

8

Criteria for Policy

PUBLIC POLICY requires some framework or set of criteria serving as a foundation on which both ends and means are based and can be judged. Generally, too, policy requires some concept of community or national goals to which policy can be directed and in which it can be evaluated. Without some scaffolding in framework and goals, there could be no order within and among policies for different groups and communities. Each conflicting group or sector could pressure for any end or means, without regard for those of other groups, and there would be no machinery for gauging the importance of these competitive interests, goals and means. Some concept of community whose interests transcend the individual must exist unless political and economic chaos is to reign.

Society is characterized by groups with divergent and conflicting ends and values, just as it also has interests which transcend those of groups. The existence of groups with different values and ends (i.e., indifference curves with different slopes along a scale line) does not preclude the development of policy consistent with maximization of the social welfare function. Society in democratic organization exists, in fact, not apart from persons attaching different values and weights to various goals, but largely because of these contrasts and the fact that it provides the mechanism for resolving extreme differences while still allowing others to exist. If the goals and values of all individuals were identical, with exactly homogeneous consumption functions and indifference maps, organized society would hardly be needed, aside from direction of traffic.

CRITERIA OF WELFARE ECONOMICS

One analytical framework providing a set of concepts for suggesting and evaluating policy in an over-all societal or community context is that of welfare economics. We need, then, to review its propositions and determine the rough extent which they can serve as guides in evaluating policy to cope with economic problems of agriculture under development. We will do so briefly, since the main elements of welfare economics are detailed elsewhere. Here we are concerned with the "new" welfare economics principles, now quite old, which do not require cardinal characteristics in utility measurement and recognize inability in making exact interpersonal utility comparisons. Issues in farm policy stem directly from this complex, namely, of change which distributes gains to some and losses to others, but with inability to measure directly these positive and negative outcomes.

Our first concern is in defining a social optimum or economic reorganization which will increase aggregate or community welfare and lead in the direction of a social optimum. We employ a social optimum in the sense of Pareto, namely, organization or position wherein no one individual can move to a position which he prefers without moving another individual to a position which is less preferred and without the requirement that utility be measurable.¹ Or, stated conversely, economic reorganization of resources in production and commodities (or income) in consumption should take place if any individual can be made better off, in goods or services which he prefers, without making other individuals "worse off."

Quite obviously, much government policy takes place outside of this framework, more nearly under the assumption that differentials among individuals in utility or welfare are apparent or measurable, and that distribution of gains and losses is such that community welfare is increased in the sense of a positive-sum game. Still other governmental policy adheres roughly to this general skeleton, especially if we include the principle of compensation—a foundation block of agricultural policy since 1930.

In general, Paretoan welfare economics only tells us which reorganizations increase or decrease the social welfare function, without specifying the exact organization which maximizes it. Or, put in different words, it only specifies conditions under which aggregate welfare will be increased without specifying unique organizations which will optimize it. In an over-all or aggregative sense, Pareto welfare economics explains how resources should be organized and allocated among products and industries and how income should be distributed among individuals and over time, but in the restricted sense mentioned above. We could employ conditions of economic organization and particular "offshoots" of welfare economics

¹ While the concept of indifference curves were developed by Pareto, much of the basis for welfare economics must be attributed to F. Y. Edgeworth, *Mathematical Physics*, London, 1881.

which suppose measurement of all relevant quantities is possible and that a unique optimizing (mathematical maximum in community welfare) organization of resources and distribution of income can be specified. It is not, however, necessary to go this far in useful application of welfare economics to policy problems.

Pareto Optimum and Contract Curve

We begin our discussion of a bargaining framework, since it appears appropriate in terms of such policy problems as conflict among farm organizations in means of attaining ends (e.g., free market prices and managed supply) or bargaining among farm and nonfarm groups in the extent of compensation to be awarded agriculture for its contribution to abundant and low-priced food. For purposes of generality, we simply suppose two classes of assets, goods or services which are to be allocated among two individuals or groups. Starting from a historic or current distribution, how can the quantity of these be reallocated with certainty of increased total welfare, or with guarantee that while some gain, others do not sacrifice and positive-sum outcome in aggregate utility is given.

To illustrate these opportunities, we resort to the Edgeworth opportunity box in Figure 8.1, where we suppose two individuals (or groups, if we

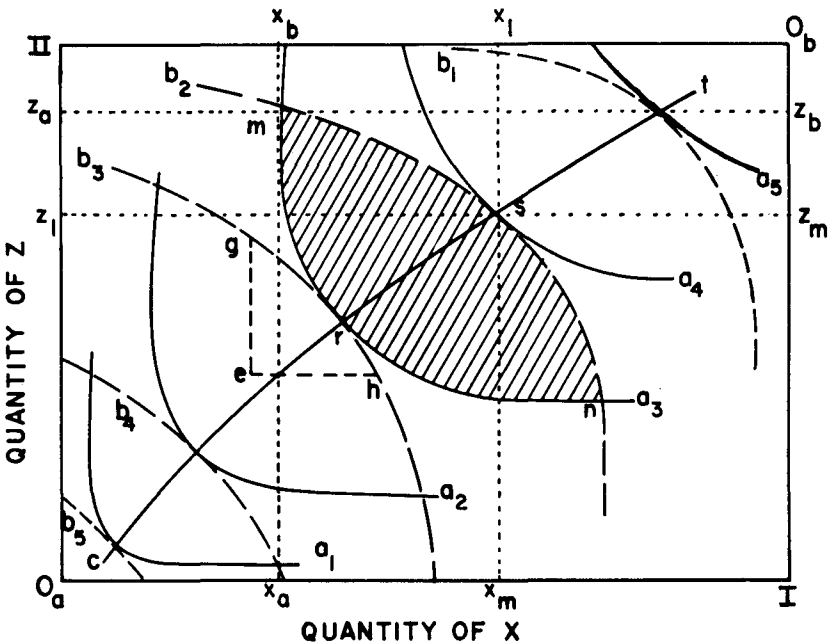


Fig. 8.1. Opportunity Box for Pareto Optimum in Allocation.

could suppose that internal indifference maps are sufficiently similar) denoted as A and B and two commodities, services or assets denoted as X and Z . The box represents the total quantities of the two goods to be distributed between A and B . Quantities are O_aI (equals O_bII) of X and O_aII (equals O_bI) of Z . The indifference map denoted by solid indifference curves is for A ; that indicated by dashed curves is for B . The map for A is in the usual position; that for B is "upside down" with origin at O_b and with level of utility characterized by $b_1 < b_2 < \dots < b_i < \dots < b_n$. Hence movement along any vector originating at O_a causes A to have greater welfare; along any one originating at O_b allows B to increase welfare. Obviously conflict can arise, one being made better off and one worse off, from a large number of reorganizations. Any point in the opportunity box represents an allocation of products between the two individuals. Point m is one such allocation with products allocated as follows: O_ax_a of X and O_az_a of Z to A , O_bx_b of X and O_bz_b of Z to B . But this allocation is one allowing reorganization and policy to increase welfare of one or both individuals, thus guaranteeing that total or community welfare is increased.

Since an indifference curve is an isoquant indicating all combinations of the two products which provides the same utility, movement along it, representing change in the mix of products to the individual, denotes changes which make him neither better nor worse off, compared to the initial quantities of products allocated to it. Thus, starting at point m , we can move rightward along indifference curve b_2 for individual B . Any point along b_2 to the right of m thus intersects an indifference curve of greater utility than a_3 for A , up to the point where b_2 intersects a_3 on the lower side. Hence, we can find many new proportions or allocations, starting from m , which provide A with more utility but which do not subtract from B 's utility. Any one of these is, therefore, an allocation preferred over m . It guarantees positive-sum utility outcomes to the community represented by summation of A and B . Each of these new alternatives in allocation will take some of X away from B and give it to A , but will transfer some of Z from A to B . In other words, the two individuals can make a trade of products, leaving B as well off as previously but increasing welfare of A . One such reorganization allows maximization of A 's utility, with utility of B remaining constant at original level as denoted by curve b_2 . It is that at point s , denoted by tangency of b_2 , B 's constant utility curve, with a_4 , the latter representing the highest indifference curve of A which can be attained without worsening B 's position. If we select a point in allocation allowing a higher level of utility than a_4 for A , we would necessarily lower utility of B below the level indicated by b_2 . We would make A better off at the expense of B . Being unable to compare utility quantities between A and B (i.e. we can only assume $a_4 - a_3 \neq b_3 - b_2$), we cannot say whether this utility sum is greater or smaller than that represented at point m . We have no certainty that $(a_4 - a_3) + (b_3 - b_2) \geq 0$. Or, if we assume that we have n individuals involved in

such re-organization and if Δ_i represents the utility change, either positive or negative, of the i th individual, we have no certainty that:

$$(8.1) \quad \sum_{i=1}^n \Delta_i > 0$$

Hence, for our two-person case, a indicates the highest position, with re-allocation of products, to which we can lift A without reducing B 's welfare. At this point we have an allocation: $O_a x_m$ of X and $O_a z_1$ of Z to A ; $O_b x_1$ of X and $O_b z_m$ of Z to B .

