



A Note on Welfare Propositions in Economics

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A Note on Welfare Propositions in Economics

Modern economic theory draws a sharp distinction between positive economics, which explains the working of the economic system, and welfare economics, which prescribes policy. In the domain of welfare economics the impossibility of interpersonal utility comparisons has for a long time been believed to impose strict limitations on the economist, which kept this branch of economic theory in the background. Recently, however, there has been a reawakening of interest in welfare problems, following assertions that these limitations are less restrictive than they were hitherto supposed to be.¹ The present note attempts to analyse the problem in detail.

I

The aim of welfare economics is to test the efficiency of economic institutions in making use of the productive resources of a community. For analytical and historical reasons it is useful to distinguish between welfare propositions based on the assumption of a fixed quantity of employed resources and those that regard that quantity as a variable.

The former are concerned with the allocating efficiency of the system ;² i.e. with its ability of best allocating a given quantity of utilised resources among their various uses in consumption and production. They can be conceived of as criteria for judging institutions and policy in a closed community whose potential resources are fixed and can be trusted to be fully employed, either because of the automatism of the system or because of the existence of a governmental policy aiming at full employment.

The latter, which may be called welfare propositions in the wider sense, are in addition to the above problems concerned also with the total quantity of resources available to an open group and the degree of utilisation of those resources. They are therefore relevant, first of all, to problems of international trade from the point of view of a single country ; and secondly, to the general problem of employment.

II

All the welfare propositions of the classical economists—viz., perfect competition, free trade, and direct taxation—belong in the first category ; a fact which has not always been realised. They are all based on the principle that

¹ Cf. N. Kaldor : "Welfare Propositions of Economics and Interpersonal Comparisons of Utility," *Economic Journal*, vol. 49 (1939), p. 549 ; J. R. Hicks : "Foundations of Welfare Economics," *Economic Journal*, vol. 49 (1939), p. 696. See also N. Kaldor "A Note on Tariffs and the Terms of Trade," *Economica* (N.S.), vol. 7 (1940), p. 377 ; and J. R. Hicks : "The Rehabilitation of Consumers' Surplus," *Review of Economic Studies*, vol. 8 (1941), p. 108. The present note is a criticism of the principle enunciated in Mr. Kaldor's first-quoted article and underlying the argument of the others. It is not presented in polemic form, in order to enable the reader not acquainted with the articles here quoted to follow its argument.

² This expression was suggested to me by Mr. George Jaszi to whom I am also indebted for reading the manuscript and making valuable suggestions.

given the total quantity of utilised resources, they will be best distributed among different uses if their rates of substitution are everywhere and for every person equal ; for only in such a situation will each person's satisfaction be carried to that maximum beyond which it cannot be increased without diminishing someone else's. Perfect competition, free trade, and direct taxation are one (probably the simplest) among the many ways of achieving this aim.

By limiting our universe of discourse to two commodities and two persons, we can illustrate this principle on a simple diagram. Let us draw the indifference maps of the two individuals superposed on each other, one of them reversed, with the axes parallel and in such a position that their intersection gives the quantities of the two goods jointly possessed by the two people. Every point of the rectangle enclosed by the axes corresponds to a given distribution of the two goods between the two persons, and the two indifference curves going through that point show their respective welfare positions. At some points, indifference curves do not cut but are tangential one to another. At these points the rate of substitution of the two goods is equal for the two persons, and they represent optimum situations, because once such a point has been reached no redistribution of the two goods can increase the welfare of either person without diminishing that of the other. The locus of all optimum points gives the contract curve.

We judge the allocating efficiency of economic institutions by the criterion whether or not they enable people so to redistribute goods and services among themselves (irrespective of their initial position) as to arrive on the contract curve. That perfect competition or, from the point of view of the universe, free trade are efficient in the above sense can be proved by showing that all pairs of offer (reciprocal demand) curves drawn from any point within the rectangle intersect on the contract curve. Similarly, excise taxes and, from the point of view of the universe, import and export duties are inefficient, because they can be represented as distortions of offer curves that make them intersect outside the contract curve. The arguments based on this diagram can be generalised for any number of persons and commodities.¹ It implies only one limitation : the quantities of goods available to the community as a whole must be fixed ; for they determine the points of intersection of the axes and the position of the contract curve. This shows that the propositions illustrated by the diagram are allocative welfare propositions ; and it also appears to limit their applicability to the problem of the exchange of goods whose quantities coming onto the market are given. It can be proved, however, that our arguments are equally valid when instead of these quantities those of the factors utilised in their production are considered to be fixed. For the formal proof of the geometrical arguments and their generalisations the reader is referred to the original sources and to textbooks dealing with the subject.²

¹ This also holds good for all arguments based on other diagrams in this note.

