THE RELEVANCE OF POVERTY MEASUREMENT TO FOOD SECURITY POLICY

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Poverty and Food Security: Casual Acquaintances

Poverty measurement activities and food security policymaking are acquainted with each other, but are not, as yet, close friends. Food security policies are said to be undertaken out of a concern for the poor; but they do not seem intended as measures to deliberately reduce the incidence of poverty. The measurement of poverty is not yet undertaken too frequently; when it is, nutritional status or access to food is the most common criterion that is used. Yet this has not implied that poverty reduction policies include food related policies and give them higher priority than policies related to other commodities.

Is it in the very nature of the food security problem that a polite distance needs to be maintained from the condition of poverty? In a recent paper, Siamwalla and Valdes (1980) assert that:

> Food security may be defined as the ability of food-deficit countries, or regions or households within these countries, to meet target levels of consumption on a yearly basis. What constitutes target consumption levels, and whose ability to maintain consumption is being referred to, are two central issues of a country's food policy. (p. 258)

By confining the food security problem area to a short-term perspective, they relegate the poverty problem to another compartment:

> Although the most severe impact of short-term food supply instability is felt by the poor, chronic malnutrition caused by persistent poverty constitutes a long-term problem whose dimensions and solutions lie well beyond the question of food security, which we consider to be a problem of short-

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term variability. Thus, we adopt the trend level of consumption as the target instead of some absolute nutritional criteria. (p. 259)

Surely, however, sidestepping the issue should only be a temporary move. John Mellor's opinion is:

Despite the interrelationship of policies for dealing with fluctuations in food supplies and of means of ensuring that the poor receive benefits from those policies, there has been a tendency toward division of concern and analysis between national schemes dealing with delivery of food to the poor and international schemes to stabilize availability. Consequently, the inhabitants of these two closets tend to deal unrealistically with their problems for lack of attention to their relationship to the other.

If food security is viewed as a problem of the poor, then little purpose is served by separating the problem of fluctuations in food supplies from the problem of inadequate total supplies. That is particularly true of the search for policy solutions, because production-augmenting policies also affect fluctuations.[1]

How food security policy should be designed and how it has actually been formulated in the past are two different things. The focus of Siamwalla and Valdes is on the ways governments have traditionally approached the problem. They observe that food security has been equated with food price stability in urban areas, and that, when threatened with urban disorder, governments have often opted for food imports as a means of stabilizing urban food prices. However, as Siamwalla and Valdes remarked governments seem helpless in the face of food security in rural areas, where poverty abounds.

These observations are undoubtedly realistic. There has been a certain macrobias in food security policies, partly for reasons of domestic politics (Lipton 1975; Mangahas 1975). There is also another reason, which is the main thrust of this paper: *the terminology, the basic data, and the analyses which economists do are also so macro in nature that they reinforce the macro-bias of politicians.* While it may be difficult to argue that such technical studies carry the bulk of the responsibility for the nature of food security policies, it would be equally difficult to deny that they have any role at all. At any rate, these are the means whereby economists, as professionals, may have some influence on the policies, and therefore they deserve some scrutiny.

In the first place, it is clear that aggregate economic growth has,

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1. In the Foreword to Valdes (1981, pp. xvi, xvii). Interestingly enough, Siamwalla and Valdes are staff members of IFPRI, of which Mellor is President.

more often than not, taken place without an accompanying reduction in poverty. If the food security analysis is limited to such Food Balance Sheet aggregates as production, consumption, imports or export, and buffer stocks, the implications for the poor cannot be determined without the assistance of trickle-down assumptions, which by now should be regarded as dubious (cf. Te 1978 and Valdes and Konandreas 1981).

In the second place, as Lipton (1975) has pointed out, the economists' traditional practice of making food demand projections by the income-elasticity approach is implicitly biased against the poor. The growth in the market demand for food tends to be dominated by upper income groups, since separate income groups' income elasticities are weighted by income (not population) shares in the aggregates income elasticity. Growth in market demand is altogether different from growth in need by the needy.