Similarly, starting at point m , we could move downward along a_3 , denoting reallocations which hold A 's utility constant while increasing that for B . In this Paretoan sense, the extreme allocation would be at point r , allowing a maximum gain in utility for B without sacrifice for A . But any point within the cigar-shaped boundaries enclosed within intersection of a_3 and b_2 is one which guarantees an increase in total or community welfare. Points on the boundary, away from the intersections of the curves, allow one individual to be made better off, with utility of the other constant. All points within these boundaries represent allocations which make both individuals better off, and thus increase community welfare over points m and n . We cannot say which point within or on the boundary of this Paretoan area is best, since this statement would require cardinal representation of utility for the two individuals. We can only say that any of these allocations is better than that at point m or n . But in general for changes which lead to points within the "cigar," we can be certain that the inequality of (8.1) prevails and positive-sum utility outcome is guaranteed because Δ_i is positive for all individuals. Thus, in economic progress such as characterizes agriculture, we guarantee community welfare gain where change in income and consumer's surplus is positive for all farmers and consumers because it falls within our bounds, but not if the new distribution falls outside the bounds.

Given the level of utility of one individual, distribution which maximizes the utility of the other individual is denoted by tangency of the indifference curves, indicating that the marginal rate of substitution between the two products is equal for all individuals. The latter, then, is a necessary condition in economic organization if welfare of the society is to be maximized. It is similarly true, as indicated below, that marginal quantities must be equal for other inter-unit allocative opportunities if utility is to be maximized. It is not a necessary condition, however, when we search only for changes and reorganizations which simply guarantee positive-sum outcomes, without the restraint that they define an optimum in the sense of maximization.

The line cl is a contract curve, a locus of points of tangency, defining equal marginal rates of substitution for the two sets of indifference curves. Welfare is never maximized, even given inability of interpersonal utility comparisons, for any distribution not located on the contract curve. For other points, we can always move to the contract curve, mov-

ing at least one or both individuals to a preferred position. But once on this curve, it is impossible to move to any point not on it without making one individual worse off than previously. The curve cl then traces out allocations which are consistent with maximum welfare. Any allocation from which it would be impossible to improve position of one without lessening position of the other is an economically efficient allocation. Any policy leading to such a position is a change increasing economic efficiency. We cannot, however, say which point on cl represents a social or community optimum, since movement along it will always increase utility of one while decreasing that of the other individual.

Various points in the opportunity box represent areas of bargaining which may lead to trades and agreement or to pure conflict. Points not on the contract curves are those where trades are possible between groups, such as between agriculture and taxpayers in general or between two competing farm organizations. Starting at point m , movement down a_3 makes B better off and A no worse off; movement down b_2 makes A worse off with B 's position maintained. Recognizing this, the two can bargain and make trades, each giving up some of one product or activity and gaining some of the other, which leads to improved position of both.

In agricultural policy, farm organization groups might try the Paretoan game in respect to level of support prices and degree of production control (supply management) or freedom and ascertain whether aggregate welfare might still be increased. Once, however, the contract curve is attained, bargaining and trades can no longer be made which increase welfare of one without causing sacrifice of the other. As a special case, an important question in this respect is: Can abundance be increased and real price of food be lowered further with benefit to consumer and without sacrifice, or with some gain, to farmers? During one realm of demand and price elasticities, farmers could increase food output at net gain to both mass groups, with the public gaining more control over knowledge creation and its distribution to agriculture and farmers losing more control over knowledge creation and the market development of technology. Under the present demand and price elasticity realm, this appears no longer to be possible in the free market, although the "free market" may be modified by policy mechanisms to still guarantee these positive-sum outcomes. It is no longer possible in the sense that rush of output against inelastic demand and lower prices allows positive outcome for consumers but negative outcome for producers as a group. The positions on cl define only those of conflict, where further bargaining and rearrangement of position cannot lead to gain by both unless compensation is possible through a third variable or "outside good," to offset the loss of utility represented in the two-variable or product case.

Other Marginal Conditions for Welfare Maximization

Figure 8.1, as well as explaining reallocations which lead to *increased group welfare*, illustrates conditions necessary for *maximum community welfare*: The marginal rate of substitution among goods must be equal

for all consumers as reflected in tangency of sets of indifference curves. This condition applies in allocation of the same goods among different time periods, as well as among different goods in the same time period. Certain other marginal conditions must also hold true for maximization of the social welfare function. Hence, policy also can be judged in respect to the sense that it leads in the direction or attainment of the complete set of marginal conditions, as well as in terms of simple guarantee of welfare increase. We review the additional marginal conditions but briefly since their implications and importance are apparent.²

For allocation of resource among two producers of the same product, the marginal rate of transformation of resource into product must be the same for both. If not, total product to be distributed among members of society can be increased by transferring resource from one to the other producer.

For proportion of resources used in producing a given product, the marginal rate of substitution between two resources used in producing a given product must be the same for all producers. Otherwise resources can be exchanged, allowing a greater output of one or both producers as in the manner of Figure 8.1 where we now suppose X and Z are factors used by two producers. The total product to society can be enhanced if X and Z are distributed so that isoquants are tangent.

For proportions of resources used for different products by different firms and industries, the marginal rates of substitution among factors must be the same for all producers and industries using them. Otherwise, as suggested by Figure 8.1, where A and B are different products and X and Z are different factors, output of one or both products can be increased, allowing larger aggregate income to be allocated among consumers.

For proportions of products produced with given resources, the marginal rate of transformation among the same commodities must be the same for all producers. If this condition is not represented by appropriate tangency of production possibility curves, it is possible to increase the combined outputs of products of all producers without increasing inputs of factors. In other words, considering b_i and a_i to be production possibility curves, an optimum is indicated only by a tangent pair.

For transformation of factors into product or substitution of resources and products over time, the above marginal conditions must exist, with modification to allow discount of future quantities for time, otherwise inter-

² For further detail on these conditions, see the following: H. Myint, *Theories of Welfare Economics*, Harvard University Press, Cambridge, 1948; M. R. Reder, Columbia University Press, New York, 1947; I. M. D. Little, *A Critique of Welfare Economics*, Oxford University Press, Oxford, 1950; J. M. Buchanan and G. Tullock, *The Calculus of Consent*, Michigan State University Press, East Lansing, 1961; T. Scitovsky, *Welfare and Competition*, Richard D. Irwin, New York, 1951; A. P. Lerner, *The Economics of Control*, Macmillan, New York, 1944; Earl O. Heady, *The Economics of Agricultural Production and Resource Use*, Prentice-Hall, New York, 1952, Chap. 21; F. Bator, "The Simple Analytics of Welfare Maximization," *Amer. Econ. Rev.*, Vol. 47; and N. Georgescu-Roegen, "Choice Expectations and Measurability," *Quar. Jour. Econ.*, 1954.

temporal reallocations could be made to increase total product of one time period without reducing that of the other, or with product of both periods increased.

For joint allocation of resources to production and consumption, the marginal rate of substitution between two commodities in production must equal the marginal rate of substitution of the two commodities in consumption. In other words, the production possibility curve of the producing unit must be tangent to the indifference curve of the consuming unit. If the b_i in Figure 8.1 are production possibility curves and the a_i are indifference curves, movement from the product mix at point m to that at point s allows utility to be raised from the level indicated by a_3 to that indicated by a_4 .³

For allocation of time to production and consumption or leisure, the marginal rate of substitution between commodities purchased with income, X , and leisure, Z , must be the same for all persons. (We simply transform production into money income and the commodities which can be purchased with money income for this comparison.) If it is not, Pareto movements can be made within an opportunity box to attain the contract line ct in Figure 8.1.

In modification of the above points to allow for consumer preference, location of resources and the effect of transportation costs on factor prices, to account for disutility of work and to allow discounting for time, we might aggregate these conditions as follows: The marginal value productivity of resources used by one firm, in one industry, at one location and in one time period must be equal to that of another firm, industry, location and time period. It is, of course, the marginal value productivity, rather than marginal physical productivity or the value of the marginal product: to allow the consumer to express the relative weight which he attaches to a particular product, produced in varying quantity, or the relative values attached to alternative products forthcoming in various proportions, against the supplies of factors used in producing them. Alternatively, it can be stated that the marginal cost of product must equal price of product for all commodities, firms, industries and locations. In general, too, the equilibrium or stability conditions of the competitive firm, meaning marginal transformation and substitution rates equal to price ratios, must hold true and the consumer must equate slopes of budget lines and indifference curves. For the above summary conditions, we refer to resources and products of given quality. Those of differential quality can be considered as different resources and commodities, with exactly the same conditions applying to them.

Maximization of the social welfare function would generally suppose pure competition of firms (although pure competition does not have to

³ The framework proposed in this condition is generally static. However, in a broad sense and more difficult in actual measurement, the same marginal conditions generally must prevail against all dimensions, whether these be in products, space, and time or over products such as uncertainty and income, time preference and saving, etc.

be postulated in using propositions of welfare economics in specifying agricultural policy leading in positive-sum outcomes as between alternative groups such as farmers and consumers or two groups of farmers). Under pure competition, attainment of all the stability conditions, defined by equation marginal rates of transformation and substitution with price ratios, would automatically result in attainment of the above conditions. This would suppose, of course, that markets are sufficiently perfect to reflect accurately the marginal value productivity of resource and the relative preferences of consumers. Quite obviously, these conditions cannot be attained where mixed organization exists, with some firms and industries equating marginal costs with marginal revenue of commodity and competitive firms equating marginal costs with average revenue of price, or, with monopoly firms in equilibrium of price exceeding average total costs and competitive firms with average variable costs exceeding price in the short run. (Existence of a single-firm industry with pricing to equate value of product with average and marginal costs does not obviate the maximum, however.) Here, then, we have one question of agriculture against nonagriculture. Should the latter be converted to pure competition to allow attainment of maximum welfare conditions, or should the former be converted to provide it with monopoly pricing power, to make marginal costs proportional to price for all sectors?

