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Poverty income Level

URBAN POVERTY PROGRAM

May / July 1981

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

File: Poverty Estimates Methodologies

TO: Distribution Below

DATE: July 10, 1981

FROM: Helen Hughes, EPDDR HH

SUBJECT: Poverty Measurement "The Construction of Poverty Income Levels and Estimation of Rural and Urban Target Groups" - Draft Paper by Professor Irma Adelman

1. The attached draft paper by Professor Irma Adelman of the University of California at Berkeley is circulated for your comments.

2. The paper briefly reviews Professor Beckerman's recommendations that the Bank discontinue use of poverty data. Professor Adelman takes the position that publication of data, even if they are weak, will eventually lead to improvements, as has been the case for now well-established data such as national accounts. Accordingly, her paper concentrates primarily on suggestions for improving the present CPS-methodology.

3. Part III of Professor Adelman's paper outlines procedures for the estimation of not only more disaggregated (or targeted) poverty data, but also more differentiated by degrees of nutritional status. For those countries where income distribution data are either not available or outdated, she suggests the use of national accounts, employment and population statistics to derive disaggregated income distribution data via an econometric approach.

4. For countries with more recent data, EPD is proceeding with a research project which evaluates and, when appropriate, adjusts the available income distribution data. This, together with the econometric approach suggested by Professor Adelman, should result in the greater availability of data for poverty estimation.

5. We welcome your comments on her paper.

Attachment

Distribution: Messrs. van der Tak, CPSVP
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SLee/JBaneth:pvt

DRAFT
IAdelman:pvt
June 25, 1981

TO: Mrs. Helen Hughes, EPDDR

FROM: Irma Adelman, CONSULTANT

SUBJECT: The construction of Poverty Income Levels and Estimation of Rural and Urban Target Groups

I. Background and Introduction

1. I was asked to review the Bank's practices in estimating absolute and relative poverty and make suggestions for improving them. I spent January 12-17 in Washington, looking at the Bank's procedures, at the responses to the questionnaire sent out by Mrs. Hughes and Mr. Lee, and consulting with Mr. Lee and his staff. It was agreed at that time that since Prof. Wilfred Beckerman, who has been asked to review the Bank's procedures for identifying poverty in relation to projects, will spend most of his effort on an evaluation of the conceptual deficiencies underlying the current approach, I will concentrate primarily on suggestions for improving present practices.

2. In my review, I will focus mostly on measurement issues. I shall not address the important conceptual and operational issues involved in deciding whether absolute or relative poverty should be the appropriate concept for preparing and appraising projects for rural development and urban poverty lending. I shall also not discuss the issue of whether the practice of taking the more inclusive measure of absolute and relative poverty for project design and appraisal is a good one. These are extremely important questions, but they are not within the terms of reference specified for this work.

3. The suggestions made in the report involve judgements concerning the operational feasibility of suggested improvements and the magnitudes of distortions in measurement of poverty induced by the deficiencies of the current approach. In what follows I shall limit my suggestions to those which could be implemented (albeit with varying degrees of accuracy) for the majority of LDC's, without requiring major inputs of new research. Naturally this will involve using shortcut procedures and making compromises with the "ideal" concepts and with "ideal" methodology. It is therefore my recommendation that parallel to the implementation of the suggestions contained in this report, studies be undertaken (1) to test the sensitivity of the results to the particular approximations made; and (2) to refine the methodology by providing better techniques of approximation.

II. Comments on Prof. Beckerman's Recommendations

1. Prof. Beckerman's report, which he submitted in April, 1981, focuses mainly on the uses of poverty identification in relation to projects and how the uses relate to Bank policy. His critique of the poverty data is three-fold: (1) that the data is not target group and/or area specific; (2) that the data is not sufficiently comparable conceptually to enable its use to compute the incidence of poverty among countries and aggregation into global poverty estimates; and (3) that the estimate is too unidimensional. He therefore proposes that the Bank discontinue the use of its poverty data (as presently estimated by the CPS methodology) and replace them with data on the relative presence or absence of physical indicators of the quality of life (e.g. potable water). I shall first comment briefly on his general conclusions, and then make specific recommendations for improving the estimates so that they meet his first two criticisms somewhat better.

2. To my mind, it is extremely important for the overall development community that the World Bank continue the use and publication of its country by country and global poverty estimates (albeit derived by different methodologies). I strongly disagree with Prof. Beckerman on this score. Regardless of whether these estimates are or are not used directly in the Bank's project work, they do serve both the Bank and the development community more generally in setting the agenda for the formulation of overall priorities for development policy. They sensitize not only Bank staff, but also other international agencies and the developing nations themselves as to the magnitude of the development task. The poverty estimates keep reminding all development practitioners, in simple graphic terms, of the ultimate goals of economic development, and help monitor how well the combination of the efforts of individual countries and donor nations is performing in attaining those objectives.