² Cf. F. Y. Edgeworth : *Mathematical Psychics*, London, 1881, and "The Pure Theory of International Trade," *Economic Journal*, vol. 4 (1894); Alfred Marshall : *The Pure Theory of Foreign Trade* (1879), London School reprint, 1930; and his *Principles of Economics*, Bk. V, Chap. II. Note on Barter and Mathematical Note XII; A. P. Lerner; "The Symmetry between Export and Import Taxes," *Economica* (N.S.), vol. 3 (1936); J. R. Hicks : *Value and Capital*, Oxford, 1939, etc. For the best analysis of the nature of this kind of diagram see A. L. Bowley ; *The Mathematical Groundwork of Economics*, Oxford, 1924.

III

We have seen above that allocative welfare propositions are based on the criterion of economic efficiency. They state that of alternative situations, brought about by different institutions or courses of policy, one is superior to the other in the sense that it would make everybody better off for every distribution of welfare, *if* that were the same in the two situations. This is different from saying that one situation is actually better than the other from everybody's point of view, because a change in institutions or policy almost always redistributes welfare sufficiently not to have a uniform effect on everybody but to favour some people and prejudice others. It follows from this that economic welfare propositions cannot as a rule be made independently of interpersonal comparisons of utility.

It would hardly be satisfactory, however, to confine the economist's value judgments to cases where one situation is superior to the other from the point of view of everybody affected. It is doubtful if in practice any choice comes within this category; besides, there would not be much point in soliciting the economist's expert opinion when everybody is unanimous, except in order to enlighten people as to their true interest.

Favouring an improvement in the organisation of production and exchange *only* when it is accompanied by a corrective redistribution of income fully compensating those prejudiced by it might seem to be a way out of the difficulty, because such a change would make some people better off without making anyone worse off. For instance, it might be argued that the abolition of the Corn Laws should not have been advocated by economists in their capacity of pure economists without advocating at the same time the full compensation of landowners out of taxes levied on those favoured by the cheapening of corn. Yet, in a sense, and regarded from a long-run point of view, such propositions are not independent of value judgments between alternative income distributions either. For, going out of their way to preserve the existing distribution of income, they imply a preference for the *status quo*.

There seem to be two solutions of the problem. First of all, in addition to admitting his inability to compare different people's satisfaction, the economist may postulate that such comparisons are impossible, and that therefore there is nothing to choose between one distribution of income and another. He may then make value judgments on the sole criterion of efficiency without bothering about concomitant shifts in the distribution of income, since he considers one income distribution as good as any other.¹ In this case, however, he cannot claim that his value judgments are independent of interpersonal utility comparisons, because they depend on the assumption of their impossibility.

Secondly, the economist may put forward his welfare propositions with due

¹ This, I think, was the attitude of the classical economists; at least of those who did not, like Bastiat, impute ethical values to the distribution of income under perfect competition. It seems to be the correct interpretation of that fairly representative statement of Cairnes': "... standards of abstract justice . . . are inefficacious as means of solving the actual problems of . . . distribution. . . . If our present system of industry (perfect competition) is to be justified, it must . . . find its justification . . . in the fact that it secures for the mass of mankind a greater amount of material and moral well-being, and provides more effectively for its progress in civilisation than any other plan."

