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AN ECONOMIC DEFINITION OF POVERTY

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Introduction

It can be argued that much of the current, and widespread, dissatisfaction with anti-poverty policies is due to a failure to make an explicit choice of a restrictive definition of poverty. In a situation where each critic can choose from a wide range of poverties--and feels no need to restrict his choice to any single one--it is no hard task to find all policies wide of some target. This essay indicates, first, the importance of making such a choice by illustrating how that choice necessarily affects the policies and programs used to eliminate poverty, and the criteria that are admissible in evaluating their success. Second, it provides one such definition--a consistent, relatively operational and, in the author's opinion, thoroughly adequate one.

A clear notion of what one is trying to do has always been of importance in the formulation of policies. The advantage of choosing the most efficient means of attaining a specific goal is also no new discovery. However, the recent adoption throughout the Executive Branch of the Federal Government of PPBS--Planning, Programming, Budgeting Systems--does indicate a change in the direction of more explicit and coordinated application of these principles. By requiring agencies to state their objectives and to establish priorities among their program proposals according to the degree that the programs serve those objectives, the PPB System enforces a tighter correspondence between objectives and policy decisions.

In the language of the model of economic choice, we may take alternative programs (or increments to them) as the set of objects of choice.

The PPB System asks an agency such as OEO to consider all possible combinations of programs and to establish a preference ordering among them based on the agency's interpretation of its mission or goal. A determinative choice, of course, requires the addition of constraints--financial, political, or what have you--but these constraints are not finally decided at the agency level. When the choices are made by the Bureau of the Budget and ultimately the Congress, objectives of other agencies must be considered and balanced with the anti-poverty objective.

Hence it can be seen that the choice of a definition of that poverty which we want to eliminate affects not only the setting of priorities among anti-poverty programs but also the higher-level assessment of the relative importance of poverty vis-à-vis other objectives of society.

If the problem of poverty is worthy of a distinct name (even of a special agency), then it certainly should be possible to distinguish poverty from the entire collection of social problems. The task of evaluating and ranking programs for their effect on poverty is not discharged responsibly by usurping the Presidential-level problem of balancing the claims of all social objectives. We must distinguish between the Great Society and the Poverty-less Society. Each successful plea for including a broader range of social and political disabilities among those comprising the poverty problem takes us further toward eliminating the need for a separate consideration of poverty as a distinct problem.

With some notion of the requirements of a complete and distinct definition of poverty in hand, consider the two approaches to the definition that have afforded the Poverty Seminar so much discussion. On the one hand there is the "narrow economic" definition and on the other there is the "culture of poverty." Whether or not these two approaches are the best ones for apposition, they are radically different and will serve to illustrate the importance of choosing between them.

The economic concept is defined in terms of the external circumstances which condition a person's behavior--especially the behavior he displays in economic transactions, buying consumption items, selling productive services, securing professional advice, etc. The cultural concept focuses on the internal attitudes and behavior patterns which a person brings to any particular set of circumstances. The one locates poverty in the person's condition; the other finds it in the person's character. A program aimed at eliminating economic poverty will measure its success by the increase in command over goods and services that is induced by the program. A program aimed at eliminating the culture of poverty will measure its success by changes in the complex of attitudes and behavior patterns characteristic of that culture. Any program will, in general, influence both economic poverty and the culture of poverty, but not in equal proportions or with equal directness. Because the external conditions, given a sufficiently long exposure, can affect the patterns of behavior we term "culture" and, in turn, "culture" can and does influence the nature of the external world a person faces, it is not usually possible to attribute exclusive effects on either "economic" poverty or "cultural" poverty to any particular policy or program.

But it <u>is</u> possible to pay exclusive attention to one or the other category of consequences. Moreover, if one is committed to a particular anti-poverty objective, he <u>must</u> exclude all extraneous consequences in order to secure the maximum impact from a given anti-poverty budget. A familiar theorem in economics rules out the possibility of maximizing more than one objective at the same time. If the activities that promote each objective use some of the same scarce resources, and if the objectives are truly different, then they must ultimately conflict. At that point a decision-maker must be prepared to accept a reduced level of success for one objective in exchange for an enhanced level for the other--it is impossible to get more of both. Two possible resolutions are (1) to ignore one of the objectives, or (2) to reformulate the problem by defining a new objective that is a combination of the two objectives--i.e., to admit that the original definition of the poverty problem was incorrect.