3. The publication of poverty estimates serves a vital function. Both the OECD and the U.N. Committee for Development Planning call for publication of figures on income distribution and poverty. No other international agency or individual group of donors is collecting or publishing these estimates. The Bank, because of the unique combination of its independence from control by individual countries and priviledged access, through its mission work, to the statistical information in developing countries, is uniquely situated to publish this data.

4. Even the very effort at poverty data collection within developing countries helps sensitize developing country governments and planning agencies to their poverty problems and indicates the seriousness with which the Bank

is taking poverty alleviation as an overall goal for its lending effort. Were the Bank to stop using these numbers, especially at a time during which the leadership of the Bank is changing, this would undoubtedly be taken as an unmistakeable signal that the Bank is switching gears in the orientation of its focus for country lending. This interpretation would be placed on the discontinuation of the use of the poverty estimates regardless of whether the explanations were stated in purely technical terms or not.

5. This is not to say that the estimates currently available are of good quality. I agree with Prof. Beckerman that they suffer from many conceptual and operational difficulties. It is also not to say that the current form in which the numbers are used could not be improved upon so as to make them more relevant to the Bank's direct operational needs. Indeed, the rest of my report will be devoted to indicating how this might best be done without great expenditure of extra resources. But to use the current deficiencies of the estimates as an excuse for abandoning the effort altogether would, to my mind, be a tragic mistake.

6. The history of currently firmly established statistics, such as national income accounts, input-output tables and price indices, indicates that, Gresham's Law does NOT work with respect to the generation of statistics. With respect to statistics, as long as the policy need for the information generated is perceived to be there and efforts to upgrade them are undertaken, bad numbers eventually bring in good ones. The first estimates of national income accounts, input-output tables and price indices were all seriously flawed and subject to large margins of error. (See, for example, Oscar Morgenstern's classic book on the subject). Since they were regarded

as important for macro-economic and welfare policy, their use and publication was continued and the conceptual and statistical bases for their formulation were gradually improved. Even now, substantial resources are devoted by the Bank as well as by other national and international agencies to the improvement of such data. (An example is the Bank's financial support to the Kravis International Comparison project, with excellent results.) Even though the statistics on national income accounts, input-output data, and price statistics are not perfect, especially for the least-developed developing countries, no one would seriously argue that their use and publication should be discontinued.

7. That a similar upgrading process is at work with respect to poverty estimates is indicated by the experience in Brazil. In 1971, McNamara cited Brazil's income distribution figures as indicative of the very poor performance of LDCs in poverty alleviation. The data on which the citation was based were of indifferent quality. This sparked several serious efforts to re-estimate the Brazilian income distribution figures (c.f. Fishlow, Morley, Fields) by going back to the original census tapes. It also led the Brazilian Statistical Agency to carry out a massive, extremely carefully designed and very-well implemented, national sample survey aimed at estimating the numbers of the poor and malnourished. The results of the survey, when published, indicated that despite rapid growth, malnutrition problems were acute and extensive. Following the publication of the survey, numerous newspaper accounts in Brazil highlighted the plight of the poor in Brazil, and shamed the conservative government into designing a large nutrition project, partially financed by the Bank. Thus, bad numbers brought in good ones, and good ones led to action.

8. In view of all these considerations, I would strongly argue for continuing the Bank's use and publication of its poverty estimates and of its effort at improving these estimates.

III. Improving the Bank's Poverty Estimates

III.1 Conceptual and Definitional Issues

1. In what follows I will assume that the poverty measurements are intended for use in targeting Bank programs and projects, and as an aid in monitoring the orientation of Bank lending towards low income beneficiaries, in particular, through rural and urban devleopment projects. The concept of absolute poverty pertinent for these purposes would appear to be that of insufficient resources for the maintenance of adequate nutritional standards, and for the provision of minimal shelter, clothing and health requirements. The level of income corresponding to absolute poverty will then be that at which the ratio of resources available relative to those required to maintain minimally decent standards of living falls below unity.

2. Operationalizing this concept involves first defining the basic unit of reference. It appears to me that the appropriate unit for this purpose is the basic income-pooling and expenditure-decision unit -- the household -- defined as the group of people habitually "eating out of the same pot".

3. The index of resources available (or "entitlements") should, in principle, be broader than just income in money and in kind. It should, in principle, include transfers and subsidies, in money and in kind; the imputed value of goods and services bartered or obtained through reciprocity relationships; as well as, perhaps more argueably, the imputed annualized value of the stream of dissaving possible out of assets; and the annualized value of the household's borrowing capacity from family, patron, government and private institutions.

But since the operationalization of this concept becomes hopelessly complicated in practice, we will limit the concept of resources available to income in money and in kind.