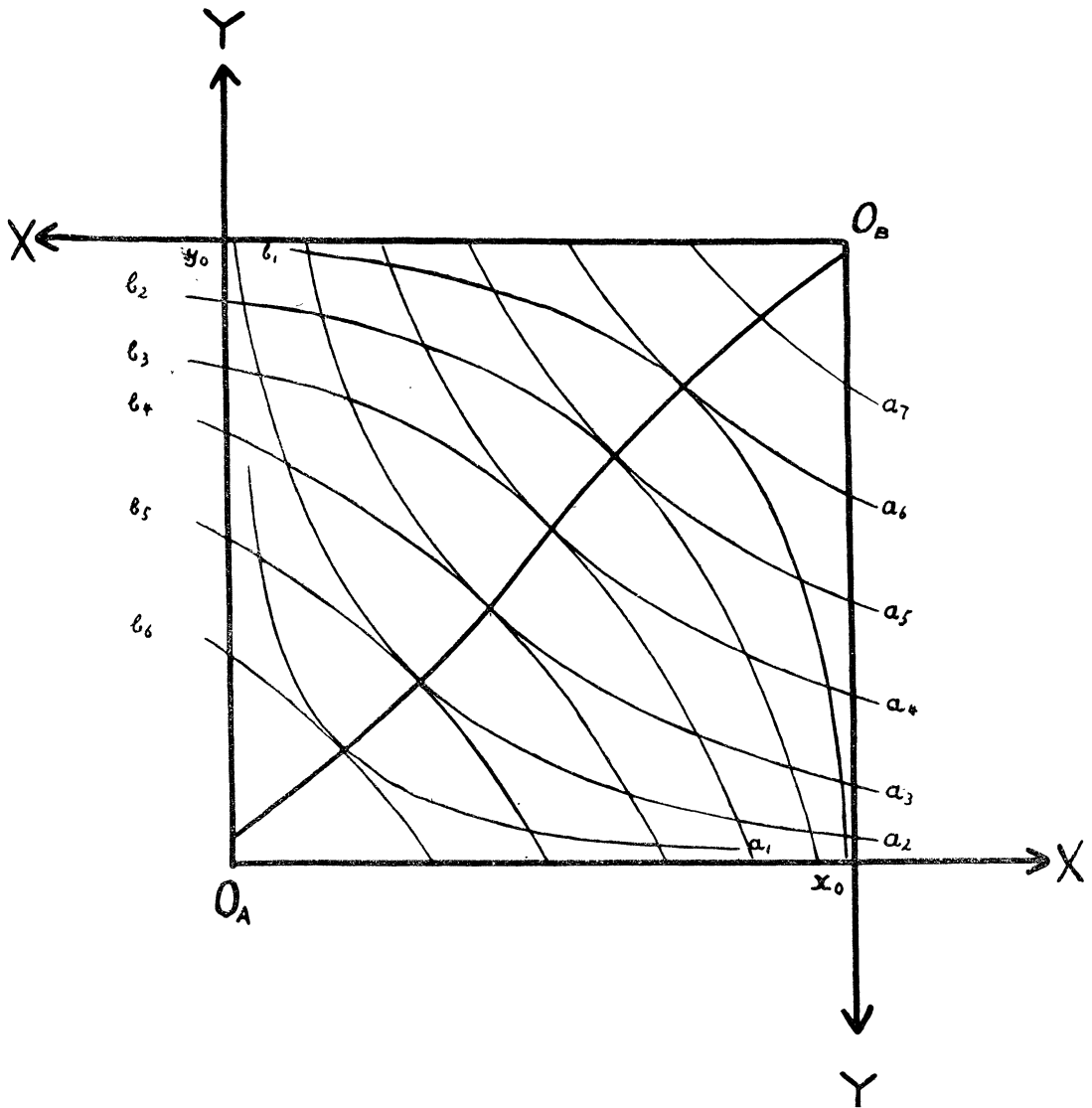


Fig. 1. Diagram 1

emphasis on their limitations, as being based on the sole criterion of efficiency. He may then point out the nature of eventual redistributions of income likely to accompany a given change, and stress the necessity of basing economic policy on considerations both of economic efficiency and of social justice.¹ Such an attitude, which I think is the only correct one, may diminish the force of the

¹ Or, of course, he may also renounce his claim to purity and base his own recommendations on both criteria.