The macro-analysis could, of course, be made more conservative by incorporating an adjustment for distributive inequality. For instance, the International Food Policy Research Institute's (IFPRI 1977) food needs projections to 1990 make a standard 10 percent addition to the national average dietary energy requirement in order to allow for individuals consuming more than the requirement. (IFPRI's objective was to estimate the Dietary Energy Gap as the calories required to bring the entire population up to a satisfactory standard of nutrition without reducing the food intake of those above the standard.) However, 10 percent seems much too small an adjustment. Assuming that the size distribution of food consumption is skewed to the right and could be approximated by a lognormal distribution, the 10 percent adjustment would suffice if the Gini ratio of food consumption were only about .025[2] (Mangahas 1978). If the Gini ratio were a more realistic .12, then the needed adjustment would be 50 percent (Mangahas and Rimando 1976).[3]

In East and Southeast Asia, the difference in per capita calorie supply between the countries which are barely on the margin of food security and those which are clearly over the threshold is more in the vicinity of 25 percent than a mere 10 percent (and, even then, food

2. This implies a standard deviation of the log of food consumption of about 0.05, i.e., the (geometric) mean ± only 10 percent or two standard deviations would already cover over 95 percent of the population, which seems unrealistically high.

3. In this case the log standard deviation would be about 0.25 and the (geometric) mean of food consumption ± 50 percent would cover 95 percent of the population. A distribution about a mean of 2,000 calories, with a lower end of 1,000 and an upper end of 3,000, would fit this pattern.

poverty may not be completely eradicated in the better-off countries).
Here are the ranges in per capita calorie supplies, according to the
Asian Development Bank's *Key Indicators of Developing Member
Countries:*

Low	Calories per capita	Period
Cambodia	1,731-2,260	1969-77
Indonesia	1,913-2,117	1969-77
Philippines	1,945-2,308	1969-78
Thailand	2,241-2,335	1969-76
Vietnam	1,980-2,201	1969-77
Medium		
Malaysia (Pen.)	2,481-2,610	1969-77
High		
Taiwan	2,639-2,805	1969-78
Hong Kong	2,619-2,883	1969-77
Korea, Rep. of	2,550-2,785	1969-77
Singapore	2,788-3,074	1969-77

Part of the blame for the macrofocus rests on the data-generating
establishment. The scale of poverty measurement and analysis
activities has long been constrained by the relative scarcity of cross-
sectional data. The Food Balance Sheets are convenient in that they
are linked to production and trade statistics which, in turn, have long
been annualized for the sake of the National Income Accounts. The
microdata sets, on the other hand, tend to be produced more on an ad
hoc and occasional basis. This is a part of the general government
orientation towards economic growth as contrasted to distributive
equity (Mangahas 1979a). This orientation tends to produce a vicious
circle of limitations on analyses, on policies, and on the production
of new sets of data relevant to the poverty problem.

To put it more plainly, the down-to-earth reason why food
security analysts' and policy-makers' year-to-year concerns cannot
directly take account of the poverty situation is that no one has
direct measurements of poverty on a year-to-year basis.[4] The con-
sciousness of everyone is still on the traditional, easy-to-get indicators:

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4. India is an exceptional case where cross-sectional data are available annually. Rao
(1981) estimates that the poverty incidence in various states in India fluctuates substantially
from one year to the next. India's difficulties with its poverty problem are a sobering
reminder that the presence of statistics is far from a sufficient condition for finding the
solutions.

food prices, imports/exports, and production. For lack of better indicators, success and failure in the area are still defined in terms of these macro-indicators.

Now, granted that economists have, for the time being, only a few micro-sets to work with, there still seem to be some tendencies for such micro-analysis to be subtly biased against the poor. The selection of the poverty norm is an important case in point. Norms are supposed to be determined by society's values; they should be culture-specific. A highly relevant and straightforward way to learn the social meaning of poverty is to observe the views which a particular society reveals about it (Mangahas 1977). What is the implication for domestic policy, for instance, if Asian economists leave to the World Bank the job of specifying the appropriate poverty line for their country? (Very often, such World Bank recommendations are lower than those by native specialists.) What is the motivation for computing "stingy" poverty lines based on imaginary and totally unrealistic diets, e.g., by means of linear programming analysis? May we safely assume that policymakers are unaffected by such academic exercises?[5]

The Need for Poverty Analysis Jargon

Poverty measurement activities are not policy-neutral. The greater the scale of such activities, then, other things equal, the more attention public policy may pay to poverty alleviation programs compared to other programs. The measurement presupposes a set of poverty-related concepts which are acceptable to those with the means and the authority to generate the requisite data sets. Such acceptance, if and when it comes about, is not based solely, or even mainly, on the intrinsic merits of the concepts themselves, because it also implies an acceptance of the likelihood that, as a result, poverty-oriented policies. will compete more strongly for public attention than non-poverty-oriented ones.

