken place, but the sum of the increases in utilities of A and B is greater than the decrease in the utility of C.

3. A 'CARDINALIST' CRITERION

- Several economists proposed the use of the 'law of diminishing marginal utility' as a criterion of welfare. Their argument can be illustrated by the following example. Assume that the society consists of three individuals; A has an income of £1000, while B and C have an income of £500 each. Consumer A can buy double quantities of goods as compared to B and C.

- However, given the law of diminishing marginal utility, $A's$ total utility is less than double the total utility of either B or C, because $A's$ marginal utility of money is less than that of B or C. Thus $W < W^*$. To increase social welfare income should be redistributed among the three individuals. In fact cardinal welfare theorists would maintain that social welfare would be maximised if income was equally distributed to all members of the society.

4. THE PARETO-OPTIMALITY CRITERION

This criterion refers to economic efficiency which can be objectively measured. It is called *Pareto criterion* after the famous Italian economist Vilfredo Pareto (1848-1923). According to this criterion any change that makes at least one individual better-off and no one worse-off is an improvement in social welfare. Conversely, a change that makes no one better-off and at least one worse-off is a decrease in social welfare.

For the attainment of a Pareto-efficient situation in an economy three marginal conditions must be satisfied:

(a) Efficiency of distribution of commodities among consumers (efficiency in exchange);

(b) Efficiency of the allocation of factors among firms (efficiency of production);

(c) Efficiency in the allocation of factors among commodities (efficiency in the product-mix, or composition of output).

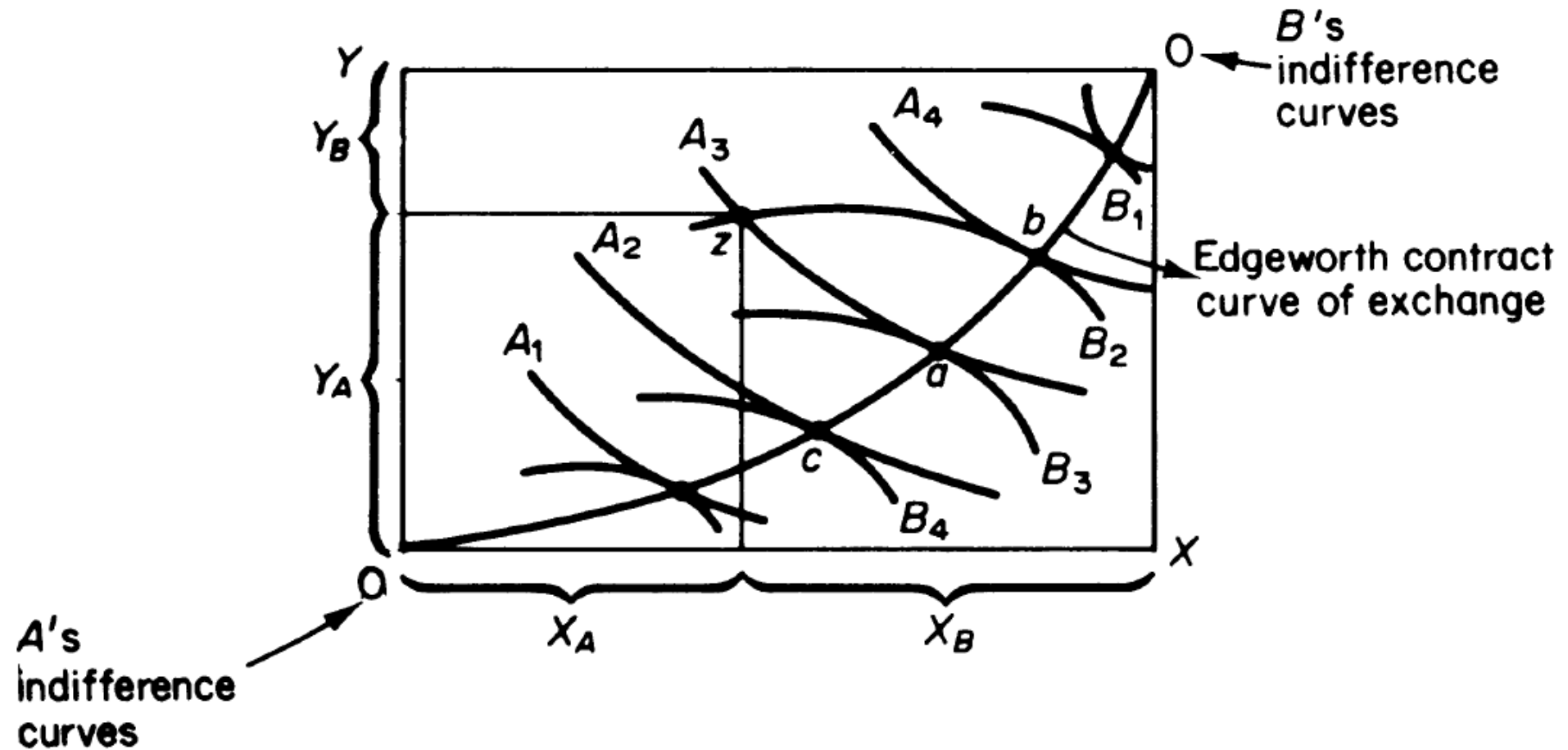# (a) Efficiency of distribution of commodities among consumers