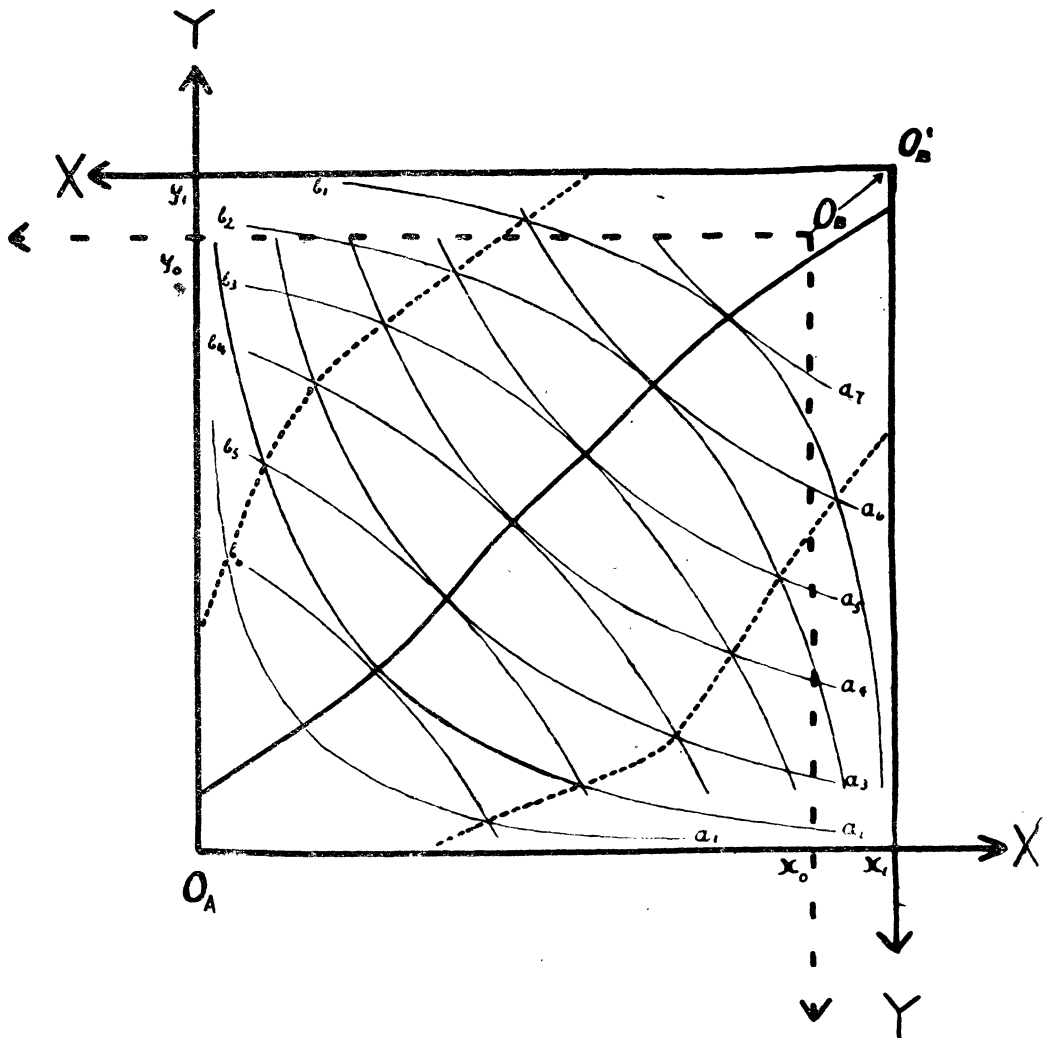


Fig. 1, Diagram 2

economist's welfare propositions but does not make them less useful. The above considerations qualify also the welfare propositions to be discussed below.

IV

When we come to the problem of welfare propositions in the wider sense, we can no longer illustrate a change in economic institutions or policy on a single diagram. For such a change will no longer mean a mere redistribution of income and alteration of the rules of production and exchange ; but may also involve a change both in the total quantity of resources available to the com-

munity, and in their degree of utilisation. The former may be due to the imposition of a duty on international trade, which from the point of view of an individual country alters the quantities of imports and retained exports available for home consumption ; while the latter may be caused by this or any other change, if it affects the propensity to save or the inducement to invest and thereby changes employment. Analytically there is no difference between the two cases. In both, the quantities of resources available for consumption are changed, hence the relative position of the indifference maps is altered ; whence it follows that welfare propositions in the wider sense must involve the comparison of two diagrams. Since these are constructed from the identical two indifference maps and differ only in the latter's relative position to each other, such comparisons are not the hopeless task they might seem at first sight. For we can represent some (not all) welfare positions on both diagrams ; and it is possible to represent on one diagram the welfare positions corresponding to all those points of the other diagram's contract curve that are inferior to its " own " contract curve. This follows from the fact that our diagrams admit the representation of all welfare situations that are inferior (worse from the point of view of at least one of the two persons) to their contract curve, while welfare positions superior to the contract curve cannot be represented on them.

Our welfare propositions may necessitate the comparison of points on the contract curves of the two diagrams, or of points suboptimal to them, or of a point on one contract curve with a point suboptimal to the other contract curve. The first case is that where the system's allocating efficiency is at an optimum both before and after the given change ; the second, where it is suboptimal both before and after the change ; the third, where the change affects allocating efficiency. Taking an example from the theory of international trade, the first case may be illustrated by the imposition of an import duty by a country in which taxation is direct and domestic markets are perfectly competitive ;¹ the second case can be represented by a duty imposed in a monopolistic world ; and the third by a duty which favours the formation of monopolies or is linked with an excise tax on the home production of import substitutes.