This political economy of data generation may help explain why it is so difficult to obtain official acquiescence even for a concept as simple as a poverty line. (Within ASEAN, only Malaysia has an official poverty line used in its development plan, even though all the governments profess that poverty reduction is a prime objective.) And yet the poverty line and the poverty incidence are only two

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5. For a critique, see Mangahas (1979b). For a recent typical exercise, see Crawford and Thorbecke (1980).

among many related concepts needed, sooner or later, in poverty analysis. They are no more informative in themselves than the GNP is for growth analysis in the absence of the other variables in the National Income Accounts.

This section, which borrows ideas from Wilfred Beckerman (1979, describes a number of concepts that would appear to be useful in poverty analysis. The concepts themselves, which are relatively straightforward, inevitably lead to a new jargon. If the concepts should prove ultimately useful, then it is only a matter of getting used to the jargon. First the terminology, then the gathering of data to give them social substance, then the analysis to put the entire frame to test and to generate new ideas for poverty-reduction programs.

Figure 1 depicts the distribution of food among families before and after some program has been implemented. Before the program,
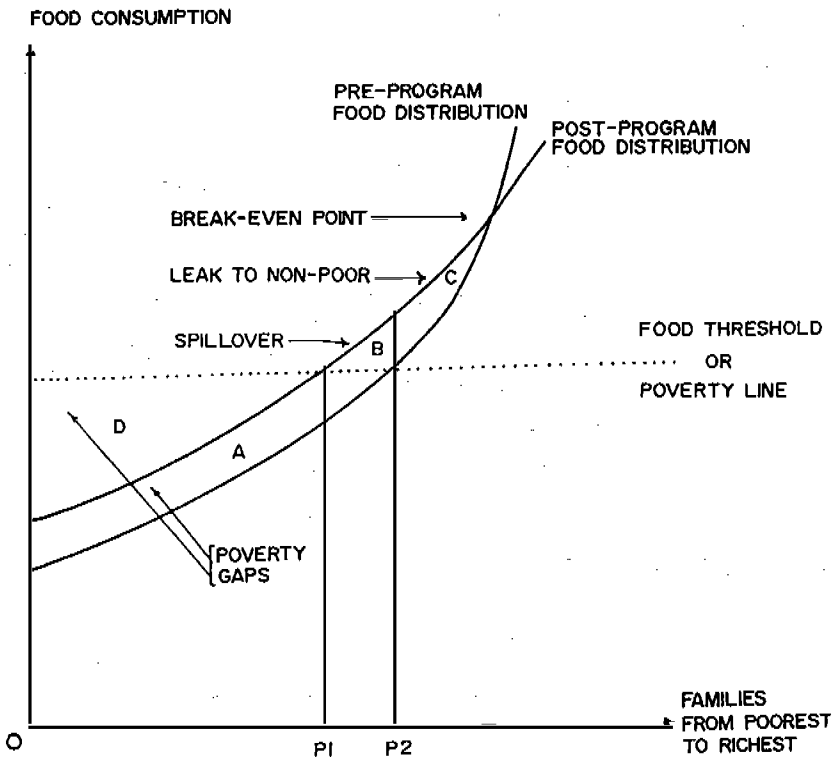
FOOD CONSUMPTION

PRE-PROGRAM
FOOD DISTRIBUTION
POST-PROGRAM
FOOD DISTRIBUTION

BREAK-EVEN POINT

LEAK TO NON-POOR

SPILLOVER

FOOD THRESHOLD
OR
POVERTY LINE

D

A

C

B

POVERTY
GAPS

FAMILIES
FROM POOREST
TO RICHEST

O

PI   P2

FIGURE I

there are OP_1 number of families who are poor, defined as all families below some food threshold. (For simplicity, all families have the same threshold; for instance, the vertical axis might be defined as calories consumed per equivalent-adult unit.) After the program, the number of poor is reduced to OP_2.

The total food benefits derived is the sum of areas A, B and C. The (preprogram) poor derive A + B, while the nonpoor derive C. The relative share of the poor in total benefits may be defined as:

$$\text{Vertical[6] Benefit Efficiency} = (A+B)/(A+B+C).$$

The proportion of the poor's benefits which are surpluses relative to the poverty line may be called the

$$\text{Spillover Ratio} = B/(A+B)$$

The program reduces the absolute *poverty gap* from A+D to D. The proportion of total derivable benefits which go towards a reduction of the absolute poverty gap may be called the

$$\text{Poverty Gap Reduction Efficiency} = A/(A+B+C.)$$

It follows from this that the:

$$\binom{\text{Poverty Gap}}{\text{Reduction Efficiency}} = \binom{\text{Vertical Benefit}}{\text{Efficiency}} \times \left(1 - \text{Spillover Ratio}\right)$$