Figure 23.1   Edgeworth box of exchange

(b) Efficiency of allocation of factors among firm-producers
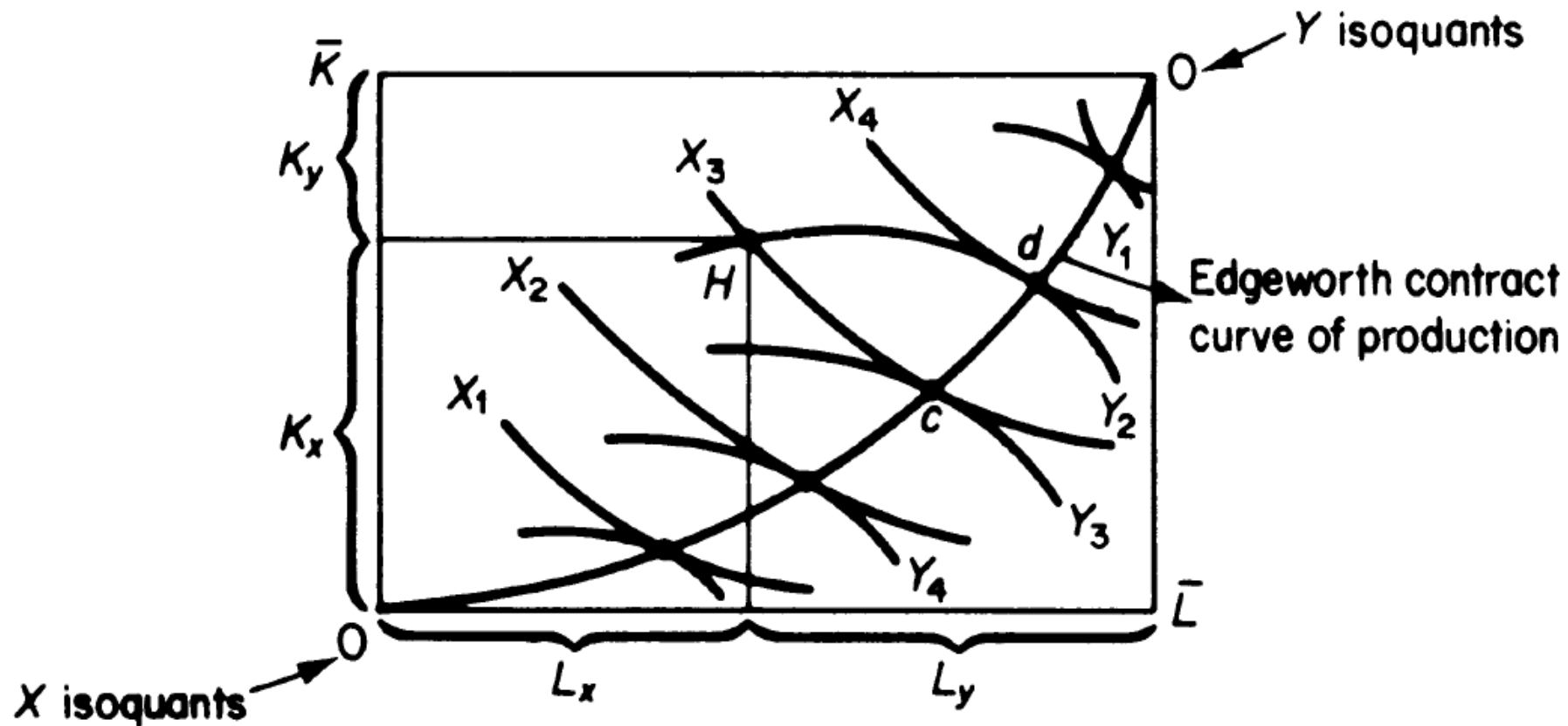