The concept of poverty developed below is restrictive, both in the sense that any specific concept must be restrictive, and in the sense that it excludes from consideration many sociological, political, psychological and physical ills that are weakly or strongly associated with poverty. This does not indicate a presumption that these goals are unimportant. What it <u>does</u> indicate is the presumption that poverty is a specific ill in itself; that poor people, while they share many other problems with the non-poor, are unique in having a relative shortage of goods and services at their disposal; and that, finally, poverty in the more restricted sense can be eliminated, is worth eliminating--both for its inherent injustice and for its fallout effects on related problems--and will be eliminated more promptly by policies that are aimed at a compact, rather than a diffuse, target.

The concept developed takes from the basic model of economic choice the idea of separating preferences from constraints. Associating poverty with extremely limiting constraints, the definition incorporates a broader view of the economic constraint derived from Milton Friedman's theory of permanent income.[1] Consideration also is given to the problem of weighting and aggregating varying degrees of poverty and to the notion of a Social Welfare Function.

The Neoclassical Model of Economic Choice

This very simple analytical tool provides a framework for analyzing the behavior of decision-making economic units. Its flexibility permits application to consuming units or producing units of varying levels of complexity. The consuming units with which we are immediately concerned are the individual and the family.

Stated most simply, the model postulates that there is a set of objects of choice which the decision-maker ranks according to his particular, and perhaps peculiar, preferences. Confronted with one or more considerations which limit his choice to a sub-set of these objects, the decision-maker will, according to the model, choose the highest ranking alternative available in that sub-set. For example, a family may prefer a suburban bungalow to a high-rise apartment, which in turn is favored over a walk-up flat, and all three are regarded as better than remaining in (or returning to) a rural tar-paper shack. If it is limited by income or discrimination to either the flat or the shack, however, it will choose the former. This is, loosely speaking, the extent of the rationality assumption which is so often used as a club with which to beat economists. It is possible, of course, to make more restrictive assumptions, and to get more substantial derivative propositions from the theory. But these are not necessary in general, nor are they needed for the development of the concept that follows.

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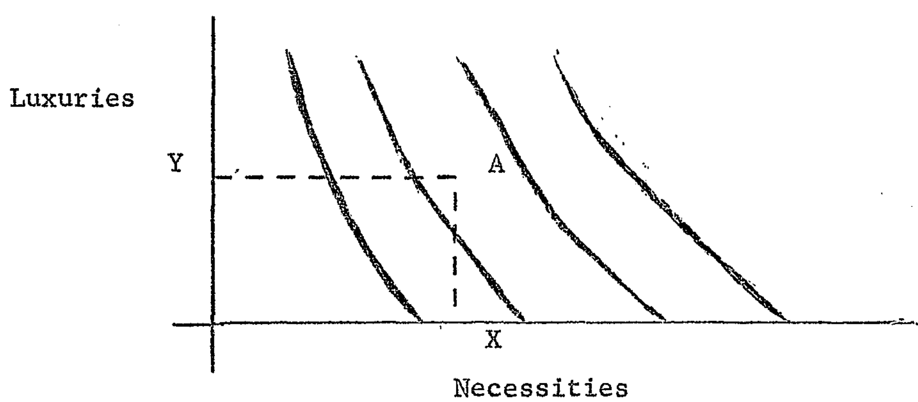
[1]Friedman, Milton, A Theory of the Consumption Function, National Bureau of Economic Research General Series 63 (Princeton University Press, Princeton, N. J., 1957).