Since the objective of the benefits is to reduce the poverty gap, it is pertinent to define the

$$\text{Benefit Gap Ratio} = (A+B+C)/(A+D.)$$

Note that both the benefits and the poverty gap may alternatively be expressed as proportion of total food consumption, and that relative benefits divided by the relative poverty gap give the same benefit-gap ratio. Then $(A/A+D)$ is the

$$\binom{\text{Poverty Gap}}{\text{Reduction Rate}} = \binom{\text{Poverty Gap}}{\text{Reduction Efficiency}} \times \left(\text{Benefit-Gap Ratio}\right)$$

Another ratio of interest is B/D, or the absolute spillover divided by the remaining poverty gap. The implication of a high *Spillover: Final Gap Ratio[7]* is that much could be done to reduce the remaining

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6. *Vertical* efficiency has to do with the sharing of the lower groups (the poor) relative to the upper groups: *horizontal* efficiency has to do with the extent to which those who are equally poor receive equal benefits.

7. One way of relating it to the other parameters is:

$$\frac{\text{Spillover-Final}}{\text{Gap Ratio}} = \frac{\text{Spillover Ratio} \times \text{Vertical Benefit Efficiency}}{\text{Benefit-Gap Ratio} \times (1 - \text{Poverty Gap Reduction Rate})}$$

gap by internal adjustments meant to rechannel the spillover of the program, i.e., there would be less cause for seeking a supplementary program.

The *breakeven point* separates the net beneficiaries from the net benefactors of the program. In the diagram, the benefactors are seen to consume less food on account of the program, but that is not strictly necessary. The additional food may come from imports. Another possibility is that food consumption may be expressed in terms of direct plus indirect grain usage; the upper-class benefactors could reduce their indirect grain usage without reducing their calorie intake by cutting down their consumption of livestock products.

Although Figure 1 clarifies the reduction in the poverty gap, the spillover, and the leak to the nonpoor, it is still relatively idealized. In particular, all of the poor, down to the poorest, derive some benefits. This may well be the intention, but the typical program implementation will fall short of this to some extent or other. The program implementation performance may be characterized by certain targetting and operational efficiencies,[8] which are illustrated by Figure 2.

The poor may be supposed to be the *ideal* target group. However, the program implementation will involve a series of steps, only a few of which are described in the diagram, which may tend to dilute the participation of the poor. For instance, some legal *eligibility* requirements may define the coverage of the program. If there is no means-test involved, then many nonpoor may prove eligible. The program may face funding constraints; the implementation may become *feasible* in wealthier local communities earlier than in the poorer ones. Even when funds are available, there may be bureaucratic bottlenecks which shrink the *actual* number of beneficiaries even further.[9]

Part A of Figure 2 shows a situation characterized only by "leaks." Every step in the program fully circumscribes the following step. There is an initial leak of the program to the nonideal group,

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8. Examples of target efficiency ratios: the proportion who do benefit out of the ideal target group; the proportion who belong to the ideal target group out of those who do benefit. Examples of operational efficiency ratios: the proportion who do benefit out of the legally eligible group; the proportion legally eligible out of those who do benefit. In these pairs of examples one of each pair could be termed "horizontal" efficiency, the other "vertical" efficiency; but which is horizontal and which vertical seems essentially arbitrary.

9. Thus, efficiency ratios would be linked to each other by relationships such as:

$$\frac{Actual}{Ideal} = \frac{Actual}{Feasible} \times \frac{Feasible}{Eligible} \times \frac{Eligible}{Ideal}$$