Figure 23.2   Edgeworth box of production

(c) Efficiency in the composition of output (product-mix)

- The third possible way of increasing social welfare is a change in the product-mix. To define the third marginal condition of a Pareto-optimal state in an economy we will use the production possibility curve.

- The slope of the *PPC* is called the 'marginal rate of (product) transformation' *(MRPTxy),* and it shows the amount of *Y* that must be sacrificed in order to obtain an additional unit of *X.* In other words, the *MRPT* is the rate at which a good can be transformed into another.
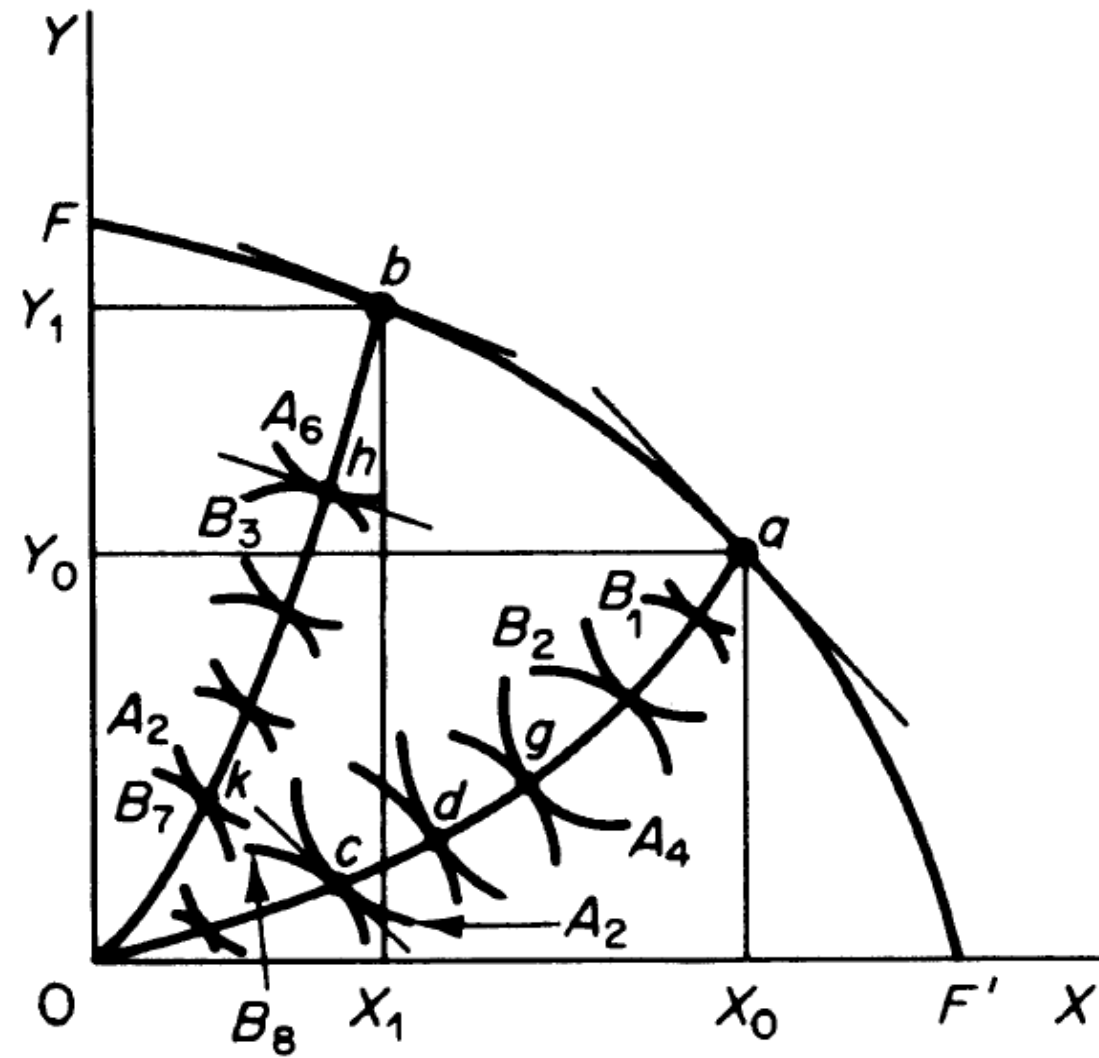
Production Possibility Curve