V

Let us draw two diagrams (Fig: 1), both consisting of the superposed indifference maps of individuals A and B , but with the difference that in the second, B 's map has been shifted by $o_B o_{B'}$; so that the joint possessions of A and B have increased by $x_0 x_1$ of X and $y_0 y_1$ of Y compared with what they were in the first. This shift will bring into a position of tangency indifference curves that in the first diagram have neither touched nor intersected, and will thus make the second diagram's contract curve superior to that of the first diagram throughout its range. This follows from that fundamental postulate of economic

¹ A tariff on foreign trade is not incompatible with the tariff imposing country's domestic trade and production being of optimum allocating efficiency. The reader must not let himself be confused by the fact that similar diagrams have been used for illustrating the waste caused by tariffs from the point of view of the universe as a whole. We are here solely concerned with the effects of a tariff on the welfare of a single country, consequently the indifference maps that constitute our diagrams belong to inhabitants of the same country.

theory that indifference curves can never have a positive slope, and it will be the case whenever the shift in the relative position of the indifference maps represents an increase in the quantity of at least one of the two commodities without a diminution in that of the other. From the fact that the second diagram's contract curve is superior to that of the first, it follows that the latter can be represented on the second diagram by tracing the locus of the points of intersection of all the indifference curves that in the first diagram are tangential to each other. This will give us a curve on each side of the second diagram's contract curve, and the area between them represents welfare positions that are superior to the first diagram's contract curve. Hence, a change that brings the welfare of our groups from a point of the first diagram's contract curve onto a point of the second diagram's contract curve (or at least within the area between the broken lines), can be said to be desirable with the same generality and significance with which perfect competition or direct taxation are said to be desirable on the ground of their allocating efficiency. In other words, while it need not actually improve everybody's position, it would do so for every possible distribution of welfare if the change were to leave that distribution unaffected.

The above argument is an explicit formulation of the statement that getting more of some (or all) commodities at no cost of foregoing others is a good thing. This may be considered as overpedantic, since that statement seems to be obvious; on the other hand, it is subject to the same limitations that qualify allocative welfare propositions (cf. section 3 above); and besides, it is not even always true. Increased plenty is a good thing only if it is not linked with a redistribution of welfare, too retrogressive from the point of view of social justice; and if it does not lead to a serious deterioration of the allocating efficiency of the economic system. For the former there exists no objective criterion, but there is a simple test for the latter. To test whether a diminution in allocating efficiency has not obviated the advantages of increased plenty, we must see if after the change, it is possible fully to compensate people prejudiced by it out of funds levied on those favoured by the change, without thereby completely eliminating the latter's gain. From the geometrical argument above it follows that if this test is fulfilled for one initial income distribution, it will be fulfilled for all possible initial income distributions, and *vice versa*. Our test is completely general also in the sense that it is applicable whether or not the initial situation is of optimum allocating efficiency. (I.e. whether or not it lies on the contract curve).

VI

The kind of change contemplated above, where the quantity of some or all goods is increased without a diminution in others, is likely to occur as a result of increased employment, capital accumulation, technical progress, better utilisation of strategic advantages in international trade (by putting a duty on the export of goods for which foreign demand is inelastic), and the like. Another kind of change, especially important in international trade, is that where the quantity of some resources is increased and that of others diminished.¹ In

¹ This is the effect of import and export duties whenever the foreigners' reciprocal demand for exports is not inelastic and employment is given,