In the exposition above, we explained two types of changes: (1) those which guarantee an increase in aggregate welfare without particular concern with mathematical maximization and (2) those which lead to conditions necessary in maximization of community welfare. The latter is possible only under the condition that marginal quantities be equated in the vein of pure competition. But it is not necessary to impose all marginal conditions necessary for maximization, and hence the framework of pure competition, to cause principles of welfare economics to be useful in the analysis of policy. Rather than follow this approach, which is unrealistic in an economy where pure competition is not the general standard, we can simply follow the first approach, namely, the pursuit of reorganizations which guarantee positive-sum outcomes in the sense that change leaves all persons better off, or improves the position of one without deterioration in position of the other. We also can concentrate on policy issues which revolve around changes where some have been made better off at the expense of others; and inquire how these conditions can be alleviated to best insure positive-sum outcomes over all major groups. It is, we believe, the absence of this simple condition to guarantee welfare increase that gives rise to the major commercial farm policy problems under rapid development of agriculture.

Magnitude of Labor Return and Welfare Gains

If the organizational propositions underlying economics, specifying the marginal conditions for an optimum, were followed strictly, we would need only to compute the marginal value productivities of labor in

various occupations and locations, diverting human resources from points where it is low to points where it is higher.

In absence of refined computations for these purposes the average returns to labor in various facets of agriculture might serve as the gauge in directing it to sectors where wages for unskilled, skilled and other categories of labor and management are higher. This would be a simple solution if we could be certain that the comparative value returns were true reflection of net gains from economic reorganization and progress. It would be a simple solution if, as mentioned elsewhere, people were inanimate resources detached from households and communities like bricks, so that trucks could be backed up to the industry and labor resources could be carted to other occupations and locations where they have greater value returns. Bricks have no internal mechanisms which generate or reflect utility. But comparative value returns to labor in various occupations are not an expression of net gains from progress. This is true because people and families are attached to labor, and value return in the market—while reflecting roughly the relative gain to other consumers in the economy as it is diverted among industries—does not reflect the magnitude of utility gains or losses to the particular family.

This is a basic reason why farm labor, while importantly mobile, has not migrated rapidly enough to solve the problems of commodity supply and resource returns in agriculture. Labor return of our 48-year-old Kansas wheat farmer in Chapter 5 may be only half the wage of a skilled electronics worker in Minneapolis. The market suggests that consumers in general would gain if the Kansan shifted from wheat to electronics. But the figures are gross in their comparison. As is true for the majority of farm migrants of middle age or older, his main opportunity is in unskilled employment of industry. Even though the Kansas farmer's real income might have declined and is low, his real income often would be lower in nonfarm industry. An element of his real income gain or loss is represented in different cultural mooring as he moves from the community to which he has attachment and related values, to the urban complex where this is much less true. Part of his loss may stem from liquidation of his physical assets and reduction in their capital value. This type of loss attaches especially to machinery and buildings which have one supply price when furnished new from outside the industry, and another as used equipment from within the industry. Frequently, the loss stemming from the resource is less when retained in production than when sold in the market. Finally, to this, must be added the costs of liquidation and transfer to a new location and occupation. Gross market comparisons of labor returns in different industries do not account for differences of this kind. Too, to be fully effective as gauges, they have to be made in a market where all industries operate under conditions of pure competition, a condition which does not prevail entirely in the U.S. economy. If market mechanisms are used to serve as the guide in resource allocation and if certainty of net welfare gains from progress is to exist, then compensation for transfer indeed is logical, just as it is for

certain reorganizations which lead to income reduction without transfer.

Relative labor returns are a better gauge of net welfare gain from economic progress in reflection to farm youth first entering the labor force or to younger persons who are still flexible. Perhaps typically for farm youth with values oriented to urban life, the value surplus of non-farm return over farm labor return is a fairly true reflection of net social gain, the individual having no capital loss in transfer and some preferences leading him to nonfarm employment. An important explanation in differential migration rate rests on this difference in net welfare gain or less to younger as compared to older people.

Compensation Principle

Since direct measurement of satisfaction (i.e. interpersonal utility measurements) are deemed impossible, modern welfare economics says that reorganizations which improve the position of one person or group at sacrifice to another person or group cannot guarantee increase in total welfare except under one condition. The condition required is that the sacrificing individual or group be given compensation so that it is left no worse off than previously. In general, this use of the compensation principle would suppose that slack exists (nonoptimum conditions prevail) in an added dimension of resource use so that, through harnessing it, product and income can be increased to compensate some who must move away from a Pareto optimum in respect to given or established dimensions.

Society has made and does make direct use of the compensation principle. For example, when the public wishes land for a dam or highway to benefit fishermen and travelers, it recognizes that while the first group will gain, the landowner will sacrifice in income, home or both. Hence, it provides compensation in the form of monetary payment. If he were left no worse off, the payment would allow him to cover the costs of moving and investment in resources which will provide him as much real income as formerly.⁴ In a rough way, we might also interpret farm policies leading to extra market returns to farmers over recent decades as being application of the compensation principle. Through its investment in technological improvement and rapid supply increase for food, the public has brought forth gain to consumers in certainty and abundance of food and in lower budget cost for it alone, considering its low price elasticity. But farm families in aggregate have sacrificed, because of greater output against inelastic demand, in less revenue and capital losses. In rough, albeit imperfect fashion, society has tried to compensate farmers so that they are made no worse off, while total welfare increase is guaranteed through consumer gain.

⁴ We use real income to allow for the fact that the person with condemned property might also attach value to life in a particular community. Here, monetary compensation would need to exceed that to give investment returning money income equal to that of the previous property.

APPLICATION IN AGRICULTURAL POLICY

Welfare economics propositions provide one framework for gauging and recommending policy. Farm policy has its best basis, its claim for compensation because of the market distribution of gains and losses under technical progress, in some propositions of the general theory. The complete set of welfare principles stated above provides a set of logical conditions for economic reorganization and policy where the single-valued goal is that of maximizing the social welfare function. Selected propositions of welfare propositions applied alone to an industry such as agriculture have, however, less applicability and do not guarantee aggregate welfare increase. Not infrequently we find an attempt to apply to agriculture, alone and out of economy-wide context, the marginal conditions of resource allocation outlined above. Application of this particular subset of principles to (1) agriculture alone when certain conditions do not prevail elsewhere in the economy or (2) farming without accompaniment by the subset dealing with consumption and compensation, need not lead to aggregate welfare increase or guarantee positive-sum outcome from change in use of resources.

Certain questions are left unanswered by welfare economic principles. They do not answer questions of equity or distributive justice, starting from position of Pareto optima along a contract curve. They do not answer questions of politics and political power as these relate to economic policy and the gain of some at sacrifice of others. Many public decisions are made in a realm where the overriding interest is not group welfare but that of individual interest groups. For certain allocations or public decisions, particular groups are willing to conform with the notion of maximum community welfare,⁵ but for other decisions, prefer to improve their own position at the expense of others.

There are few major changes which can be brought about in complex societies where sacrifice for some individuals or groups is lacking. Many public choices and decisions thus refer to conflict along a contract curve, rather than to bargaining in movement to it. Further difficulty arises over the fact that not all sectors of firms and industries are organized under pure competition to allow attainment of the necessary marginal conditions and maximization of the social welfare function, nor are they about to let themselves be so organized. This is a condition applying as well to the elite planners under socialism as to firms in favorable position in enterprise economies.

Some thread of societal interest and optimizing does transcend the special interests of particular economic groups. If this is less true for the immediate period within society, it is more true for long periods where the pressing interests and conflicts of the moment carry less weight.

⁵ They conform with group interests in the sense that they do not withdraw if they are on the "losing side." Still, group choice or selection may provide them with positive utility, if not maximum utility gain.

For this reason it is easier for the numerous publics which make up a society to agree on more distant goals than on those immediately ahead. If it were not true that some over-all concept of optimizing or societal maximum prevails, social organization would retrogress and break down, with eventual dictatorial control by the "strong men" who rise over their adversaries in pursuit of maximum individual welfare at the expense of those with conflicting preferences. To abandon all concepts, elements and notions of possible betterment in welfare or collective position of community is thus inappropriate and inconsistent with the activities, efforts and aspirations of a society which obviously does have some subset of common public purposes. Welfare economics propositions dealing with community utility maximization do, therefore, have applicability in over-all societal sense. To belittle and entirely neglect all propositions of welfare economics would itself be inconsistent with the being of a society which maintains its organization, especially by democratic procedures and under wide range of individual freedom.

But just as it would be foolish to abandon all concepts of welfare economics and possibility of increasing the social welfare function, it would be equally foolish to suppose that society can be pushed with certainty to great heights on utility surfaces by an attempt to impose subsets of welfare economic propositions and the conditions of pure competition only on agriculture, an industry which uses a minor fraction of the nation's resources and has an inherent structure which violates these propositions and conditions less than other major industries and sectors. In fact, rapid effort and progress in imposing and extending the particular subsets of welfare economics propositions and pure competition on agriculture, while at least a larger proportion of resources (as compared to those of agriculture's) are employed under monopoly and related conditions, with the remainder and majority of resource employment falling somewhere in between these two extremes, has no certainty of increasing community welfare. This would not be true if equal progress and intensity were applied to imposing the same subset of conditions on all other sectors of the economy, or in applying the full set of propositions to agriculture, rather than just the subset dealing with resource allocation.

The resources of agriculture are no longer large enough to "save" the society, even if they were used twice as efficiently. Those of the remainder of the economy are. To reorganize agriculture, improving its productivity and releasing more of its resources to the general economy without making general welfare improvements in the other sectors, and without exercising the compensation principle, need not guarantee a community welfare increase. A positive-sum game is not guaranteed because the sacrifice of persons crowded out of agriculture is not guaranteed to be less than the gain by consumers in the nonfarm sector, or by farmers remaining in agriculture. This statement applies where some loss of money or real income occurs in the transfer and interpersonal utility comparisons remain elusive.