- *The marginal condition for a Pareto-optimal or -efficient composition of output requires that the* MRPT *between any two commodities be equal to the* MRS *between the same two goods:*

$$MRPT_{x,y} = MRS_{x,y} \text{ of A} = MRS_{x,y} \text{ of B}$$

- Since the *MRPT shows the rate at which a good can be transformed into another* (on the production side), and the *MRS* shows the rate at which consumers are willing to exchange a good for another, the rates must be equal for a Pareto-optimal situation to be attained.

5. THE KALDOR-HICKS 'COMPENSATION CRITERION'

- Assume that a change in the economy is being considered, which will benefit some ('gainers') and hurt others ('losers'). One can ask the 'gainers' how much money they would be prepared to pay in order to have the change, and the 'losers' how much money they would be prepared to pay in order to prevent the change.

- If the amount of money of the 'gainers' is greater than the amount of the 'losers', the change constitutes an improvement in social welfare, because the 'gainers' *could* compensate the 'losers' and still have some 'net gain'. Thus, the Kaldor-Hicks 'compensation criterion' states that a change constitutes an improvement in social welfare if those who benefit from it could compensate those who are hurt, and still be left with some 'net gain'

- Assume, for example, that the economy consists of two individuals, *A,* who is a millionaire, and *B,* who has an income of £4000. Suppose that the change (being considered by the government) will benefit *A,* who is willing to pay £2000 for this change to happen, while it will hurt *B,* who is prepared to pay £1000 to prevent the change.

- According to the Kaldor-Hicks criterion the change will increase the social welfare (since the 'net gain' to *A,* after he compensates *B,* is £1000). However, the gain of £2000 gives very little additional utility to millionaire *A,* while the 'loss' of £1000 will decrease a lot the well-being of *B,* who has a much greater marginal utility of money than *A.* Thus, the total welfare will be reduced if the change takes place.

6. THE BERGSON CRITERION: THE SOCIAL WELFARE FUNCTION

- The various welfare criteria so far discussed show that when a change in the economy benefits some individuals and hurts others it is impossible to evaluate it without making some value judgement about the deservingness of the different individuals or groups.