4. The index of resources needed, requires first normalizing family income by the demographic composition of the household. Obviously, the same income goes farther if applied to a four rather to a six person household. I would therefore suggest that the income concept relevant for defining absolute poverty is that of household income per adult equivalent. Going from household income to household income per adult equivalent requires the use of adult equivalent scales. These have been estimated in various household budget studies, but may require refining for present purposes.[/1]

III.2 Poverty Estimates

1. Prof. Beckerman's basic objections to the Bank's current poverty estimates are that they are not sufficiently differentiated to be useful in assisting project design within countries, and not sufficiently comparable among countries to be useful for deriving global estimates of the poor. In the rest of my report, I shall try to make some positive suggestions how more disaggregated poverty estimates might be devised, and how the comparability of estimates among countries might be improved. Naturally, the derived estimates will still fall short of the ideal. But then so do all other statistics.

2. The procedure used currently to derive absolute poverty estimates involves three conceptual steps: (1) costing the expenditure required in each country to purchase the minimal calories needed to maintain an adequate nutritional level at average levels of activity under the physiological and climatic conditions applying to the country's region; (2) blowing up the

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/1 The ILO has produced a major compilation of household budget data which makes such reestimation possible.

estimates of the necessary food expenditures into estimates of minimal incomes required for subsistence, by estimating from consumer budgets the usual ratios of food to non-food expenditure required to satisfy basic needs; and (3) identifying the numbers of people in each country falling below any given income level by combining per capita income estimates with income distribution data. If more differentiated income distributation data (by occupational group, by region, and/or by sector) are available (or can be derived) then steps (1) and (2) can be applied to the disaggregated income distribution data to arrive at more differentiated poverty estimates. Also, if in step (1), one were to distinguish, as nutritionists do, among first, second and third degrees of malnutrition, and apply steps (2) and (3) to the estimation of the number of people at each level, this would go a substantial way towards enhancing the degree of comparability of the poverty estimates among countries and among regions.

4. The rest of my report will suggest how by combining national accounts, employment statistics (surveys of economically active population) and population censuses with econometric estimates, more disaggregated income distribution data can be derived. I shall then make some comments on how the usefulness and validity of step (1) can be improved.

III.3 Deriving Income Distribution Estimates

1. The procedure suggested for deriving income distribution data is as follows:

1) derive the functional shares (e.g. wage and salary earners, self-employed, etc.) of various functional household categories from the national income accounts;

2) calculate the mean incomes of the functional household categories from employment data;

3) calculate cross-country regressions relating the variances of the distributions of income within each functional category to the country's socio-economic characteristics;

4) then calculate the size distributions of income within each functional category assuming that the distributions of income within the functional categories are log normal. In estimating the log normal distributions, use the mean incomes calculated in step 2) and, where direct information on the variance of income in the functional category is not available, the variances calculated in step 3).

5) use the resultant size-distributions of income within functional categories to estimate the incidence of poverty by target group.

6) aggregate the size distributions by functional groups, with the aid of the data of step 2), into overall size distributions of national income.

7) Convert to household income per adult equivalent by using adult equivalent scale. ILO has estimated for few countries adult equivalent scale using household budget studies and has derived income distribution per adult equivalent unit.[/1] Depending on the availability of household budget data, it should be possible to derive similar distribution for other countries.

/1 Ginneken, Wouter van, "Generating internationally comparable income distribution data. Evidence from the Federal Republic of Germany (1974), Mexico (1968) and the United Kingdom (1979)." Employment and Income Distribution Programme, ILO, Geneva, June 1981.

2. Except for the use of regressions to estimate the variance of the functional distributions, the procedure suggested is essentially identical to the procedure which would be followed in the statistical agencies of any country to derive the over-all size distribution of income. The procedure suggested has the merit of permitting the derivation of differentiated poverty estimates. By calculating the size distribution of income from the functional distribution, it becomes possible to identify the poverty groups in terms of sources of incomes and to identify the degree to which different groups of the population are part of the target poverty population. To some extent, the results of the regression analysis can also be used to suggest which variables within the economy are most closely associated, in a systematic manner, with the distribution of income within each target group.

3. A test of the suggested procedure was carried out in 1977, in a Master's Degree dissertation written under my supervision.[/1] In the dissertation, the size distribution of income in 24 developing countries was estimated by using this technique. The estimated size distributions were compared to the size distributions in the Jain Compilation,[/2] with excellent results (see Table 1). The share of income accruing to the poorest 20% of the population was within 10% of the Jain share in 79% of the countries, and within 15% for 96% of the countries in the sample. For the next quintile, the corresponding percentages were 92 and 96% respectively. These are the relevant comparisons since the poverty population is in most countries somewhere in the first or second quintiles. The Gini coefficient was within

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/1 G.D. Triner, "Analysis of the Size Distribution of Income in Developing Countries" (Unpublished M.A. dissertation, University of Maryland, 1977.)