Those who wish to make economics apart from reality, too simple and

ruled purely by mechanics and arithmetic quantities, will discard welfare economics on this very point, by discarding its proposition of inability in interpersonal utility measurement because these propositions overrule recommendations based on arithmetic quantities and implicit assumptions of cardinal utility. But here is where welfare economics perhaps has its greatest relevance. In the sense of resource reorganization, the concept of a Pareto optimum, or simply a Pareto-better position, gives rise to suggestions of change which benefits different groups and the application of the compensation principle does provide a framework for getting greater utility under distributions which otherwise include both gains and losses.

Our argument is not with the general applicability of welfare economic propositions. Instead, it is with the attempt to apply only part of these rigidly to agriculture when they are equally, and sometimes more widely, violated by industries employing more resources. Is it an inefficient allocation of the economist's time, where he purports to be concerned with the broadest and most urgent policy problems of society, to dote on the figures of agriculture, showing how inefficiently resources are organized and how many of them could be transferred out of agriculture to increase the social welfare function, but does not do similarly for the major portion of the economy outside of agriculture? The marginal productivity of his time would be much greater if applied with equal intensity to that broader expanse of human and capital resources which lie outside of agriculture. The waste of resources, and the potential for reorganizing them to increase national product, indeed are greater over other sectors of the economy.

It is perhaps unfortunate, in the allocation of scarce societal research resources, that the public has several thousands of economists and other scientists assigned to the agricultural industry, computing quantities to determine its efficiency, increase its productivity and extend the transfer of resources out of it, with hardly a handful directly assigned (as in the manner of public research institutions) to other sectors of the economy where the majority of human and capital resources are invested. Certainly the same resources would allow closer attainment of the social optimum if more of them were allocated to lowering the cost of housing and medicine to the relative level of food; in extending research and facilities for the large number of persons whose psychiatric moorings retard their output and utility level; in increasing the quantity and quality of education and other means for a fuller expression of human capabilities; in improving the abilities and allocation of a large body of unskilled labor; in improving the effectiveness of industrial plants and layouts; in tackling the problems of monopoly; and in lessening inputs for purely neutralizing advertisement in industries of imperfect competition.

The gauge of welfare economics, although lacking a lead for measurements where certain quantities are crucial for public decision and being unable to specify which of certain optima provide greatest social utility

or equitable allocations, provides some useful concepts and guides when applied to the entire economy or when the complete set of conditions is applied to a particular sector. The concept of inability in interpersonal utility measurement and the compensation principle, an important foundation in welfare economics, must accompany the subset of marginal conditions dealing with resource allocation if a particular industry is to be singled out for concentration, suboptimum conditions being allowed to prevail over a wider body of the economy. But once the complete set is applied, the general concepts have applicability and usefulness.

Without compensation, we cannot say that the social welfare function is increased by policy which increases food supply and lowers its cost to consumers at the reduction of income to agriculture, or that transfer of a farmer of older age into manufacture of zippers for cigarette packages, for benefit of consumers in total, will do so if the former has a conflicting set of values and lower real income in his urban setting. But with application of the compensation principle, this enigma can be lifted. The fuller set of welfare economics propositions has been applied by the public in farm policy of recent decades, more than by economists in agricultural policy analyses obsessed with the marginal or stability conditions relating to nonfarm consumer welfare. Application in policy of the complete set on a broader scale perhaps would have done even more in permanent solution of the basic problems of agriculture, and at less long-run cost to the general public. Rather than continuous annual payments as compensation to farmers for income reduction from augmented supply and as costs of carrying surpluses, lump-sum compensation to purchase land, cover capital losses and pay transfer and relocation costs could have more readily restrained the agricultural supply function.

Such alternatives need not be forced upon people against their values and in lowering their utility position. They could be put in the realm of individual choice and welfare betterment in the manner of discussion for Figure 8.1, the bargaining concept being used with bids to allow acceptance by those farmers who could see their utility position so improved. Or, under a range of policy alternatives, choices might have been offered, with the individual family better able to exercise its preferences in utility improvement. For example, rather than attempt to impose a single policy formulation on all producers and regions, such as withdrawal of a historic land proportion at a specific relative price, farmers might better be given a range of choices. (Chapters 12 and 14 discuss policy alternatives which provide choice to farm people and allow them to select alternatives which they appraise to increase their utility position, thus allowing positive-sum reorganizations to be favored.) Individual freedom and movement from the contract curve would not be violated since the family could make its own appraisal and choice. The choices to allow greater certainty of utility improvement for all concerned could simultaneously include public offer to purchase and retire land at a schedule of prices, public rental of land for specified periods, government purchase of rights to produce certain crops, eligibility for loans and price supports

at different levels for varying levels of acreage reduction and opportunity for complete nonparticipation by those attaching most value to complete freedom.

Under such a range of choices, and one needed to conform with differential regional change of agriculture and economic development, a particular point within the opportunity box of Figure 8.1 would be forced on no person. He would be allowed to make his own choice, and specify which shift pushed him towards the contract curve. The U.S. public has not been unwilling to appropriate funds in exercise of the compensation principle for agriculture. Its main impatience has been in the fact that money appropriated has not been used in a general manner to solve basic structural problems of the industry. A more complete usage of welfare economics propositions in the manner outlined above could have done so from the magnitude of public funds invested in some broad attempts to impose single molds on all persons and regions.

It is consistent with democracy and continuance of social organization that individuals have different values and indifference maps. It also is consistent that choice for the individual be allowed even in policy. Policy need not be maintained at a conflict position when opportunity for choice and movement to Pareto optima exists. The sharp farm policy conflicts of the 1950's have not given proper recognition to this opportunity.

In recapitulation, we propose that the portion of modern welfare economics, that dealing simply with Pareto-better movements within the "cigar" of Figure 8.1, which stresses change to guarantee utility gain by all individuals or groups, is a useful basis for analysis of the problems of commercial agriculture. The problem specifically is that of a rate of development in the industry which distributes gains of progress to consumers but distributes the main costs of progress to agriculture in aggregate. We wish to specify change and policy which allows simultaneous gain to contrasting groups such as these, causing some to be made no worse off while others are made better off or which generally insures positive-sum utility outcomes from progress over all major groups. Thus we do not search here for the "very best" organization and social structure; we are satisfied with the second, third or " n th best," as long as it represents a higher community welfare level than that now existing and does not cause major sacrifice to fall on some in order that others may gain. This is a "workable" concept of welfare economics for policy purposes and does not require us to force a rigid application of marginal conditions and pure competition. A concept of optimizing and the "first best" economic organization is useful as a long-range goal, but it is more difficult to apply in the short run when many of its basic assumptions in respect to industry organization and equilibrium structure do not prevail.

Distribution of Gains Under Fluctuating Output

We have been talking about progress changes which distribute gains to some and losses to other persons, thus calling for policy and compensa-

tion. But there also are other economic phenomena which do not provide a symmetrical distribution of gains and positive-sum outcomes within agriculture. Cycles in output and price of farm commodities fall in a realm of benefit and sacrifice which do not guarantee aggregate welfare gains. They represent phenomena not unlike that of the wider-spread business cycle. For the latter, society has decided that gains and losses are not spread in a manner to guarantee positive-sum welfare increase from a market devoid of monetary and fiscal policy. It also is true that some producers gain as feed and livestock decline in one phase, and shoot to heights in another phase, of the farm commodity cycle. However, it is easily possible to find farmers who sacrifice under general progress and decline of relative price for farm prices and who clamor for compensation or other policy to eliminate these losses; but who gain from farm commodity cycles and who resist policy to eliminate them.

In welfare economics propositions there is no basic difference between these two cases. If net community gain cannot be guaranteed in the first case, absence of net welfare loss cannot be guaranteed in the second, as losses of some under commodity cycles provide the basis for gain by others. Policy is logically possible in either case to guarantee that losses do not outweigh gains in contribution to aggregate welfare. In this sense they are similar. In adapted policy sense, however, they are dissimilar. The first, stemming from progress, requires that change be continued but that compensation be provided for losses inherent in it; the second, stemming from particular configurations of supply function and producer response, requires elimination of instability and the losses to particular individuals which accompany it.

Similarly income fluctuations from weather provide distribution of gains and losses which do not guarantee positive-sum utility effect and provide logical basis for policy. With inelastic demand for farm commodities, gains to producers in aggregate are forthcoming from unfavorable weather and small crops. But again, yield losses are seldom distributed proportionately, and producers with full yields gain as those with no yields lose. Even favorable weather, which leads to bumper crops and reduced aggregate revenue under inelastic demand, brings gain to some as it brings loss to others. Those who further process the product as a factor, store it or otherwise engage in it through the market, may gain. But diminution of aggregate welfare is always a likelihood when it cannot be guaranteed that gain in utility to this group exceeds loss to farmers with diminished output. Hence, policy resting on storage to even aggregate interyear supply and crop insurance to provide equivalent of stable individual output becomes a means of preventing losses to some individuals when there is no assurance that gain to others is of sufficient magnitude to guarantee increase in aggregate welfare. Again, policy in this area for agriculture has its counterpart in national policy aimed at preventing fluctuations of the business cycle.