- Bergson suggested the use of an explicit set of value judgements in the form of a *social welfare function*. A social welfare function is analogous to the individual consumer's utility function. It provides a ranking of alternative states (situations, configurations) in which different individuals enjoy different utility levels.
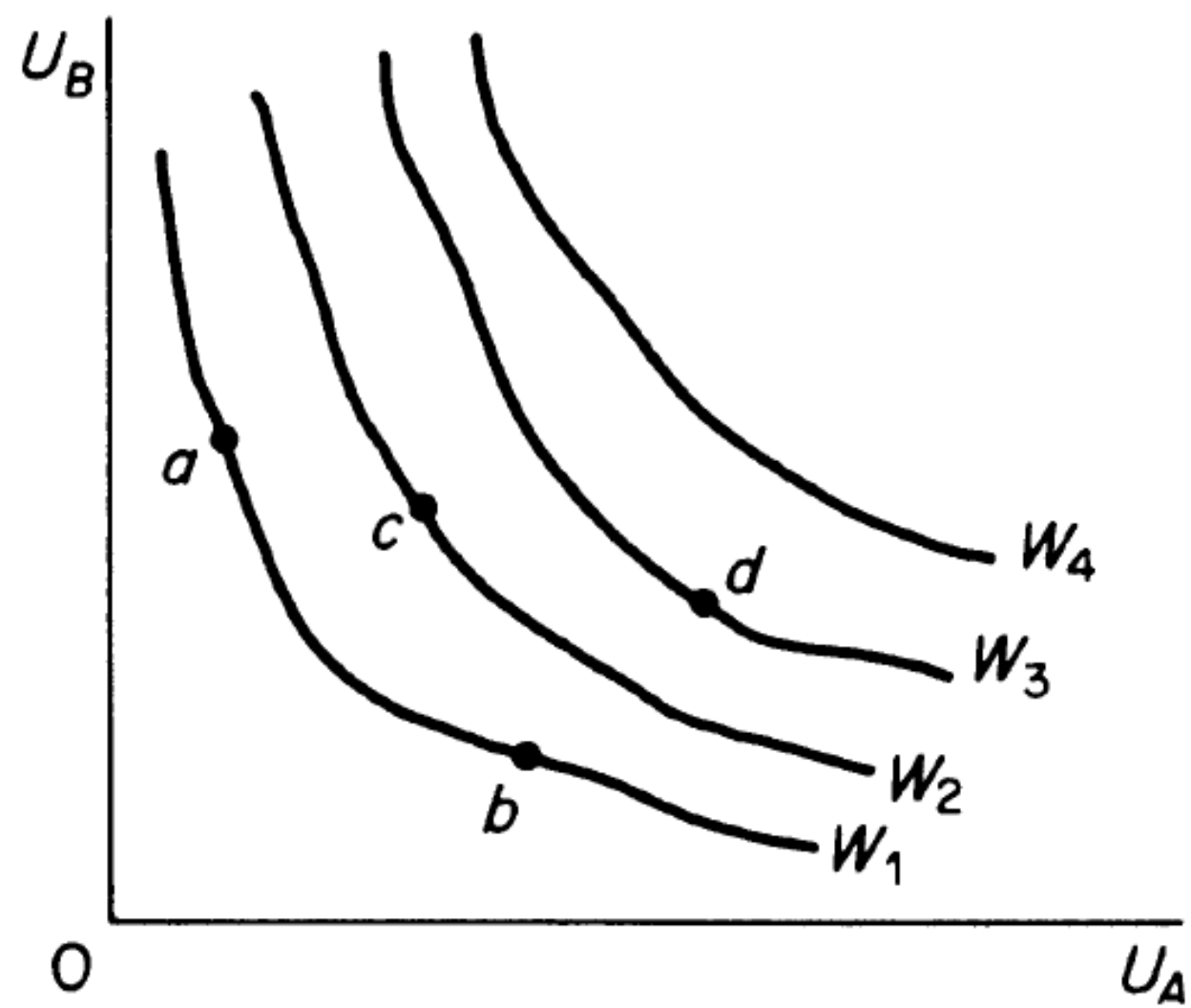
MAXIMISATION OF SOCIAL WELFARE

In this section we will examine the conditions of social welfare maximisation in the simple two-factor, two-commodity, two-consumer model. The assumptions of our analysis are listed below.

1. There are two factors, labour L, and capital K, whose quantities are given (inperfectly inelastic supply). These factors are homogeneous.

2. Two products, X and Y, are produced by two firms. Each firm produces only one commodity. The production functions give rise to smooth isoquants, convex to the origin, with constant returns to scale.

3. There are two consumers whose preferences are represented by indifference curves, which are continuous, convex to the origin and do not intersect.

4. The goal of consumers is utility maximisation and the goal of firms is profit maximisation.

5. The production functions are independent. This rules out joint products and external economies and diseconomies in production.

6. The utilities of consumers are independent.

7. The ownership of factors, that is, the distribution of the given Land K between the two consumers, is exogenously determined.

8. A social welfare function, $W = f(U_A \cdot U_B)$, exists. This permits a uniquepreference-ordering of all possible states, based on the positions of the two consumers in their own preference maps. This welfare function incorporates an ethical valuation of the relative deservingness or worthiness of the two consumers.

- The social welfare function is one of the tools which we will use in finding the situation which maximizes social welfare.