In more specific terms, consider the set of choice objects all to be possible rates of consumption of two categories of consumer goods and services: necessities and luxuries. (We may indulge in the abstraction that there are only two goods, measured in some convenient scale, and each good is perfectly divisible, so that amounts can be varied in a continuous manner.) The decision-making unit, which we may take to be an individual or a family, has a system of preferences among these objects that may be represented by an "indifference map" imposed on a two-dimensional space as in Figure 1. Each point in the positive quadrant corresponds to a unique combination of luxury and necessity consumption. The point A in Figure 1 corresponds to consumption of X units of necessities and Y units of luxuries per month. Each curved line consists of points that are considered equally good by the family. (There is such a line through every point--only a few representative ones are drawn.) Points to the northeast of any one curve are all

Figure 1

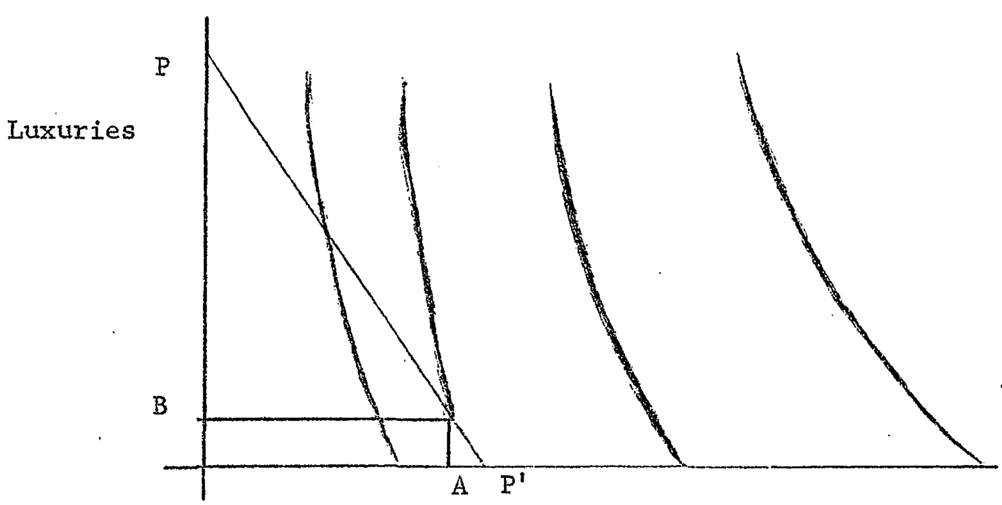


preferred over points on or to the southwest of the same curve. In this manner a system of indifference curves can describe completely a particular ranking; any pair of consumption levels on two-dimensional points on the diagram can be evaluated as better, worse, or equally good, compared to any other pair.

This system of preferences is regarded as a characteristic of a particular individual and may be quite different for some other individual. The preference ordering represents the tastes, values, and knowledge possessed by the individual--they will reflect his culture. As such the preferences are not immutable, but, like culture, they are treated as stable enough to make worthwhile the abstraction that they remain constant for analytical purposes.

Given these preferences, now consider which combinations are available to the decision-maker. Assume that he has a fixed income flow to be spent and can purchase any amount of each good at prices that do not depend upon the size of his purchase. We may now draw a straight line, PP', that divides the space into a portion that he can afford and one that he cannot, as shown in Figure 2. The point P on the vertical axis is simply the number of luxury units that could be bought if the entire income were spent on luxuries; P' is similarly derived from income

Figure 2



and the price per unit of necessities. The model is now complete, and indicates that a family with preferences as shown, faced with a budget limit and prices as drawn, would choose to consume necessities at rate A and luxuries at rate B.

The external and relatively objective factors that determine the available alternatives are usually regarded as subject to variation. For example, an increase in income would shift the constraint outward in a parallel manner and, as drawn, would lead to increased purchases of both commodities. A change in relative prices will rotate the constraint and thus alter the level of purchases. Usually an increase in price of one good, other things remaining constant, will result in a reduction of consumption of that good.

<u>Poverty and Affluence as Degrees of Constraint on Choice</u>

The above excursion into basic economic theory was made to lay a foundation for the concept of poverty. The distinction made between preferences and constraints provides a useful basis for limiting the notion of poverty to the relatively objective constraint side of the problem. Poverty is, in this view, a property of the individual's situation, rather than a characteristic of the individual or of his pattern of behavior. Of course, overt behavior or <u>ex post facto</u> choices will reflect both preferences and constraints--both values or culture and situation--but poverty is associated solely with severe constriction of the choice set. Similarly, affluence corresponds to a much larger area of attainable alternatives. Indeed, poverty and affluence are, in this view, the names we give to the two ends of a scale measuring level of generalized command over real goods and services. Current income is an important part of this command over goods and services, but it is not, as will be argued below, the sole determinant.