COMPLEMENTARY ALLOCATIONS

Conceptually, not all adjustments which provide potential increase in the social welfare function require a redistribution of products, services or opportunities in the manner of Figure 8.1. Choices are not wholly competitive, with one individual directly sacrificing so that another individual can increase quantity of a commodity. Prevailing allocations and technologies of production, including the use of basic human capacities, need not always fall at the boundary of the production possibility curve. If, for example, we view b_3 in Figure 8.1 as a production possibility curve attainable with potential technology of given resources (or capacity of a human), point e is a nonoptimum and inefficient use of factors where it represents the same quantity of resources as b_3 . We can move production over any vector between eh and eg , with a gain in both. It is not necessary to reduce the quantity of one product in order that more of another be attained. We also can think of the horizontal axis as representing the amount of utility or income distributed to one person and the vertical axis as representing the amount to another person. If, by different technology or skills, the same resources can be used to extend production to the boundary of b_3 , then reorganization is possible which need not lower the utility of one individual so that another may gain. Any position on the boundary of b_3 , defined within the range opposite the angle at e , or over the segment gh , provides opportunity for more of income or utility to one individual without sacrifice to the other, or more to both. We need not know that utility surface of either individual or group to know that certain "movements" from e allow change of positive-sum utility outcomes for the community. Any position off from e , and over the quadrant egh extending from it, allows attainment of a higher level of utility for both, or a higher level for one without sacrifice by the other.⁶

Opportunity in Agriculture

There are many opportunities for adjustment of resources in agriculture which are similar to movement from e to a boundary position on b_3 . A large number of these do not involve gain of one individual at direct expense of another, even in the sense of trade in commodities (although some have this effect indirectly through the market). Policy aimed at market standards and qualities of food products sometimes has been of this general character, allowing a more specific and certain price for the producer and greater quality and pricing for the consumer. But the important area of opportunity approaching our example of nonboundary position and mutual gain of individual and consumer sector is in appli-

⁶ If b_3 were a production possibility curve for two physical products or services and we could construct a community indifference map, the isoquant which intersects e is lower than any one which intersects b_3 between g and h , maximum utility level being defined by tangency of b_3 with an indifference curve between points g and h .

cation to human resources of agriculture. To leave them, divert them by subsidy inverted towards agriculture, blindly counsel them in this direction alone and educate them for farming only, is to lessen the level of attainment for many. Aided and compensated in training and moved to growth industries, not only could a larger number of farm persons have greater income and rewards for their skills, but also consuming society could be provided with more commodities and services which it values as income grows. This would be accomplished without sacrifice in supply and price of food where remaining farmers are capable. This condition and opportunity exists over a wide range of human resource in agriculture, especially children and younger persons. Here, the adjustment of agricultural resources in the sense of a social optimum need not require sacrifice on the part of the individual and hence does not require compensation. In general the quantity of educational and guidance resources now in use could be diverted to a much greater extent to accomplish this shift.

There are, of course, alternative uses of these resources which would benefit the general consumer and the individual going out of agriculture, but which conflict with the interest of other labor or economic groups. It is not currently possible to invest in medical education, to transfer youth from agriculture into medicine, in quantity which brings reward of human effort in the two fields together, without some trespass on the interests of the medical profession and some confrontation with obstacles to entry by the latter. Neither is it possible for labor from agriculture to transfer to all areas of labor union jurisdiction without encountering conflict of interest and restraints on entry. Still, there are sufficient realms of employment opportunity where conflict is absent or small and a redirection of educational resources could transfer a person from agriculture to an area where his long-run rewards would be extremely greater. In selected growth industries which provide increasing factor rewards, the transfer process is gradual and the growth and gain for consumer enhancement is rapid enough that existing labor is not squeezed out. The opportunities for such general complementarity between reward to agricultural labor resource and consumer gain are great enough that it is unnecessary to invoke the principle of compensation at every turn, or to focus on policy which is negative in the sense of failure to recognize the broader opportunities in economic growth, and turn only to policy of supply control and resource containment.

As we have mentioned previously, it is likely that early developmental policies for agriculture fell in a realm of "unanimous consent" or general complementarity, such as movement from e to a point between g and h on b_3 as a production possibility curve in Figure 8.1. Public action in land settlement and at the initiation of public agricultural institutions could likely increase supply of farm products with positive gain in real income and utility to aggregate agriculture and consumers at the same time. The rapid growth in market for food and higher demand elasticities provided a realm allowing or approaching this condition. In more recent

decades, however, this market and demand realm no longer exists and rapid output development of agriculture can cause gain to consumers but sacrifice to farmers in aggregate. Developmental policy is still desirable and needed to bring national welfare increase, but it needs to be mixed with policy to allow both consumers and farmers to derive positive gain from progress in agriculture; or where this is impossible through the market or market improvements to do so, it needs to provide compensation which guarantees against costs of progress falling heavily on agriculture.

Choices in Conflict

Welfare economics makes no attempt to say which of the reorganizations along the contract line are preferable. It doesn't even attempt to state which of two Pareto optimum positions are best, except as bargaining range is defined for individuals and groups. Neither does it say whether a given allocation or distribution is equitable or optimum.

In starting out from point m in Figure 8.1, for example, we can move to point s , with certainty of greater aggregate welfare. But is s an equitable distribution? Would point r be more so, supposing that the bargaining power of A is sufficiently great to move the position from m to s rather than r ? Or, is the tangency point between b_4 and a_2 even more so? Principles of welfare economics as they now exist can only indicate changes which will lead to movements up the total utility surface, without indicating whether the surface is an ant hill whereas mountains might exist for ascension. But society does have to make decisions between ant hills and mountains of utility. It has to do so even where competition and conflict exist. Within some realms, it can use the compensation principle to override utility loss in certain groups. In other cases it cannot, or does not, because it would end up holding its own hand. These cases must be decided largely in the political process, but not necessarily in complete domination of one group by another. Fortunately, many such issues have not always arisen for agriculture. And where they have, they have more nearly been among the competing commodity, regional and organization groups within agriculture. Society, having made certain choices about the altitude of ant hills as compared to mountains, has quite readily invoked the compensation principle on behalf of agriculture.

LONG-RUN AND WELFARE PROPOSITIONS

Our statement in the last chapter was: Policy designed for agriculture should view the long-run structure implied in economic growth and allow and encourage at least gradual progress in this direction. In fact, progress ought to be as rapid as possible within the restraints of change as fast as culture and value structure allow it, and as rapid as is consistent with general welfare gain and the ability of policy to guarantee the same.

There are several reasons for encouraging this progress in agriculture.

The force of prices, even in the factor markets if shut off in farm commodity markets, provide a strength which cannot be offset by policy aimed at an industry employing less than 10 percent of the nation's capital and labor resources. Farm people increasingly do not want to be blocked off from the values and consumer patterns of other society, but increasingly wish to meld with them. Finally, the nation does have over-all public purposes which call for and require progress.

The process of progress is not blocked, perhaps only slowed slightly if at all, even in industries which have some monopoly power or other control over their commodity prices. Some of the more monopolistic industries have displayed great progress, not only in technical discovery but also in factor combinations which are consistent with resource prices under economic growth. The electrical equipment industry has been highly progressive, as compared to agriculture or other competitive sectors, even though it was convicted of monopoly practice and price-rigging in 1961. But even though it, like many other industries which are not pure competition, did not compete on the basis of commodity prices, firms did compete for resources in developing new products and in furthering technology used in producing given commodities.

Similarly, the agricultural industry needs to progress more than in the sense of adopting new biological practices. It needs to shift firm size and capital-labor structure in line with factor pricing. It will do so regardless of farm price policy, even if only as a result of farm youth who are attracted to industry because of higher labor earnings. This will be true increasingly as the nation invests more vigorously in education, with more reaching rural areas where it has been scantiest and as it promotes national economic growth, with the latter favoring the relative expansion of nonfarm sectors. The farm youth so inclined—and the data indicate that the extreme majority has been so inclined since 1940—will continue to turn a muted ear to the professional and industry spokesmen of agriculture who extoll the virtues of the industry and its need for price supports at levels to hold the structure of agriculture to the past. An "Indian reservation policy," one attempting to maintain agriculture as a "national muesum" with its image drawn from history, is impossible for these reasons. This does not rule out the very real need for compensation policy and other policy aimed at price instability and the desirability of putting agriculture on the same footing as other industries in respect to market power and capture of an equitable share of economic progress for themselves. It only means that any attempt of policy to retain an obsolescent craft structure of agriculture is impossible under the level of growth already attained and rates in prospect for the U.S. economy.

Our view in application of the propositions of welfare economics is similar. Emphasis does need to be on a "larger pie" to be allocated among consumers. Gain in community welfare is certain if the absolute size of the piece going to each consumer is larger, even if it is *relatively* smaller. Modern welfare economics, as we apply it, only tries to tell how to increase the size of the national product, with each person getting a

larger income, even if it is a declining percentage. The several marginal conditions spelled out above are more general guides in the direction of a social optimum organization for movement in the long run. In the short run, greatest urgency for agriculture is simple movement from a point such as m to one within the Pareto-better area, rather than to one outside of this area. The proposition is not that distributions be changed from l to r or vice versa. The Marxists rested their case on the supposition of measurable utility and the redistribution of a pie of given size. Economic growth has itself been rapid and awarding enough in the United States that it allows possibility of equitable sharing of a larger pie. Modern issue, and especially that in the farm economy, needs to be more with the continuance and the equitable sharing of economic progress rather than concentration on a given product and its redistribution.

The profound recommendations of modern welfare economics, translated slightly, are the following: Economic growth and a larger aggregate product should be promoted with vigor. No individual should end up with a smaller absolute share if increase in the social welfare function is to be guaranteed. Individuals may have smaller relative shares, but no one should have smaller absolute share. This, especially, is where farm policy becomes laced to welfare economics and general policy. The fundamental claim of agriculture to compensation policies falls in this realm and itself arises from progress. But if the compensation method is made too binding and apart from progress and change, it can prevent (in a small way, since the industry uses relatively few resources) rearrangements which lead to progress and a larger national pie to divide.