- For this purpose, however, we need another tool, the *grand utility possibility frontier.* This shows the maximum utility attainable by *B,* given the utility enjoyed by *A* from any given product-mix.
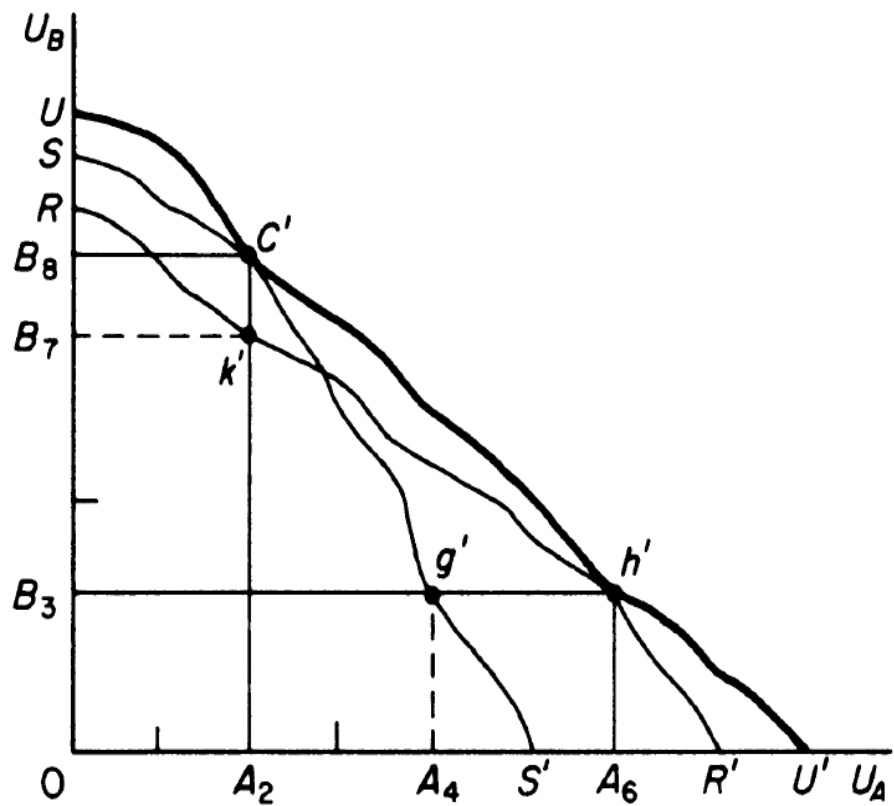
The grand utility possibility frontier
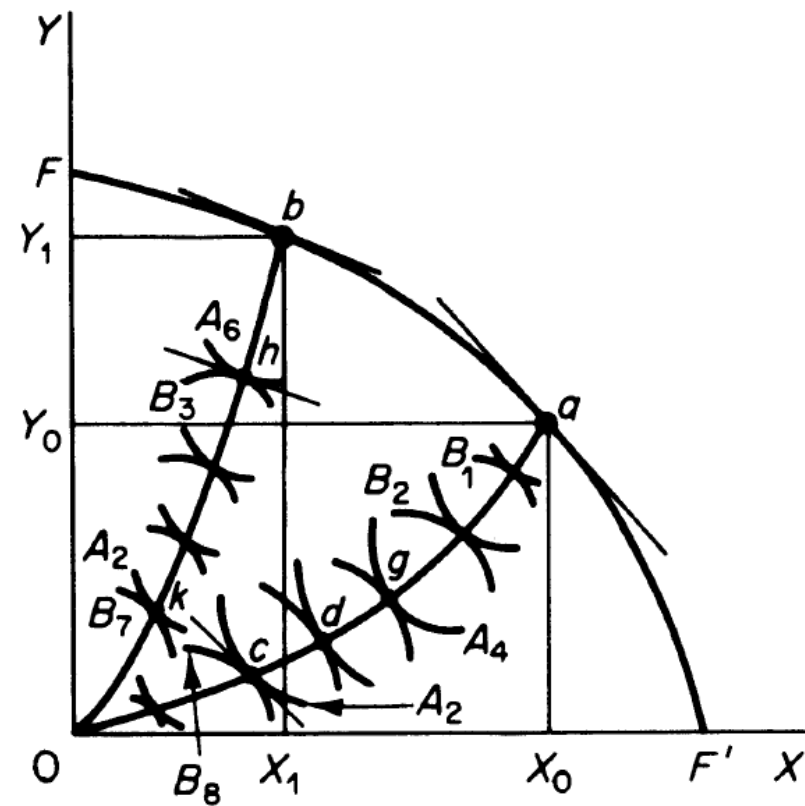
Production Possibility Curve
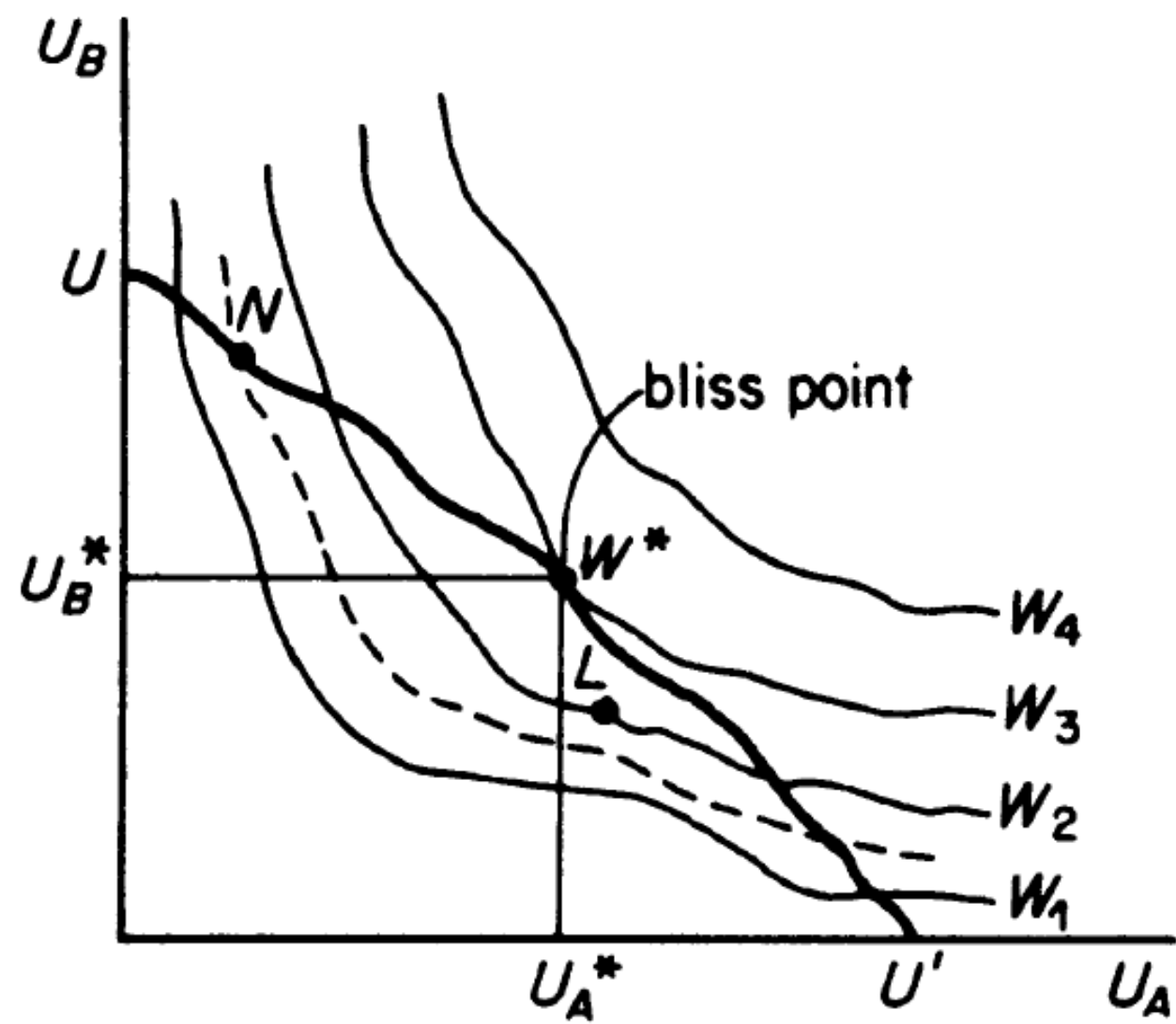
- Social welfare is maximised at the point of tangency of the 'envelope' utility possibility frontier with the highest possible social indifference contour. This point is called 'the point of bliss'.

- The welfare maximisation will occur at a point *on* the 'envelope' utility possibility frontier, and we saw that all points on this frontier satisfy all three conditions of Pareto optimality. Thus, the point of welfare maximisation is a Pareto-optimal state.

- However, a large number of points *below* the grand utility frontier, although not Pareto-optimal, yield a higher level of social welfare than points *on* the utility frontier. For example, point *N* is a Pareto-optimal situation while point *L is* not. Yet *L* lies on a higher social indifference contour than point *N*. However, it can be shown that, given any inefficient point (below the 'envelope' utility frontier), there will exist some point(s) on the grand utility frontier that represents an improvement in social welfare.

That's it...