/2 S.Jain, "Size Distribution of Income: A Compilation of Data", World Bank, 1975.

Table 1: SUMMARY OF ESTIMATED OVERALL INCOME DISTRIBUTIONS

	Percent of Income by Quintile of Population									
	Lowest 20%		21-40%		41-60%		61-80%		Highest 20%	
Country	Estimated /1	Actual /2	Estimated /1	Actual /2	Estimated /1	Actual /2	Estimated /1	Actual /2	Estimated /1	Actual /2
Argentina	4.6	5.1	8.6	9.3	12.8	13.1	19.3	18.6	54.7	53.9
Botswana	3.1	2.6	5.6	6.0	8.6	10.3	15.3	20.8	67.4	60.3
Chile	4.3	4.8	8.2	8.2	12.1	12.2	18.3	19.0	57.1	55.8
Colombia	3.1	3.5	6.4	6.6	11.0	10.9	19.3	18.9	60.1	60.1
Costa Rica	5.3	5.4	9.6	9.2	14.2	13.8	21.1	21.2	49.8	50.4
Dominican Republic	4.3	4.3	8.5	8.1	13.1	12.8	20.4	20.5	53.7	54.3
Greece	6.3	6.7	10.9	11.5	15.3	16.2	21.8	23.0	45.7	42.5
India	4.7	4.7	8.0	8.4	12.4	13.0	20.9	20.8	54.0	53.1
Israel	5.3	5.8	9.7	10.5	14.4	15.3	21.7	22.8	48.8	45.7
Ivory Coast	4.5	3.9	7.9	6.7	11.7	11.2	17.8	19.7	58.1	58.5
Jamaica	2.1	2.2	5.6	6.0	12.1	10.8	22.4	19.8	57.8	61.2
Korea	6.1	6.1	10.4	10.1	14.6	14.8	21.1	21.9	47.8	47.1
Lebanon	3.7	4.1	6.8	7.2	10.8	10.8	17.9	17.5	60.8	60.6
Malawi	5.9	5.7	9.2	9.3	12.6	13.1	17.9	19.0	54.4	52.9
Malaysia	4.4	3.8	7.9	8.0	12.0	12.4	18.9	19.6	56.9	56.2
Pakistan	8.0	8.0	11.9	12.2	15.6	16.2	20.9	21.8	43.6	41.8
Peru	2.1	1.8	5.3	5.5	11.0	10.6	20.4	19.5	61.2	62.6
Sierra Leone	3.4	2.9	6.9	6.7	11.5	12.2	1919	20.5	58.3	58.3
Sri Lanka	5.5	5.1	10.0	10.2	14.8	15.3	22.2	23.1	47.5	46.3
Tanzania	5.2	5.2	8.2	7.3	11.3	10.8	16.3	17.0	59.0	59.7
Thailand	6.1	5.9	10.2	10.4	14.4	15.2	21.0	22.4	48.3	46.1
Venezuela	2.9	2.7	6.3	5.5	10.5	9.6	17.9	16.8	62.4	65.4
Zambia	4.0	5.4	6.9	7.6	10.6	11.1	17.8	17.7	60.7	58.2

/1 Gail Triner, Op.Cit.

/2 Actuals from Jain, Op.Cit.

5% for 78% of the countries and within 10% for 100% of the countries in the sample. The degree of correspondence obtained between the estimated and the "actual" distributions was thus quite good. This close correspondence is all the more impressive since the basic income earning unit and the dates to which the Jain data refer are not always comparable to the basic income earning unit (the household) and the years to which the regression estimates refer. And the Jain data is itself subject to a margin of error of at least that magnitude.

4. In the dissertation, the functional groups distinguished were:

- wage and salary earners; - agricultural cultivators;
- agricultural farm workers; - traditional non-agriculture;
- self-employed; - property income earners

In addition to the above six groups it would be desirable to distinguish commercial from traditional self-employment. It should be possible to make these distinctions in at least some of the countries.

5. The log variances for the above six groups were estimated using cross-country regressions. For example, the log variance of wage income was regressed upon variables representing the extent of modern industry, the level of education, and the rate of industrialization. (R^2 = .586) The R^2 in the log variance regressions ranged from .25 for property income to .87 for agricultural wage income. However, the log variance of total national income and the overall size distribution of income both proved to be relatively insensitive to the variances within the functional groups. For 75% of the countries the log variance of the overall national income was within 10% of the actual log variance, and for 92% of the countries it was within 15%. The Gini was within 10% for all the countries in the sample.

6. For countries in which regional national accounts or regional input-output data exist, the procedure suggested for estimating the size distribution of income can also be applied on a regional basis. This could be quite useful in pinpointing areas and target groups within areas and in monitoring changes in their welfare over time.