There are two features of a definition based on the choice constraint which recommend it. First, it avoids imposing a norm on the tastes and values held by individual decision-makers. Instead of arguing that anyone who consumes less than X units of food or Y units of housing is poor, it would argue that anyone who has sufficient command over goods and services to achieve X and Y simultaneously must be at least as well off if he actually chooses some other combination.

It is, of course, a value judgment on the part of economists that the diversity of tastes and values reflected in different allocations of consumption at the same level of general command ought to be respected. Accordingly, the fact that a particular family allocates a given budget in a way contrary to a (typically middle-class) outsider's notion of how he would do it, or at variance with some statistical average of families at a comparable budget level, should not be taken as evidence that the family is worse off or poorer.

The second salutary feature of this definition pertains to the elimination of troublesome questions about the level of satisfaction or happiness achieved by particular families from a given budget. The theory of choice requires only a ranking of alternatives; it does not require any measure of the magnitude or intensity of the distinctions made in rank, nor does it require any absolute measure of the pleasure derived from a particular allocation. Neither economics, nor, as far as I know, social science in general, can contrive a measure of satisfaction that would make one comfortable about asserting that Mr. A, with very aristocratic tastes and only two Picasso's, does not feel more deprivation from want of a third than does Mr. B, who hasn't been able to buy shoes for the last three years. Lacking such a measure and possessing egalitarian tendencies, one is attracted to a definition of poverty that focuses on the means for pursuit of happiness rather than on happiness itself.

Generalized Command Over Goods and Services

The prevailing practice of measuring the extent of poverty according to levels of money income can be construed as a choice of a constraint-oriented poverty concept, as recommended above, combined with a choice of current annual money income as the measure of command over goods and services. Probably everyone remotely connected with developing and working with these statistics has acknowledged the crudity of this measure. But, if the argument in favor of a constraint-oriented measure is accepted, then it follows that improvement lies in adopting a more comprehensive measure of the constraint on household choice. The income measure is crude because of its incomplete coverage of sources of command over goods and services and its short time horizon--not because it is narrowly economic, lacking in humanity, or oblivious to subjective subtleties. The following paragraphs indicate how the measure can and should be broadened both on conceptual and empirical levels of analysis.

The economic literature contains a concept of income that comes very close to meeting the present need for a comprehensive measure of command over goods and services. Milton Friedman's permanent income concept has proved useful both in clarifying theoretical analysis of household behavior and in improving our ability to predict behavior. The value of the largest sustainable level of consumption is one, slightly circular, way of describing Friedman's more comprehensive concept. More precisely, it is the sum of income flows from property, from sale of labor services, and from transfers (unilateral "gifts") from other persons or from governmental units, whether received in money or in "real" form. These flows are evaluated at the normal rate they can be expected to maintain over the long run instead of at the current level. The reason for this is that current income may be higher or lower than normal because of temporary good fortune or misfortune. Friedman terms these deviations "transitory income," which, together with "permanent income," divides current income receipts into two additive components.

Expansion of the time horizon for purposes of measuring income broadens the concept substantially. As developed by Friedman, there are two bases for income via the market--Human Wealth and Non-human Wealth. The latter is relatively familiar owing to its similarity to <u>wealth</u> in common usage--real and financial property. Money income from this source is usually counted in current measures, although year-to-year variation in profits or dividends may exaggerate the dispersion of the income distribution. However, it is not common to consider the wealth itself, as distinct from the income it generates, as part of a household's command over goods and services. But, considering that households do accumulate wealth with the intent of de-cumulating it during retirement (or passing it on to succeeding generations), it would seem appropriate to convert net wealth (assets minus liabilities) into equivalent life annuities, for purposes of measuring the capacity to sustain a level of consumption. This modification would primarily affect the aged or near-aged family units.

An important example arises from the directly consumed services of owner-occupied housing. The value of such services is, conceptually speaking, a form of income, and is no less worthy of inclusion because the income does not accrue in money. The income will be appropriately accounted for if owner-occupied housing is included among the assets used in the net wealth calculation discussed above. It is specifically singled out here because of the ubiquitousness of home ownership, and because it is easily overlooked.