We are supposing here, of course, that the same conditions will hold true for other industries—that monopolistic and general feather-bedding policies of other groups will not be allowed in sufficient strength to stop growth in product, or to invert it. And generally this has been true. Progress, although its rate has not been at maximum feasible level, has been quite rapid, even with some degree of monopoly in particular sectors, and the spread of the fruits of progress over the population has been wide. So true is this that social reform concentration in the United States hinges less on income redistribution and more on the promotion and continuance of economic growth. Under growth, and development of countervailing power, the bargaining process, labor and industrial sectors guarantee themselves each a larger absolute amount of an augmented product. Most groups are generally so absorbed in the success of this process that political interest in socialistic movements to appropriate the capital of industries or distribute its return equally to the populace are approaching the mathematical limit of zero. In the context of economic progress and a growing absolute share to both capital and labor groups, the general propositions of modern welfare economics have been broadly used in American society. Social legislation to create some equality of bargaining power has helped to assure these mutual or Pareto-better gains.

Principles of welfare economics that suppose compensation to redress sacrifice, and guarantee that individuals be left no worse off from change,

do not require permanent farm subsidy for this purpose, or that new entrants in the industry, who have not experienced sacrifice from previous change, be compensated equally with those who have. Agricultural policy would have been much more efficient, supposing funds of the magnitude appropriated in the past and used for this general purpose, had it made these distinctions in compensation. It would have been more efficient in better compensating those actually making income and welfare sacrifices and in pulling agriculture to new structure consistent with economic growth. Neither do the propositions state that when compensation is made to agriculture, compensation should be made to related industries and groups which have made no sacrifice.

Certainly, then, compensation funds of the 1950's could have been used more efficiently if structured into programs which channeled more of public appropriations to farmers and less to grain storage sectors which were given call for investment and return far beyond that required in the normal food market. But in the same vein, the propositions would say that all persons making sacrifices in economic reorganization and progress should be compensated if increase in community welfare is to be guaranteed, and not just part of them. This was not entirely recognized in the massive farm policies of the 1950's. For example, town, trade and public service families in rural areas are tied nearly as close, and suffer income reduction almost as readily as farmers when revenue of agriculture declines. They are no less important than farm people. As productive agents and consumers in the next generation, their sons and daughters are equally as important as farm youth. Oversight of this group, and the fact that welfare increase cannot be guaranteed unless compensation is awarded all who sacrifice materially, has led to resistance, and likely prohibition, of policy forms which could have been more effective than those used in the 1950's and 1960's, in solving the supply and storage problem of agriculture. In general, townspeople in rural areas resisted and lobbied against regional concentration of the soil bank and conservation reserve because, while it compensated farm people and drew them from agriculture, it lowered income of rural businesses.

The propositions of welfare economics would suppose that under allocations differing from the compensation policies of the 1950's, either (1) fewer funds would have been necessary for complete compensation, with savings available for better educating farm youth and thus generally extending national welfare, or (2) more complete compensation would have been possible from given funds. Townspeople with losses in income, rather than owners of storage facilities (who not only obtain volumes of grain much greater than normal, but also made tremendous return on investment), would have been awarded compensation. Similarly, older farmers who sacrificed income and capital values would have had greater proportion of public funds so allocated while beginning farmers not previously realizing sacrifice, or without large indirect sacrifice from parents and with flexible opportunity of nonfarm employment, would not have been compensated through eligibility as new farmers. Neither

would nonfarm individuals have been allowed to buy up land and divert compensation to themselves when it was originally directed to farm families. These are general constructs in farm policy formulation to best allow gains and compensation which guarantee utility gain and guarantee against costs of progress.

Compensation, Poverty and Equity in Income Distribution

Modern welfare economics disavows ability to measure utility, and, hence, to specify redistributions of personal incomes which will optimize the social welfare function. Accordingly it has emphasized change and reorganization which allow more to all individuals concerned or, minimally, with no loss to some and gain to others, and with compensation to those who should actually incur loss. These propositions are axiomatic. In the sense that they specify conditions guaranteeing community welfare increase where utility of individuals is not measurable, they cannot be refuted. They have much applicability for the commercial farm problem which falls in this general category. But they have less applicability for low-income farms which are on the fringe of commercial agriculture, those sharecroppers, mountain farmers and others of the poverty class whose resources are so few that they produce little income. This stratum of agriculture is little affected by major economic reorganization which shifts economic positions between individuals and groups because it produces little for the market. Its problem is not that the absolute position of families in it is lowered by reorganization and change improving the position of others, but only that their income is extremely low and inconsistent with the U.S. standard in any case, and especially under rapid postwar growth in per capita income for the nation.

The two problems are quite different, not only in their case but also in their relevant role in policy formulation. For policy that is compensation-oriented, to redress potential loss from economic change and reorganization, it is consistent that individuals be compensated in line with magnitude of their sacrifice. For this element of policy, it is consistent that a California cotton farmer, with income sacrificed being 100 times that of a Mississippi tenant, should expect to receive compensation of this relative magnitude as compared to the southern farmer. It does not call for limit on magnitude of payment, restricting the California farmer to less than sacrifice and awarding the Mississippian more than his original return. This is not a problem and concern in the optimum distribution of a given income but rather in organization to guarantee that no one is made "worse off." Modern welfare economics offers little specific recommendation on the distribution of a given income, since it does not recognize measurability of utility.

But society has something to say in this respect. A value of American society has never been that income should be distributed equally. To do so would assume identical utility function for all individuals, supposing that exactly an i th dollar of income has equal marginal utility for all persons. To do so, too, would result in awards of fixed magnitude to all

persons, without incentive in effort and productivity so that marginal outputs are drawn forth to approach the marginal social value of this output, or to match the marginal disutility of effort. Even Russian planners soon found this to be true and scheduled awards to human effort somewhat in the manner of the market. U.S. society has said, at least in its actions, that while it has been willing to embrace the general concept of modern welfare economics in the realm of reorganization and the compensation principle in respect to agricultural policy, it has found negative or pure passiveness interest in respect to equality in income distribution. It has not guaranteed wealth to those who sing while others store the grain, but in general it has held a concept of rough minimum in income and services to which all persons should have some right. It has not made judgment about the exact algebraic nature and magnitude of parameters describing the consumption functions of all individuals, but it has said that the marginal utility of income for persons who have very little must be greater than that of individuals who have very much income. To this extent, it has made quantitative judgment about relative utility of income among individuals. This judgment is reflected in progressive income tax rates, exemption of food from sales taxes in some states, relief food allotments and certain other public legislation.

Income has always been low for a large number of farmers such as those in the Appalachian and Cumberland mountains, and it would have been almost equally low even without progress in the rest of the economy. This problem of equity in income distribution need not be viewed entirely as one apart from possible gains in progress, however. It has been too greatly separated in the past. Consequently, society has not aided sufficiently in development of a large pool of human resources which might otherwise have been possible. Education and other training and guidance facilities in most of the true poverty areas of agriculture have had small investment. This, along with some malnutrition stemming from poverty, has prevented development of human resources which might have added greatly to economic progress. Over the longer run, a higher minimum restraint for educational investment and for personal income, to improve health and human aspiration, can benefit not only individuals falling in the poverty class, but also the consuming society in general. Gain can be mutual, as in moving from m to a point within the Pareto-better area of Figure 8.1, through opening of greater economic opportunity for the former and through expanded supply of skilled and professional manpower to growth products and industries for the latter. One set of policies needs to be directed towards this problem of poverty and potential productivity of human resources, another towards those problems of welfare gains and losses stemming more directly from conscious public policy of economic progress. There are, of course, subsets of policy elements which can be the same, or similar, for the two major segments of agriculture involved.

Poverty in particular sectors of agriculture has existed so long that its initial causes are largely forgotten and unimportant. Some did stem from

social change nearly a century back, either as capital assets were wiped out or as individuals had their own labor freed in a restrained market. Others—those in the more mountainous areas—had resources which were comparably adequate in an immature subsistence economy, but entirely inadequate in a mature, growing economy. Smallness of resources and detachment from markets have largely extended incomes into the present which were comparatively adequate decades back. These conditions have prevailed through several generations, and persons suffering first incidence of loss, where change was the cause, are largely gone and can no longer be compensated in any systematic manner. Hence, the current problem is hardly one of recent or ongoing distributions of gains and losses, but largely one of poverty and equity in income distribution.

One question is: Can income be transferred to this group from other sectors to increase total welfare? In earlier days when cardinal utility was supposed, the conscience of welfare economists would have been bothered little in answering this question—had someone made the utility measurements for them. But this problem can be thrown into a context of welfare economics and social policy which is not based on cardinal utility. Given the human resources that are involved and the current product produced by them, can reorganizations be made which provide this group of individuals with gain while maintaining or improving the position of other consumers? It appears that this question can be answered positively. As mentioned previously, here exists a pool of human resources which has had little opportunity, in the markets of previous decades and generations, to contribute to the product of general society. In a similar vein, it has had little opportunity to develop talents and sell them at prices increasing its own income. Research in psychology indicates that the potential of rocket scientists, engineers, biologists, managers and doctors is generally as great for children from this stratum as for those from other strata of society. Investment in education particularly can allow gain to children of this group, while also allowing more product and gain to other groups in an expanding economy.

GENERAL CONCEPTS OF PROGRESS IN RELATION TO NET WELFARE GAINS

Agriculture is not the only industry which has been uprooted in technology and factor employment. A general characteristic of a mature and growing society is shift in its makeup. Under economic progress, some industries expand positively in output and employment. Others decline, either relatively and absolutely. New industries and even new firms arise continuously while others disappear. Managers, investors and labor in new industries frequently realize large windfall profits as well as the high capital gains expected for participation in uncertain adventures. Investors in declining industries see their capital values melt away and laborers see their skills and group status developed in a particular occupation become inapplicable in another. Does net welfare gain always re-

sult from these continuous and simultaneous processes of blossoming and withering in labor and investment returns?