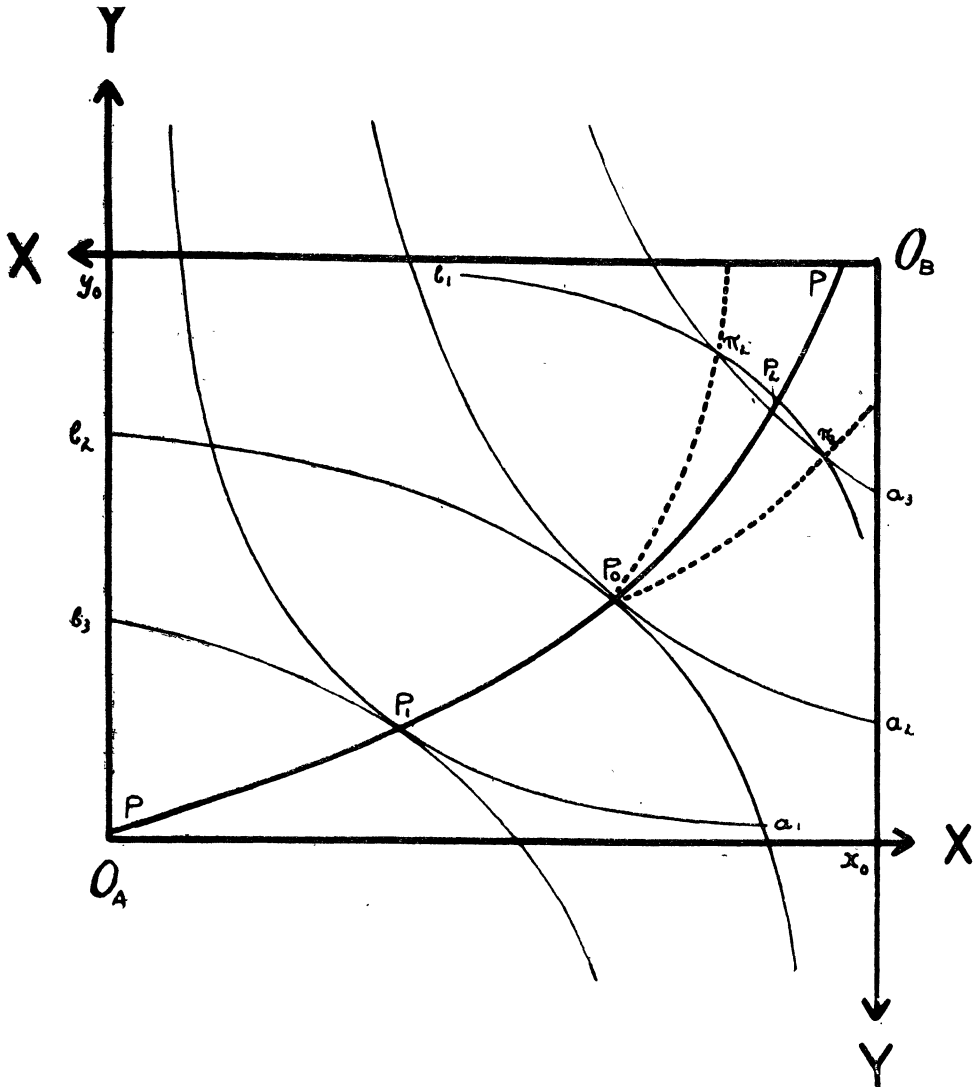


Fig. 2, Diagram 1

Fig. 2 this is represented by a parallel displacement of one of the two indifference maps in the negative direction; so that the quantity of X is diminished by x_0x_1 and that of Y increased by y_0y_1 . Nothing general can be said about the relationship of the two contract curves in this case without detailed knowledge of the shape of the indifference maps. It is possible that the change will result in superior welfare positions throughout the whole range of the contract curve, in the same way as was depicted in Fig. 1. This is especially likely to happen when the increase is large and the diminution small. When on the other hand,