The notion of human wealth is a major improvement over current earnings as a measure of command over goods and services. The effective capacity to earn money income by selling labor services in the market, or to produce directly consumed services in the home, is the second component of permanent income. As compared with current earnings, it both takes into account a longer period of time and incorporates real income as well as money income. The longer period tends to substitute average rates of unemployment for intermittent full and zero levels of employment. It also offsets the quite low levels of current income usually enjoyed by those who are adding to their stock of capital by education or training.

In terms of this broader concept, an unemployed dishwasher would be counted as poorer than an unemployed plumber, even though both had the same zero level of current earnings. A Negro assembly-line worker who currently earns the same wage as the white worker at his side would be credited with a smaller long-run command over goods and services by being subject to a higher risk of future unemployment.

Another feature of the generalized measure of human wealth is its ability to include the home-produced and -consumed services of the homemaker and other adult family members. The conventions of income taxation and national income accounts do not give explicit recognition to this source of income. The anomaly has been pointed out with respect to the national income accounts but, in the absence of any threat of drastic changes in human nesting patterns, it has not been regarded as an important weakness. When making inter-family comparisons, however--particularly at income levels where nesting patterns frequently diverge from the ideal nuclear family--it is quite indefensible to ignore the direct contributions of adult family members to the services, or even goods, available to the family.

Finally, there are transfer payments among persons. These may be entirely voluntary, as within a family; or be covered by contract, as in the case of alimony; or arise out of public programs, such as Social Security. Persons are able to obtain command over goods and services in such ways without a current quid pro quo. Insofar as these claims are secure, either through law or through convention, there is no reason to treat them as different from income that accrues to human or non-human wealth.

There are, of course, substantial problems involved in measuring "permanent income." But, if it is possible to obtain some general agreement on the suitability of the concept for analysis of poverty, there are many possibilities for improving on the measures now in use. Furthermore, if, as I believe, the generalized concept is relatively free of many weaknesses that have been criticized in the current money income concept, then it may be possible for a wider range of analysts to work within a common conceptual framework.

The Index of Poverty

The preceding discussion has argued that a measure of poverty should be related to the individual's or family's "permanent" level of command over goods and services. There remains the problem of specifying standards of comparison that will permit evaluation of commensurate degrees of poverty for families of different size or composition, in different places, and at different times. The "poverty lines" now in use are intended to provide such standards for annual money income. The Orshansky[2] thresholds vary according to family size, they have been adjusted for changes in the consumer price index for intertemporal comparisons, and they allow for differences between farm and nonfarm residence.

In the simplest terms, the poverty lines represent the level of income that divides the families of a particular size, place, and time into the poor and the non-poor. Hence the set of poverty lines are intended to designate equivalent levels of deprivation. Similar thresholds could be obtained for the more comprehensive constraint measures presented above, and these, again, could be used to divide the population into poor and non-poor.

However, it has been argued above that poverty is not really a discrete condition. One does not immediately acquire or shed the afflictions we associate with the notion of poverty by crossing any particular income line. The constriction of choice becomes progressively more damaging in a continuous manner. As a first step it would seem appropriate to maintain the graduation provided by a continuum but to seek a scale along which differently situated families can be compared. For this purpose a ratio of the measure of permanent income to the poverty threshold might be taken as a first approximation. Symbolically, let $\hat{Y}(N,L,t)$ denote the poverty threshold for a family of size N, in place L, at time t. Define a family's "welfare ratio" w as the ratio of its permanent income, Y, to the appropriate poverty threshold, i.e.,

$$w = Y/\hat{Y}(N,L,t).$$

[2] Orshansky, Mollie, "Counting the Poor: Another Look at the Poverty Profile," Social Security Bulletin (January 1965), pp. 3-29.

This scale extends the notion of equivalence at the poverty thresholds to equivalence at any proportional distance from the poverty thresholds, e.g., 15 percent below.

This welfare ratio will, of course, permit the same bifurcation into poor and non-poor, the latter having ratios greater than one and the former less than one. But it also preserves the notion that those who are 5 percent above the threshold are not much better off than those who are 5 percent below. The welfare ratio also leads into consideration of more sophisticated ways of aggregating the detailed data into one-dimensional measures of the nation's poverty problem.