If society were certain that the welfare gains to recipients of expected and windfall gains from progress exceeded the losses of those who sacrifice from it, economic expansion could take place with certainty of increased social welfare function, without public policy to provide compensation to the latter group. In a quantitative sense, increased group welfare under chance distribution of gains and losses would hold only under these conditions: The utility function of all individuals is linear and of equal slope or it is known with certainty that those with gain have little income and high utility of money while those with loss have high income and low utility.

Early traditions in societies of market economies either supposed these conditions to prevail, or that the direction and extent of economic change were so differential, infrequent, unpredictable, or uncontrollable that attendant gains or losses might best have incidence as they happen to fall. Thus those with loss from change were expected to bear the incidence. This was never wholly true in U.S. society, since compensation was provided for such minor changes as condemnation of private property for use in public purposes. But for major changes and eruptions, such as those growing out of business fluctuations and economic growth, it was true. The large group of persons who sacrificed from major depressions bore the incidence without compensation from the smaller group that was in a position to invest and gain or to benefit in real income from reduction in price level. Those whose skills and plants were made obsolete by new technical developments or factor market changes were not compensated. But in one of these realms, that of business cycles, societal reflection has changed under the supposition that gains to those in favored position during depression do not outweigh losses to others in unfavorable position. Hence, policy to provide economic stability in this respect is a widely held public goal, just as is emphasis on economic growth to prevent recession and unemployment.

The stability goal itself provides but little controversial base, although agreement on how best to achieve it, as in debate over means of attaining selected farm policy goals, and on some technical problems in economic prediction, is not complete. Unemployment compensation, available during periods of full employment as well as during recession, also can be looked upon as a societal shift to provide redress to those with unpredicted loss from economic change. It is available in short periods to persons thrown out of work by changing technology, as well as those unemployed during recession. Tax write-offs, allowed for capital in certain cases, also fall in this category. Yet the largest public outlay which might best be interpreted as compensation to those suffering losses from economic change has been the funds channeled to agriculture. Evidently society has said that the gains to consumers from greater output and lower price of food are not measurable against the losses to farmers in reduced revenue.

Thus, compensation occurs under a policy wherein the public has a designed program to invest in technology and expand food supply.⁷ In other realms where change is induced and implemented through the market, the tradition still calls for gains and losses to fall as they may, except as unemployment compensation and control of the business cycle are provided. If economic change were purely random in its outcome and if welfare gains and losses were strewn randomly over the population, with change of sufficient frequency, compensation to redress losses would be unnecessary to guarantee net community welfare gain in each generation. Under sample of this size or frequency and of random nature, and supposing that the effect of economic change is net welfare gain where business cycles are controlled, all persons would experience loss and gain, but the latter more often or to a greater extent than the former. Hence, net gain would accrue to each person during his life.

But this expanse and randomness of gains and losses of progress do not prevail. Some individuals absorb losses in respect to productive assets and abilities which are not offset through their gains as consumers, or even as producers at later times. While the gains of progress are spread, on the side of asset, to all consumers, they are not always as great, on the liability side, as losses on the side of resources.

Society that values progress for its own sake, or as a means of political and military equality, requires that marginal effort of resources be encouraged in accordance with their endowed ability, and against any disutility accompanying this effort. Against both of these bases, productivity and progress are best encouraged if gains from change do accrue in sufficient magnitude to those who allocate resources and invest capital and effort in a quantity bringing forth change in sufficient magnitude. If gain is the award to those shifting resources and loss is the penalty for those who do not, incentive is great for re-allocations of resources which facilitate change and progress. There are, of course, exceptions to this general condition, mainly those in uncertainty where the prospect of major loss may dampen willingness to select change. Undoubtedly this general framework has added greatly to mobility and migration of resources. Capital and labor made obsolete in some locations and occupations, and bearing the incident of loss, have lessened further potential sacrifice by moving to other alternatives. Where uncertainty has not been too great, resources have been invested in new techniques and commodities leading to progress in order to capture gains forthcoming from these ventures. Dictatorial economies have used less humane means of penalty and less flexible methods of award for change and marginal effort. But they have used them even with loss being the literal magnitude of the individual's head. The necessity of a system in relative awards has not yet found substitute in promoting progress in any type of social organization.

⁷ For an early discussion of the distribution of gains and losses from technical development of agriculture, see Earl O. Heady, "Basic Welfare Considerations in Farm Technological Advance" *Jour. Farm Econ.* 1947

Yet what are the purposes of progress? For progress itself as an intrinsic end? Progress is not an ultimate end. It is only a means to other ends. As a means, it is expected to lead to greater utility and welfare through growth in income and consumption possibilities. Even if progress were pursued alone for purposes of world military and political comparability, it would still serve as a means. But we have greater eventual hope for humanity than progress alone as a means of world comparability. Supposing it to serve as a means for income growth and welfare betterment, it is important that a system of awards for resource re-allocations and commitments leading to progress and change be retained.

The system of distribution of welfare gains and losses in whatever manner they fall, more so in history than at present, but even greatly so now, has led to progress. Few persons would question that it has contributed to net or community welfare gain, especially if we ignore inter-generation comparisons. Yet it cannot be proven that this distribution of gains and losses leads to maximum community welfare. Net or larger community welfare gain could be better guaranteed and incentive to progress still assured under policy which allows shift of resources to new areas of demand but still provides compensation to individuals with loss incidence. It is not necessary that compensation be either passive or of a nature tying resources to their present employment. To the contrary, if it gives sufficient attention to value orientations and cultural moorings and is of appropriate magnitude, it can still redress all losses and more readily bring resources into employments meshing with consumer preferences.

The number, location, nature and effect of changes and progress elements in the American economy are so varied that gains and losses are not easily identified and measured. Some changes, especially those of smaller impact, do have a "balancing out" effect to nearly all members of the population (on the side of resource returns or as gains on the consumer side balancing losses on the producer and resource side). For other changes, where some individuals are left with small losses, the judgement is made that these are too small to be measurable and any force assigned to numerical expression of them would be too costly.

But there are major changes where this clearly is not the case. For these situations, too, it is obvious that those bearing the burden of loss cannot simply wait until a change brings gain, with the latter more than offsetting the former. Some localities have experienced mostly loss from change and they remain as decaying economic and social communities. The pain has not been sudden, soon to be over, killed with a blast of gains from development. It has persisted, both with important misery to people of these communities and potential gain sacrificed by other segments of society. Mammoth illustrations of sacrificing communities and their attendant welfare losses exist. Some have persisted since the Civil War. Others are more recent in change giving rise to their origin but are rapidly becoming chronic. The depressed areas of former mining and textile centers are examples. So are many rural communities which

are dependent on agriculture, and more will thus develop as technology progresses and adjustment of people is sluggish. While change need bear no loss to youth and but little loss to young persons of flexibility in capacities and skills, it does provide burden to older persons in farm communities whose skills and values have become extremely rigid.

Few elements of change and progress can occur in a market economy without bringing losses to some persons as they bring gains to others. Some of the losses, as indicated above, are small and spread thinly so that they are acceptable and conventional (the assumption of positive-sum game) and can be borne by those upon whom they fall from the market. Others can be large and persistent, hanging to people and communities for decades.

As uneven distributions of gains and loss from economic growth have occurred in the past, they will be so distributed by the market and somewhat unpredictable nature of economic growth over the future. The uneven first distribution is not, however, a basis for doing away with the market as a mechanism for expression of consumer preference and as a force pulling relative factor supplies in the direction of change. It is yet to be proved that any other allocating method is as efficient as the market in promoting growth in a highly mature and complex economy where the consumer is given major autonomy, even given the imperfections and lags that exist and the ability of some groups to transfer a disproportionate share of the gains in their direction.

But just as the market provides flexibility and guidance in this sense, it is known to have imperfections in guaranteeing attainment of welfare goals and maximization. As mentioned previously, society need not take the market as its master or as transcendental in character. It has not done so, adapting institutions and mechanisms to modify its effects, as illustrated in the early socialization of agricultural research, public investment in schools, monetary and fiscal policy to arrest depressions, unemployment compensation, progressive income taxation, public roads and others. As the economy grows and becomes capable of even greater strength in progress, policy to spread the gains of progress equitably comes to have increased importance. The commercial farm problem itself is not one of hungry people unable to pay taxes. It is not even one of low living standard. It is one of relative rate of progress in income.

When we speak of the market as an allocative mechanism, we refer to the private sector and allocation in the choice realm of the individual consumer. When consumers are miserable with cold, hunger and sickness, any planner who alleviates these almost certainly can cause resources to be used in a manner preferable to the mass of consumers. But when consumers have abundance in these areas, plus many others which were considered luxuries a quarter century earlier, the choice and allocating mechanism needs to be flexible, as perhaps it can only be through the pricing system. Still, there remains the essential function of social policy causing appropriate quantities of resources to be allocated to the public sector in a manner aiding the maximization of community welfare where

it is certain that the distribution of gains and losses is not otherwise positive-sum, or that the allocations so attained still allow further movement to Pareto optimality.

Even with ironclad rules enforcing pure competition in all industries, it is yet to be proven that the pricing system would have provided adequate facilities for education, defense, public roads, agricultural research and other services produced in the public sector. The social decision in obtaining an optimum balance of resources between the public and private sectors is of no less importance than that of utility-maximizing allocations within the private sector. The maxims of "the least government the better" or "the most public planning the better" provide no logical basis for allocations directed at social welfare maximization, or in assuring distribution of gains of progress with some benefit to all individuals.