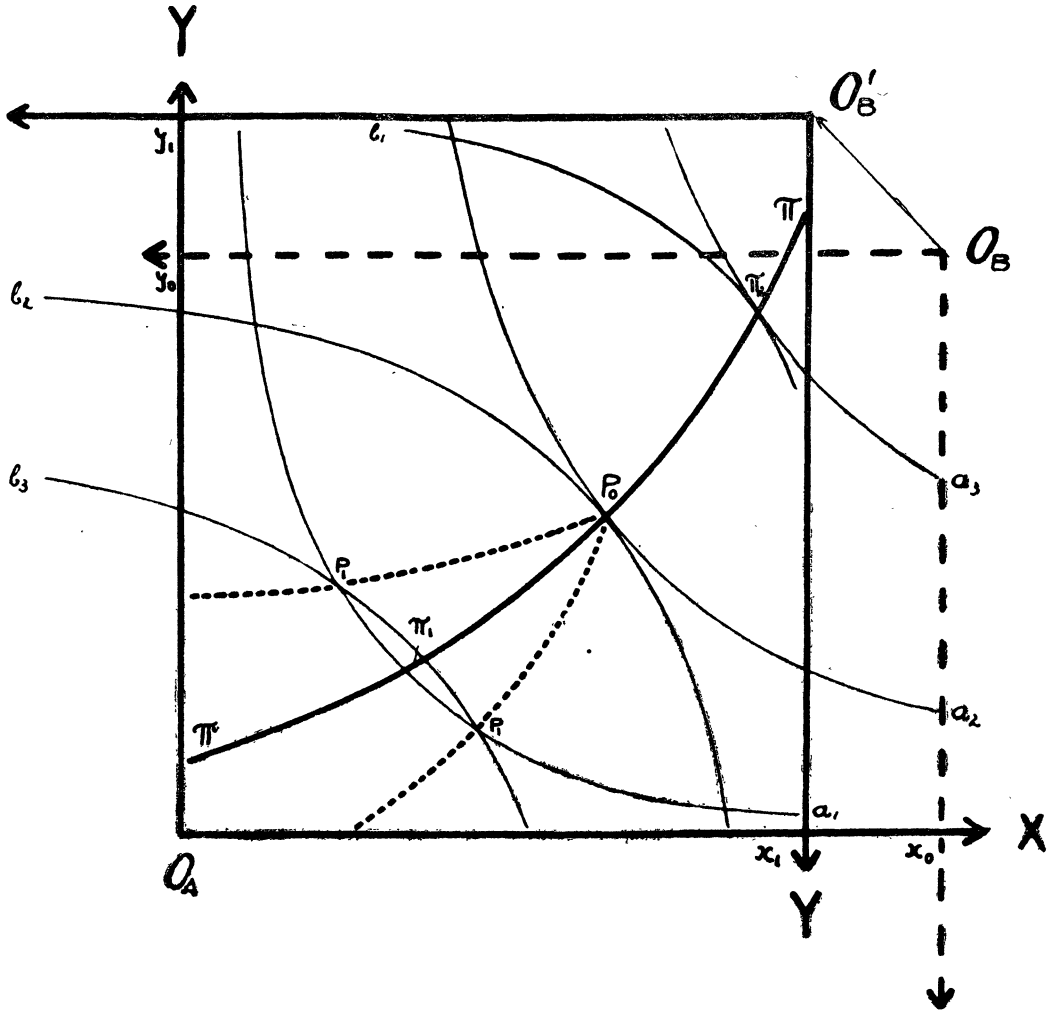


Fig. 2, Diagram 2

the diminution is large and the increase small, the change may result in inferior positions throughout the contract curve ; a situation which can be visualised by thinking of diagram 2 (Fig. 1) as showing the initial, and diagram 1 the new, position. Between these two extremes lies the more general case in which some sectors of the new contract curve are superior to the old one, while others are inferior to it. Its simplest example is illustrated in Fig. 2, where P_0 is a common point of the two contract curves, to the left of which the new contract curve, $\pi\pi$, represents welfare positions superior to the corresponding welfare positions of the old contract curve, PP ; while to the right of P_0 , the old contract curve is superior to the new one. In each diagram the broken lines show the welfare

positions corresponding to the other diagram's contract curve wherever that is inferior to the diagram's own contract curve.

The economic meaning of this is that the identical change in the composition of the national income would improve general welfare for some hypothetical welfare distributions and worsen it for others. Imagine members of a community divided into two groups according to their preference for goods Y and X respectively.¹ Then assume a change that increases the quantity of Y and diminishes that of X , but leaves the distribution of money income between our two groups unaffected. From the point of view of individuals, the change will appear as a shift in relative prices; which, given the distribution of income, will be likely to make those with a special preference for Y better off, and those with a liking for X worse off, than they were before. Assume next that the members of our first group are rich and those of the second poor. Then the gain of the first group expressed in money (or in terms of any single commodity) will be greater than the money equivalent of the loss suffered by the second group. Therefore, if we so redistributed income as to restore approximately the initial distribution of welfare, there would be a net gain, making members of both groups better off than they were before. Conversely, if the people favoured by the change were poor, and those prejudiced by it were rich, the money equivalent of the former's gain would be insufficient fully to compensate the latter's loss, so that a redistribution of income tending to restore the initial distribution of welfare would result in a net loss of satisfaction for everybody.

What significance are we to attach to this case? To refrain altogether, as the classical economists did, from making welfare propositions relating to it, seems unduly restrictive. It is true that as we have seen such a change would improve general welfare for some welfare distributions and worsen it for others; on the other hand, we are not interested in all possible welfare distributions. There are only two distributions of welfare that really matter. Those actually obtaining immediately before and after the change contemplated.² It seems therefore sufficient to concentrate on these and to investigate how the change would affect general welfare if it were to leave the distribution of welfare unaffected and if that were both before and after it, first what it actually is before, secondly what it actually is after, the change. Whenever these two comparisons yield identical results, we can make welfare propositions of almost the same generality and significance as the allocative welfare propositions of the classical economists; especially since the identical results for the two welfare distributions imply a strong presumption in favour of the same result holding for all intermediate welfare distributions as well.

We propose, therefore, to make welfare propositions on the following principle. We must first see whether it is possible in the new situation so to redistribute income as to make everybody better off than he was in the initial situation; secondly, we must see whether starting from the initial situation it

¹ The term "preference" is used in a loose sense. It denotes the whole shape of indifference surfaces and not only their slope at the relevant point, which in equilibrium conditions is the same for everybody.