III.4 Estimating Nutritional Levels - Differentiated Measurement

1. Conceptually, the process recommended here is similar to the one currently in use. However, the suggested approach will lead to a more differentiated measure of malnutrition that takes better account of intra- and inter-individual variations in energy intake and requirements. It also makes more allowance for nutrient losses which occur between the act of purchase of food (or home production) and the act of food ingestion.

2. The current process of estimating poverty incidence involves the following steps: (1) identify the number of calories needed to produce an adequate nutritional status; (2) generate a minimum-cost diet which will produce that status; (3) cost the diet at local prices; (4) using household budget data, derive/estimates the necessary non-food expenditure to arrive at a minimum income requirement; and (5) using income distribution and mean income figures, identify the number of people falling below a particular income status.

3. I shall discuss in turn all but the last two steps. (The last step was discussed in the previous section).

A. Identification of the Number of Calories Needed to Produce a Given Nutritional Status

4. It is suggested that, instead of a single nutritional status, the Bank devise for each country three nutritional statuses and identify the number of people falling below each. The statuses are: first-degree malnutrition--

corresponding to a calorie intake between 90 and 81 percent of that needed for adequate energy; second-degree malnutrition--a calorie level between 80 and 60 percent of the required nutrient norm; and third-degree malnutrition--a calorie level less than 60 percent of the norm.

5. The identification and costing of the additional two levels of malnutrition will not require much extra work. However, it will add a great deal of information to the poverty estimates by enabling one to distinguish between countries in which the majority of the people below the poverty level fall only a little bit below it and those in which the majority of the poor fall a great deal below safe nutritional levels.

B. Estimating Prevalence of Nutritional Deficiencies - Variation in Intake and Requirement

6. Malnutrition can be defined as the situation in which the individual's usual consumption falls below his true requirements. The latter value will vary among individuals rather than be a fixed number for all persons.

7. Estimating the incidence of malnutrition, therefore, involves recognizing that both individual requirements (R) and the individual intakes (I) vary among individuals. As a result, a certain proportion of individuals whose intake is above normal requirements will be malnourished because their own requirements are above normal, and a certain proportion of individuals whose intake is below normal requirements will not be malnourished because their own requirements are below normal. How these two effects balance against each other can, however, be estimated. To do so, we need the means and standard deviations of requirements, of intakes, and the coefficient of correlation among requirements and intakes.

8. Requirements vary by age, sex, level of activity, body weight, and metabolism rate. However, where requirements are expressed in per kg of body weight, nutritionists/1 have found that requirements in a given age/sex category are normally distributed around the mean for that category, with a coefficient of variation/2 (CV_R) of approximately 15%./3

9. A table of average energy requirements by age/sex category as specified by an FAO/WHO Committee is given in Table 2. The actual energy intake per kg of body weight can also be assumed to be normally distributed, for each age/sex category, around the mean allowed by income, with a coefficient of variation of about 20%./4

/1 P. Corey and G.H. Beaton, "Safe Protein-Calorie Ratios in Diets: Reply to Drs. Sukhatme and Payne", American Journal of Clinical Nutrition, Nov. 28, 1975, pp. 1195-1199.

/2 Standard deviation as percent of mean.

/3 This is the approximate value which in part is due to differences in the level of activity. This value emerges from about 40 micro studies of nutritional status. See G.H. Beaton and Lynn Swiss, "Evaluation of the Nutritional Quality of Food Supplies: Prediction of "Desirable" or "Safe" Protein-Calorie Ratios." American Journal of Clinical Nutrition May 27, 1974; pp. 485-502. After analyzing the data the authors conclude that a single coefficient of variation for requirements for all age/sex categories is appropriate. The micro studies conclude that energy expenditure has a coefficient of variation of 15% by age/sex group and that the basal metabolism rate has a coefficient of variation of 12.8%. If the coefficient of variation of requirements is 15% this implies that the correlation between energy expenditure and basal metabolism rate is about .35. The coefficient of variation of energy expenditure increases with age and is greater for females than for males, but that for the basal metabolism rate has the opposite pattern, hence the approximate constancy of the coefficient of variation for requirments by age/sex.

/4 This coefficient of variation also appears constant by age/sex. A test for significant differences performed by me on the summary of the original data cannot reject the hypothesis of constancy at the 10% level of significance.

Table 2: AVERAGE REQUIREMENTS FOR ENERGY BY AGE/SEX
(per kg of Body weight/day)

Age (years)	Average Energy Requirements (Kcal/kg/day) Males	Females
infants	111	111
1-3	101	101
4-6	91	91
7-9	78	78
10-12	71	62
13-15	57	50
16-19	49	43
20-39	46	40
41-50	44	37
51-60	43	36
over 60	40	32
pregnant women		45
lactating		56

Source: FAO/WHO ad hoc Expert Committee Report on Energy and Protein Requirements; FAO Nutrition Meeting Report Ser. No. 52, 1973.