A. PROGRAM IMPLEMENTATION LEAKS
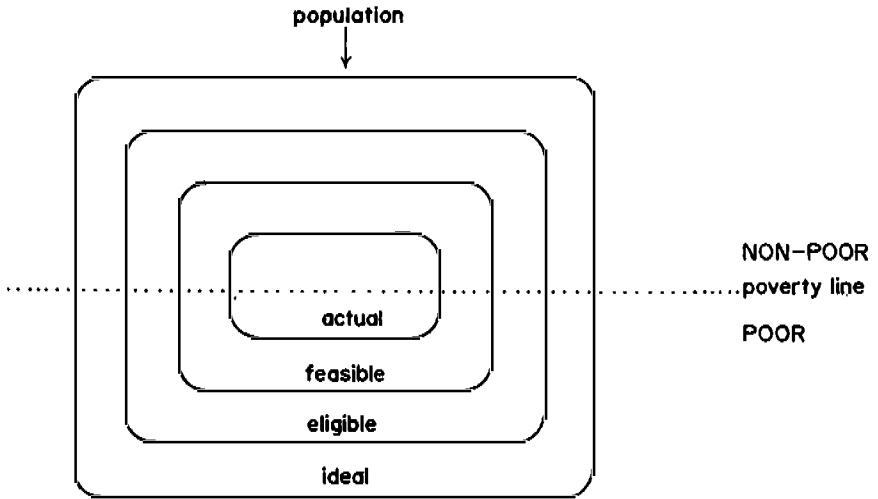
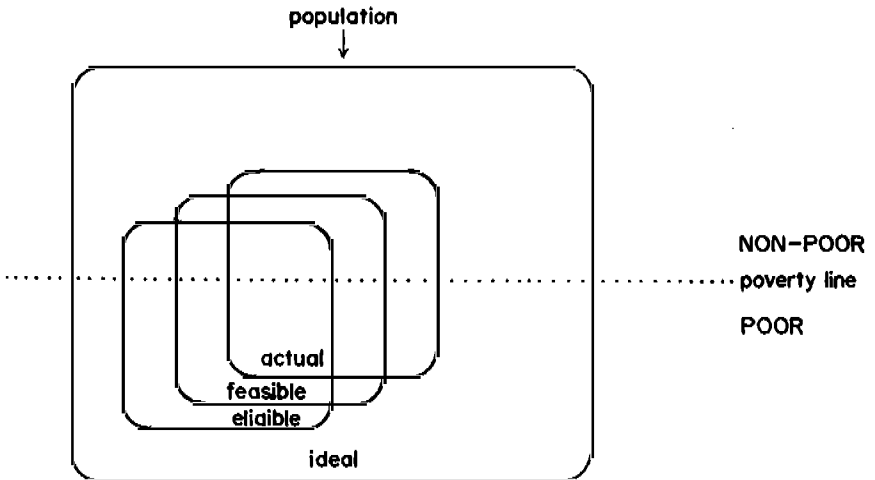## B. PROGRAM IMPLEMENTATION LEAKS AND ANOMALIES

FIGURE 2

which is corrected to some extent as the narrowing of program coverage affects both the poor and the nonpoor.

In Part B there are both "leaks" and "anomalies." Funds may be budgeted to assist some people who are ineligible under the rules. Some people who are not even in the budgeted list may receive funds. These are anomalies. Some anomalies may be "corrective"; some poor people may be able to break the rules and join a queue at some stage of the program, even if they have been excluded from the queues in earlier stages. Some nonpoor people may be able to do this as well, and this could be classified as an "anomalous leak."

Concluding Remarks

The prevailing system of measurement of socioeconomic phenomena, as well as the measurement of the institutional process which interacts with them, is an important part of the policy environment. In the case of the poverty problem, the subject matter is relatively new and may be perceived as threatening to many established interests. It is not a routine matter for the measurement activity to precede and become the basis for well-informed policymaking. The political and economic institutions may be such that the standard procedure is for new policies and new measurements or accounting systems to be undertaken simultaneously, or possibly even for the measurements and the accounting to follow sometime after the policy is initiated.

This helps to explain the great inertia or even positive resistance against new measurements. The new measurement activitity may not only open up new policy possibilities; they are even likely to be interpreted as tacit or partial official acceptance of the new policies themselves. It is a rare situation that facts are allowed to be objectively gathered and presented first, following which alternative policies may be rationally discussed and evaluated. Those who would oppose certain policies — whether out of selfish reasons or out of social principles — are only being far-sighted when they oppose activities to bring certain facts to light.

Under these circumstances there seems to be no real option for economists and other technicians but to try to persevere. Here and there, within the institutional setting, there may be some opportunities where initiatives to do accounting on nasty subjects such as poverty (foodwise or otherwise) and the efficiences of governmental programs to deal with it may not be completely stifled. Given the

very limited traditions which the less developed countries have for recording, accounting, measuring and other forms of fact-finding, believe that social scientists' efforts are more socially productive when spent in generating new primary information on crucial subjects than in analyzing the data conveniently being spewed out for them by a tradition-bound statistical establishment.

All measurements should be unbiased; but not everything can be measured. Therefore the topics selected for measurement should conform to the presumed social bias in favor of the poor.

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