² The reader's attention is called to the fact that in reality the distribution of income is not *given* as we have assumed in the argument above. As a rule, the change will affect the distribution of welfare not only by shifting relative prices but also by boosting some industries and depressing others, and thereby redistributing money income.

is not possible by a mere redistribution of income to reach a position superior to the new situation, again from everybody's point of view. If the first is possible and the second impossible, we shall say that the new situation is better than the old was. If the first is impossible but the second possible, we shall say that the new situation is worse; whereas if both are possible or both are impossible, we shall refrain from making a welfare proposition.¹

We can illustrate this procedure in Fig. 2 for the special case when allocating efficiency is at its optimum both before and after the change. Each situation can then be represented by a point on its respective contract curve and compared with the corresponding point on the other contract curve. If both points lie to the left of P_0 on their respective contract curves, the change will increase general welfare, because starting from the new situation on the second diagram's contract curve it is always possible to travel along that curve by redistributing income and arrive at a point which is superior to the initial situation from everybody's point of view; whereas starting from the initial situation on the first diagram's contract curve, it is impossible by travelling along that curve to reach a position superior to the new situation. If on the other hand, both points lie to the right of the common point P_0 , the change can be said to diminish general welfare on the same reasoning; while if one point lies to the left and the other to the right, we can make no welfare propositions relative to our group.

VII

Our two criteria for making welfare propositions bear a close resemblance to Paasche's and Laspeyre's formulae in the theory of cost of living index numbers. There, just as here, the difficulty lies in comparing averages whose weighting is different;² and the solution is sought in comparing the two real situations not one with another, but each with a hypothetical situation, which resembles it in weighting but is otherwise identical with the other real situation. In the theory of index numbers, budgets of different dates or places are compared each with the cost of the identical bundle of commodities at the prices of the other date or place; and these two comparisons, expressed as ratios (Paasche's and Laspeyre's formulae), are the limits within which the true difference in the cost of living must lie.³ In welfare problems, of course, we can aim neither at a "true" answer nor at its quantitative expression without measuring satisfaction and comparing different people's. But our two criteria are exactly analogous to Paasche's and Laspeyre's formulae. For we compare the first welfare situation with what general welfare would be if the satisfaction, yielded by the physical income of the second situation were distributed as it was in the first; and contrast the second situation with the welfare that the first situation's physical income would yield to each person if it were so distri-

¹ It need hardly be recalled that in the situation discussed in section 5—that is, when the quantities of goods and services all change in the same direction—this last case can never occur, and we can always make welfare propositions.

² Because the general welfare can be conceived of as average welfare.

³ Cf. Henry Schultz: "A Misunderstanding in Index Number Theory," *Econometrica*, vol. 7 (1939), p. 1; and A. A. Konüs: "The Problem of the True Index of the Cost of Living," *Econometrica*, vol. 7 (1939), p. 10.

buted as to make the distribution of welfare similar to that of the second situation.¹

VIII

Mr. Kaldor and Professor Hicks have asserted that it is *always* possible to tell whether a given change improves general welfare, even if not all people gain by it and some lose. The test suggested by them : to see whether it is possible after the change fully to compensate the losers at a cost to those favoured that falls short of their total gain, is fundamentally identical with the first of our two criteria. The objection to using this criterion by itself is that it is asymmetrical, because it attributes undue importance to the particular distribution of welfare obtaining before the contemplated change. If the government had a special attachment to the *status quo* before the change and would actually undertake to reproduce that welfare distribution by differential taxation after the change, then Mr. Kaldor's test would be sufficient. For then, the economist could regard that particular welfare distribution as the only relevant one and would be entitled to use it as his sole standard of reference. But in the absence of such a governmental policy there can be no justification in attaching greater importance to the welfare distribution as it was before than as it is after the change.

To illustrate the pitfalls of this one-sided criterion, imagine a change, say the imposition of a duty on imports, that brings the welfare of *A* and *B* from P_1 (Fig. 2) on the contract curve of diagram 1 onto π_2 on the contract curve of diagram 2. According to Mr. Kaldor's test this change is desirable, because by redistributing income we could travel from π_2 along the $\pi\pi$ curve to π_1 , which is superior to P_1 . But once the tariff has been imposed and situation π_2 established, it will be free trade and the resulting (original) situation P_1 that will appear preferable *by the same test*, because starting from P_1 , income could be so redistributed (travelling along the PP curve in the first diagram this time) as to reach P_2 , which is superior to π_2 . So the two situations can be shown each to be preferable to the other by the identical criterion : an absurd result, which can only be avoided by using our double criterion.

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¹ We say that the distribution of welfare is similar in two situations if every member of the community prefers the same situation. A more exact definition would be unnecessary for our purposes ; besides, it is also impossible, since welfare cannot be measured.