BASIS FOR AGRICULTURAL POLICY

Agriculture does not have a basis for policy unique from all other sectors of society. More nearly, the problem is broad policy to encompass agriculture as well as other sectors which have similar types of problems and are faced with welfare loss from the same category of variables in change and progress. In some cases, as in market power, the challenge is not one of finding a distinct policy for agriculture but more nearly to give it the same basis as other sectors, if this is to be looked upon as a problem in equity, or as a method of assuring Pareto optimality in the sense that all groups realize gain from change or that one does not gain at the expense of the other.

Policies for commercial agriculture have appeal and basis in compensation to redress losses stemming from change which brings gain to other groups. The major "other group" includes all consumers. In the manner explained previously, the nation has a positive development policy to augment the supply and lower the real price of food. Farm families in aggregate have less income than would prevail with smaller supply. Yet the problem is basically the same as that of depressed communities once important in fabrication of fuel and textiles but now passed over as a result of substitutes which augment total supply. The latter groups, no less than agriculture, merit compensation if net community welfare gain is to be guaranteed.

But what form should this take? Should substitute locations and materials be neutralized so that change is not invoked in the original community? Should the public provide a market for New England textiles and West Virginia coal, investing in immense warehouse facilities with never-ending restraint on surplus stocks? Is it a basic social value that compensation can be provided these depressed areas only through policy which keeps resources directed to textiles and coal? Few economists or industry leaders would answer positively to these questions. But some would if the term agriculture were substituted. Still, are there not more efficient means for compensation of welfare losses to these particular

groups? Can sacrifices be offset by means which guarantee that the first recipients are made no worse off, or with positive opportunity for gain for them in other segments of the economy which are characterized by growth?

Other Policy Bases

The above analysis provides the major basis for agricultural policy, just as it does for economic policy in general. If we examine these foundations, we find the case of agriculture to be not generally unique, but to parallel that of the total economy where the same problems exist with wider spread. Where a particular policy element is needed for the subset of farm problems, within the matrix of general economic problems, it generally has its counterpart in national policy. It might be claimed that policy is needed for agriculture for purposes apart from those mentioned above. What about economic development? Economic development policy is itself the process of reorganization to allow greater product and welfare. It is accepted policy for agriculture, the claims of the farm industry to compensation being based on its distribution of gains and losses.

What about market and bargaining power? These are mechanisms of policy, placed in the hands of groups to help guarantee that equitable shares of progress flow to each, in attempt to be certain that no group is made worse off as change and reorganization are brought about. Bargaining and market power is somewhat the antithesis of pure competition, a condition necessary if community welfare is to be lifted to the very maximum. But since Pareto welfare economics propositions do not attempt to state exactly which distribution and organization provides a unique maximum, but only those changes which will certainly increase the community level of utility, it is not required (even if scale economies were lacking) that the organization of industries be revamped, converting the structure of steel, petroleum, electrical equipment and farm machinery to the pure competition structure of agriculture. Industry structure is a problem of national policy, and not of farm policy. It is doubted whether farm policy is the pole from which attack on this problem should be launched. As mentioned previously, the political power of agriculture is now too small to bowl over the established position of major industry and labor groups in their acquired market power.

Supposing the structure of industry and labor groups to be given, as it certainly is considering their political strength, and serving as means where one group averts loss from gain to another or a sharing of fruits of progress so that each has positive gain, a policy question becomes that of whether agriculture should also permanently abandon the pure competition model—as an industry of completely ineffective individuals taking price and particular sharing of progress as given. Certainly there is no economic or other logic which says that agriculture must be a “pure price taker,” if aggregate welfare increase is to be guaranteed under economic growth and technical change.

In other words, if we take as given that industry organization is

mixed, with market power in the hands of one group so that they can bargain and alter price but pure competition and lack of control over price is the lot of a second group, organization of the second group to give it bargaining power to guarantee either (1) that it does not sacrifice from change or (2) that it gains along with the other group, is entirely consistent with welfare propositions and attainment of either Pareto optimality or Pareto-better welfare conditions.

The development of bargaining power is a policy implicitly approved in welfare economics where lack of bargaining power of one group must be taken as given and conditions of the market, such as price elasticity of demand less than unity, cause agriculture to sacrifice at the gain of other groups which have market power. And it is true, as pointed out previously, that agriculture must take the structure of certain other sectors as given. It does not have the political force to convert them back to a pure competition structure.

It is the presence of some monopoly in the economy (or industry structure which leads to market power, price control and sheltered advantage in short-run resource productivity) which causes the marginal conditions for maximum social welfare to be somewhat obviated. Given some extent of monopoly power or its near relative in nonprice competition, relative factor returns are not a clear short-run indication for resource allocation. And as Galbraith points out, losses from a suboptimal allocation of resources stemming from a degree of monopoly may not have great social significance in the private and consumer oriented sector with a level of income and degree of affluence which leads it to ask what its marginal preferences are.

Of course, we can always argue that imposition of pure competition structure on all industries provides a logical basis for welfare greater than that possible under the best organization in a mixed economy. So that this is true, of course, we would have to be certain that while industries are matched to the competition mold, they did not have other imperfections attached to them. Galbraith has emphasized that the competitive nature of the bituminous coal industry did not lead to progress in this sector, but the petroleum industry, characterized by oligopoly rather than pure competition, has been progressive and efficient.⁸ Not only must the mixed structure of the economy be taken as given by an industry such as agriculture, but also the expectation that economic change or progress would be much faster or as great under a complete economy of pure competition, as represented by breaking the steel and electrical equipment industry into more small firms, is perhaps misleading.

The existence of mixed organization and some sectors with short-run control over commodity prices does not obviate the major pulls of the price system and competition under economic growth. One industry, such as the electrical equipment industry which cannot be characterized by

⁸ J. K. Galbraith, *American Capitalism, The Concept of Countervailing Power*, Houghton-Mifflin Co., Boston, 1952, p. 92.

pure competition, can serve to bid scientists and materials away from another such as the oil industry, and spur both on to progress. Perhaps the main essential in progress is maintenance of "workable competition" and prevention of monopoly excesses.⁹ Pure competition, in attachment with certain market imperfections, has not led to progress-oriented utilization of the human resources found on farms in the Appalachian Mountain area, or even in efficient farming thereon.

It could be argued, of course, that if pure competition prevailed, greater factor price flexibility would exist, thus obviating many of the losses stemming from economic change and the need for policy applying the compensation principle. Change might bring short, sharp pains, but flexibility of factor prices would cause resources immediately to be re-employed so that prolonged maladies of losses could be avoided. The short-term losses might then be insignificant as compared to the long-term gains of all individuals. A small-scale model of this type exists in agriculture. It is the commodity cycle touching on such products as feed and hogs. True, prices are flexible and as change or large outputs occur, price plummets and resources respond. As feeds are low, they become employed in animal production. Employment of these resources does follow prices and there is never lack of a market for them. Yet this degree of pure competition, price flexibility and factor employment does not eliminate short-run loss of important magnitude to many individuals.

Economic and technical development of a long-term nature also is accompanied by great adaptation in prices and employment of resources in agriculture. Witness how technical improvement has increased feed output, with the latter responding in price and employment in livestock production (except to the extent of supply restrained by government storage). Wage rates of family labor also have been flexible, people remaining employed in agriculture almost at whatever price they could earn. While competition and flexibility have led to heavy resource employment, it has not obviated losses and frustration to many people, not alone because of inflexibilities elsewhere in the economy but also because of the general market imperfections which typically attach to industries of pure competition.

SOCIAL EVALUATION AND CHOICE

Society can and does make choice and distributions which involve judgment of interpersonal utility quantities. Some of these are ethical judgments made in the realm of the political and democratic process. In some cases, the choice is sharp and clear and a great deal of economic analysis is not needed or desired, the height of the two utility surfaces between which choice is made being apparent, and refined calculations and detailed logic to provide proof would only slow down the process. In other cases, elevation is attained on a particular surface, with a plateau

⁹ See J. M. Clark, "Toward a Concept of Workable Competition," *Amer. Econ. Rev.*, June, 1940.

approached so that loss is small when alternative decisions are tried, with policies frequently reversing themselves. Measurement of gains and losses thus have empirical expression as one policy is tried, its satisfaction or solutions weighed, then another is tried with perhaps eventual swing back to the first.¹⁰

This is the political process. The process takes this apparent lumbering and meandering course, not necessarily because it is inefficient or inapplicable, but because it is the only means which a democratic society has for rough quantitative assessment of gains and losses. One policy may represent two steps up the utility surface, its replacement a step down. This is the political process which eventually allows expression of greater attainment in community welfare.

Much of agricultural policy has necessarily fallen in this process of trial and error, try and retry, because relevant quantities are not given *a priori* and in errorless estimates. It is possible and frequently true that one policy can be chosen through the political process, with later discovery that an alternative voted down, or a former policy voted out, is socially estimated to provide greater community utility. If, under majority rule, the gain to some individuals was always equal absolutely to the loss of others, this experimentation in policy to maintain or increase public welfare would be unnecessary, and an optimum policy could be adopted at the first try. However, where different persons have varying intensity in their preference for alternatives, an alternative can be selected by vote which does not maximize group utility, because the loss per person for the minority group is greater than the gain per person for the majority group.

¹⁰ A first choice, specified by majority at the polls, need not necessarily be the one leading to higher, or highest, utility. For an explanation of such situations, see K. A. Arrow, *Social Choice and Individual Values*, Wiley & Sons, New York, 1951.