10. Energy intake and energy requirements are not entirely independent. When both are expressed per kg of body weight, the correlation among them is estimated to be .20.

11. Given this information, one can specify the distribution of intake shortfalls in a population category as a normal distribution with the mean $\overline{X}_s = \overline{I} - \overline{R}$ and $\sigma_s = \sqrt{\sigma_I^2 + \sigma_R^2 - 2\rho\sigma_I\sigma_R}$. With the numbers given above, if $\overline{I}$ and $\overline{R}$ are close to each other, σ_s is about 22.5% $\overline{R}$. The percentage of individuals subject to a given deficiency level at a given value of $\overline{X}_s$ can then be looked up from a normal curve table.

12. In the above formula, all variables are expressed in per kg of body weight. Since requirements vary by age/sex, $\overline{R}$ should be calculated using age/sex distribution data from the U.N. Demographic Yearbook, or from population censuses. The WHO has developed age/sex adjusted weight charts for each country, and so has Iowa State University. These can be used to convert the per kg of body weight requirements into daily caloric requirements.

C. Estimating the Diet

13. Here, I have nothing to add to current practice except to note that three diets will have to be estimated if my recommendation of the differentiated measurement is accepted.

D. Estimating the Calorie Intake in the Diet - Nutrient Loss

14. Going from food purchases to calorie intake involves several leakages. First, there is loss in storage. It has been estimated in a National Academy of Sciences study[/1] that 10 percent of non-perishables and 20 percent of perishables are the minimum loss percentages. Second, there is loss in food preparation. This loss is two-fold: (1) not all that is purchased is actually

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/1 "Post-Harvest Food Losses in Developing Countries," National Academy of Sciences, Washington, D.C. (1978).

utilizable (e.g., shells of eggs, bones in fish, stems and shells in vegetables, etc.). The average ratios of edible foods to purchased foods are given in Table 3. At the food composition obtained in several nutritional studies carried out in the Philippines, the average ratio of edible to purchased foods was only 86 percent, implying an average loss of 14 percent. (2) there is a loss of nutrients in food preparation. Two nutrition studies--for Colombia and for Burma--compared the recipe-based nutrient content of meals and the chemical analysis-based nutrient content of meals after cooking for sample families in several locations. The average ratio of the recipe-based calories to the composite chemically analyzed calories was 115 percent for Colombia[/1] and 120 percent for Burma, implying nutrient losses in cooking between 15 and 20 percent.[/2] A conservative estimate of the combined average of these losses is 40 percent.

16. It is recommended that, in calculating the calorie intake in the diet, these losses be taken into account and the necessary diet be inflated accordingly.

F. Costing the Diet

17. Many respondents to the Hughes/Lee memorandum indicated that the difficulty of obtaining rural prices was a major impediment in their following the procedure recommended by the CPS. One approach to this problem would be to deduce rural prices from urban prices by assuming that rural prices are equal to urban prices minus the retail and transport margins evident in the Input-Output tables.

/1 Interdepartmental Committee on Nutrition for National Defense, "Colombia Nutrition Survey," May-August, 1960 (December, 1961).

/2 Interdepartmental Committee on Nutrition for National Defense, "Burma Nutrition Survey," October-December, 1961 (January, 1962).

Table 3: RATIO OF EDIBLE TO PURCHASED FOOD IN THE PHILIPPINES/1

Food Group	Ratio
Cereals	.99
Starchy roots	.85
Sugars and syrups	1.00
Dried beans, nuts, seeds	.96
Leafy and yellow vegetables	.66
Vitamin C rich foods	.77
Other fruits and vegetables	.73
Meat, poultry, fish	.68
Eggs	.88
Milk and milk products	1.00
Fats and oils	1.00
Miscellaneous	.99
Total Diet	.86

/1 Average of detailed survey results in three regions: Southern Tagalog (1965), Ilocos Mountain Province (1963), and Cayugun Valley Batanes Region (1963).

Source: Food and Nutrition Center, National Institute of Science and Technology, National Science Development Board, the Philippines.

IV. Conclusion and Recommendations

1. It is recommended that the use and publication of the poverty estimates by the Bank be continued, but that using the procedures outlined in this memo, the poverty estimates be made more targeted and more up-to-date, and more differentiated by degree of malnutrition. Also, greater attention should be paid to individual variability in both energy intake and requirements, and to the age/sex composition of poverty households.

2. It is also recommended that the Bank finance at least one detailed poverty and nutritional status study per region, to test the robustness of the poverty estimation procedures suggested to the shortcuts and approximations made, and to refine the approximation procedures.