The "nose count" in poverty is one such measure which has little but its simplicity to recommend it. The "dollar gap," or the total amount by which the incomes of the poor fall short of the poverty lines, is a somewhat better measure, because it counts a family that is at half the poverty line as five times as severe a problem as one which is at 90 percent of the same line. A further improvement would recognize that poverty becomes more severe at an increasing rate as successive decrements of income are considered; in other words, that poverty is reduced more by adding $500 to a family's command over goods and services if the family is at 50 percent of the poverty line than if it is at 75 percent.

A simple and mathematically tractable measure which has this property would be the logarithm of the welfare index. It is not, by any means, the only such scale, but it offers a definite improvement over the current practice. The logarithmic function,[3] as shown in Figure 3, takes on negative values for fractional welfare ratios (incomes below poverty) and positive values for ratios greater than one. For purposes of more aggregative measures of poverty it would be appropriate to sum the logarithms of

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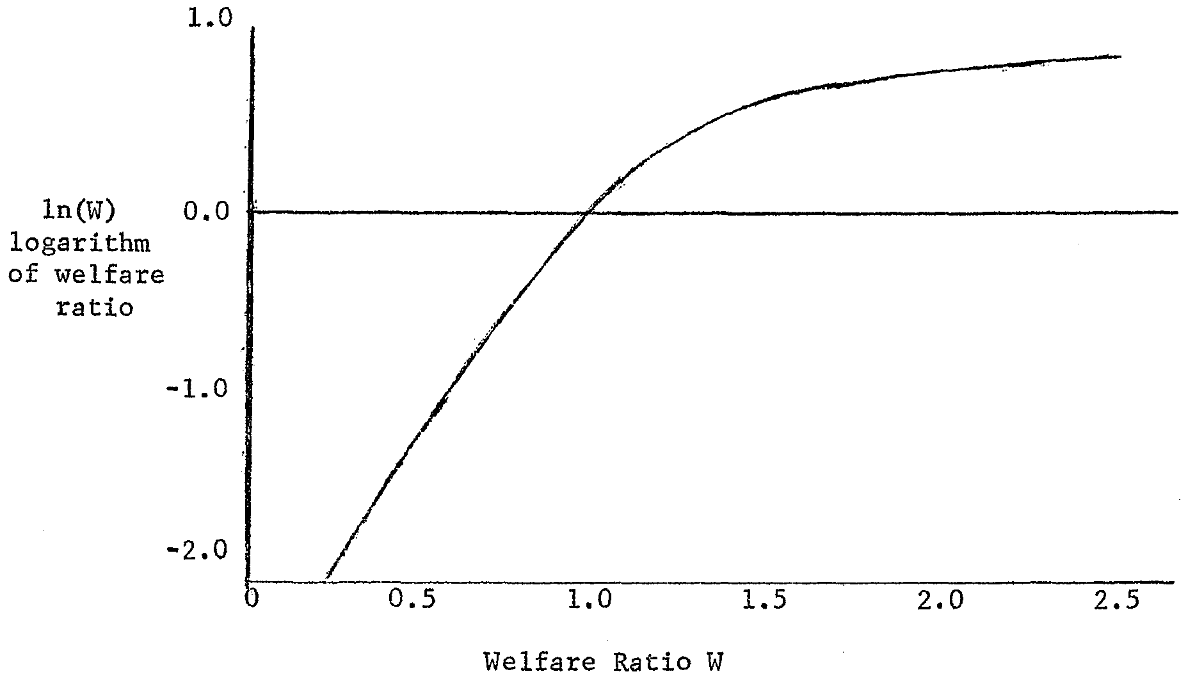
[3]Cf. Dalton, Hugh, Principles of Public Finance, 4th edition (Routledge & Kegan Paul Ltd, London, 1954), p. 68.

Figure 3



welfare ratios, weighted by family size, over some part or all of the lower half of the distribution of families, i.e.,

$$P = \sum_{i \in L} N_i \ln(W_i),$$

where L is the set of subscripts belonging to families with $W \leq W^* \leq$ median W, N_i is the ith family size, and W_i is the ith family's welfare ratio; ln(X) denotes the logarithm of any (positive) number X.