The Measurement of Poverty in the Context of the World Bank's Activities

by Wilfred Beckerman, Balliol College, Oxford(1)

(Revised) 15th May 1981

I Introduction

During the last decade, and particularly since 1973, there has been a major shift of emphasis in the Bank's lending policies in favour of projects that are expected to benefit the poor more or less directly. This is in contrast to the lending policy that would be implied by the view - which had earlier been very widespread - to the effect that the best, or even the only, way of helping the poor was to raise the income levels of the countries concerned and that for this purpose, it would suffice to concentrate lending on relatively traditional sectors - such as irrigation, transport, power generation and so on - and to do so in the light of more or less traditional criteria in terms of rates of return. But the demise of the "trickle down" assumption in development economics, combined with the obvious urgency of poverty relief led to the introduction, in the 1970s, of lending criteria that emphasised the need to find new types of projects or programmes and to apply new criteria - even if complementary rather than substitutes for some of the existing criteria - designed to have a much more direct impact on the poorest sections of the population.

This shift of emphasis has been adequately documented in various World Bank publications, annual reports and other sources, which show the increasing share of poverty oriented projects in total lending by the Bank (including IDA lending), so that there is no need to elaborate on this point here.(2) There is

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(1) In preparing this paper I have been entirely dependent on the goodwill of Bank personnel in discussing the issues involved frankly and openly and in showing me the documents that might be of interest, irrespective of how far my conclusions might throw doubt on the validity of their own activities. The willingness of the Bank's staff to co-operate and to provide me with material on the basis of which I might reach critical conclusions can only be found among highly competent personnel who are justifiably confident that, whatever improvements or changes may be needed, they are basically doing a very good job that will stand up to any fair scrutiny. In preparing the first draft I have taken account of such criticisms made of the first draft with which I agreed, and in particular, of detailed suggestions by Charles Taylor. But I have not attempted to produce a report that would satisfy everybody and this final version still reflects basically my own jdugement of the situation.

(2) See, for example, a very recent overview of the change in policy during the 1970s and the effects on the pattern of Bank lending in The World Bank and the World's Poorest, The World Bank, June 1980.

no dispute that the poverty-orientation of the Bank's lending policy during the last decade has been genuine and effective, and this paper in no way attempts to question the success of the Bank's efforts in pursuing its goals. Furthermore, the poverty orientation of the Bank's lending seems to have been achieved without any excessive sacrifice of viability of the projects undertaken, judging by the rate of return that many of them have shown.

The main question to which this paper is addressed, therefore, is not the efficacy of the Bank's anti-poverty policy but the much narrower technical question of the validity of the Bank's concepts of poverty and related poverty estimates. And, in particular, this paper will concentrate on the role played by the Bank's estimates of the "poverty line" in project selection, although this is not the only use to which measures of the poverty line in different countries is put in the Bank's work. An alternative way of looking at this question is to ask how far the Bank's achievements in pursuit of its poverty alleviation objective have depended on the application of precise estimates of the poverty line that, in principle at least, are called for in project selection and design.

This may appear, at first sight, to be a rather unimportant and excessively technical question since, it might be argued, as long as the objectives are being satisfactorily achieved there is not much point in re-appraising the methods used. On the other hand, if the methods used are very time consuming they can only be justified if they play a significant role in the achievement of the objectives. The efficiency with which an operation is conducted is not a matter solely of the output; it is also a matter of the inputs used to produce it.

But the notion of "efficiency" has no meaning except in relation to specified objectives, so that it is useful, at the outset, to enumerate the various objectives that poverty measurements may serve in the Bank, along the following lines:-

Objectives of poverty measurement[1]

1. Increasing total resources

The total resources made available for poverty alleviation, which may be looked at as financial resources in the present context, can be increased in two ways, namely (i) mobilizing the Bank's resources for this purpose or (ii) mobilising others' resources.

(1) In drawing up this list, and a later list of criteria for judging any poverty measurement methodology, I have made extensive use of schemas suggested to me by Charles Taylor, of the P.P.R. Department.

As regards greater mobilization of the Bank's resources for poverty-alleviation, this may be promoted by

(a) improving the relationship between the Bank and its sources of funds, or other important bodies - i.e. the "public relations" aspect of poverty measurement;

and (b) increasing the awareness amongst the Bank's own staff of the importance attached tothe poverty-alleviation objective, and hence raising the degree of staff motivation in the pursuit of this objective.

The former means of increasing the Bank's resources may be promoted by the dissemination of estimates of the degree of poverty in developing countries, the role of the Bank's operations in alleviating it, and the effectiveness with which the Bank carries out this role. Estimates, such as those appearing in the President's speeches, or the World Development Reports, and in other education, information and public relations activities, all help to increase outside awareness of the magnitude of world poverty and hence help increase sympathy with the Bank's aims and activities.