If $W^* = 1$ then P cannot take on positive values. It would have a limiting value of zero if no one were below the poverty line. The more severe is poverty, according to this scale, the more negative is the value of P. For $W^* > 1$, P could take on positive values and could do so even though some families remained below the poverty line. However, in both cases an objective of maximizing P would provide a tenable guide to policy formation.

It would be possible to use some old and honorable terminology to add further perspective to the measure proposed here. Without doing excessive violence to the ideas of the utilitarians, one could specify an over-all utility function for society as the sum of all welfare ratios:

$$U = \sum_{\text{all } i} N_i \ln(W_i).$$

This magnitude could be broken into two parts:

$$P = \sum_{i \in L} N_i \ln(W_i)$$

where L is the set of subscripts for families with $W \leq 1$,

$$A = \sum_{i \in \overline{L}} N_i \ln(W_i)$$

$$U = P + A$$

Here P will be a negative number (unless there are no poor) and could be interpreted as the disutility suffered by society because of poverty. The sign of A will be positive and could be termed the affluence level of society, part of which is "wasted" as an offset to P in the calculation of total utility.

It should be explicitly noted that the interpretation discussed above incorporates a fairly radical form of egalitarian value bias. It assumes that, except for the adjustments introduced in defining W (family size, location, etc.), all persons have equal needs; and that, other things being equal, including total output of goods and services, society would attain its highest satisfaction from an absolutely equal distribution of incomes. No positive value is attached to dispersion of the income distribution even for the sheer delight of variety. Practically speaking, there is a relation between total output and income dispersion that would almost certainly prevent complete equality from being an optimal or even an attainable solution.

Regarding P as simply an objective function, it is useful to consider how it would tend to allocate effort among the various levels of income. The derivative of P with respect to the welfare ratio of a particular family is an indicator of the relative importance of increasing that family's welfare ratio. That derivative for the logarithmic function is:

$$\frac{dP}{dW} = \frac{N_i}{W_i}$$

for all families with $W_i < W^*$ (=0 otherwise). Hence, for a family of four at half of the poverty line the derivative is $8 = 4 \div 0.5$. Compared to a family of four only .20 percent below the poverty line which would have a derivative of $5 = 4 \div 0.8$, it is seen to be 60 percent more important to raise the welfare ratio of the former. It would be preferable to promote an increase in welfare for the poorer family unless it were 60 percent more expensive to do so.

It appears to many that calculations of the sort carried out above are symptomatic of an extreme insensitivity to human values. How can one justify the contention that if it costs too much--where "too much" is given a definite numerical value--it would be better to forsake the poorer family and help the less poor one? The simplest, and least invidious, answer is a pragmatic one. If the 8:5 ratio doesn't seem right, we can specify a function that will make it, say, 100:1. But at some point, with limited budgets for fighting poverty, choices of this sort have to be made. They cannot be made more sensibly by <u>refusing</u> to look at the distributional implications than by looking at them. An economist draws very little satisfaction from engaging in interpersonal comparisons which, according to his training, cannot be grounded in objective fact, but must be plainly labeled as value judgments. He cannot profess any expertise in making such judgments, but he can and must insist that such judgments be made explicit, both to promote democratic debate and to permit consistent analysis and choice of policy alternatives.

A poverty function of the sort displayed above should be carefully distinguished from an over-all social welfare function. The former is at best appropriate for guiding the choices of an agency charged with eliminating poverty. For choices that have to be made at the Presidential level, a much larger set of national objectives, inevitably conflicting at the margin, have to be balanced against each other. The poverty level should be one of these, but so should the affluence level, national security, mental health, and at least several others.

Finally, it should not be assumed that, because the poverty index depends solely upon the level of command over goods and services, the optimal means of reducing poverty must be to increase that level as directly and as immediately as possible--e.g., to hand out money or public jobs. There is nothing in the definition that prevents Head Start or even prenatal nutrition from being the most efficient means of reducing poverty in the sense of amount of poverty reduced _per dollar spent_. Some kinds of direct transfers would almost surely be among the least efficient.