The latter means of increasing the amount of the Bank's resources devoted to poverty alleviation may also be important. Several members of the Bank staff take the view that whatever reservations one may have about the precise methodology used inside the Bank for poverty measurement and about the obstacles to any accurate estimates, the mere existence of pressure on staff to produce precise poverty line estimates as well as detailed appraisals of the impact of projects on the poor are important in keeping the poverty alleviation target firmly in the minds of Bank staff, or in keeping up pressures on some members of the staff who may not be generally disposed to the move away from lending only to traditional and "productive" activities.

The second means of increasing the total resources devoted to poverty alleviation is to stimulate increased allocation of resources to this purpose by other bodies (e.g. national governments' direct lending, other international agencies, and so on). This can be helped by use of poverty estimates in forms such as those already mentioned above - i.e. by figures that dramatize, without any distortion being necessary, the true magnitude of the world poverty problem and the likely trends over the future.

2. Improved allocation of resources

This role of poverty estimates can take various forms, notably

(i) within the Bank's own operations, better estimates of poverty can

(a) improve the allocation of resources among countries and projects.

(b) improve the design, implementation, monitoring and evaluation of projects,

and (c) be used as inputs into research studies, such as those showing the relationship between poverty, on the one hand, and alternative growth strategies on the other hand, which are designed to influence general Bank policy with respect to project selection and to development strategies aimed chiefly at poverty alleviation.

(ii) improved resource allocation can also be promoted insofar as better estimates of the severity of poverty in individual countries, its location, characteristics and so on, helps national governments to make corresponding adjustments to:-

(a) their budgetary allocations;

(b) the role and detailed operations of the public sector;

(c) the provision of public services - notably those supplying basic needs

(d) forms of market intervention (such as credit policy, pricing policy, and so on)

As indicated above, this paper concentrates on a detailed analysis of the way that the poverty estimates used, in principle, for project selection have been drawn up and the influence they have had on project selection and design. Hence, the paper's conclusions are relevant chiefly to those objectives that come under the heading of improved resource allocation within the Bank, although, as indicated, they may have an indirect impact on the motivation of the Bank staff.

In confining this paper to the question set out above, various other interesting aspects of the efficiency with which the Bank seeks to implement its poverty-alleviation objective have to be ignored. For example, this paper does not discuss the political issue of the degree to which ostentatious precision in connection with the impact of the Bank's lending on poverty is effective in influencing outside bodies (such as the U.S. Congress, or the public); or how far the emphasis on precise quantitative analyses of the poverty impact of projects serves as an effective reminder to staff or the priority attached to this objective by comparison with others. As mentioned already the staff are faced

with a wide range of objectives, including many that are of a socio-economic character, such as the impact on the environment, or on particular social groups, or improving the status of women, etc. In such a situation, staff will feel that the Bank's management attached most genuine priority to those objectives for which precise quantification is demanded.(1)

However, this is not a unanimous view. Others take the view that the preparation of figures, such as those relating to the poverty line or to the impact of projects on the poor, that are known to be totally unreliable and subject to enormous margins of error merely brings the whole process of quantification into disrepute, or cause enough resentment at the imposed waste of time - or simply causes enough waste of time, with or without resentment - as to be counter-productive. But this question is difficult for an outsider to evaluate unless, perhaps, he is a psychiatrist. Clearly much depends on the personalities of the people concerned. It is a general fact of life that there are limits to the extent to which the behaviour of members of any organisation and functioning of the organisation can be determined by precise rules or constitutions. In the end a certain amount will always depend on the people involved.

Nor does this paper discuss the wider political context in which the Bank's negotiations with recipient countries have to be conducted. For example, there are obvious limitations on the extent to which any economic calculations, including those relating to the poverty impact of projects, enter into the final decisions when account is also taken of what Professor Ascher calls the "give-and take" relationship with borrower and potential-borrower governments in which their priorities and political sensitivities play an important role".(2)

Finally, as mentioned above, the discussion here concentrates on the poverty doncepts used in project selection and evaluation. An alternative concept of the poverty line is used, in the Bank, for quite different purposes, notably mobilizing resources and providing an input into research on the poverty-development relationship. These estimates - referred to here as the

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(1) Some of these questions are briefly discussed in the draft paper by Professor William Ascher "Preliminary exploration of the issues pertaining to the Bank's project work and poverty alleviation"; internal Bank document, May 1980; esp. pages 26-29.

(2) ibid.

A-C-C estimates (corresponding to the Ahuluwalia-Carter-Chenery studies) - will be discussed in this paper, but relatively briefly since (i) the limitations on these measures and the issues involved are of a fairly well-known and general conceptual character and do not depend on the kind of detailed internal Bank data that has been made available to me in the course of this work, and (ii) the limitations on this measure have no bearing on project selection and design, which is, after all, the Bank's main function - notwithstanding the valuable contribution that the Bank's more general research work has made to the understanding of the process of economic development.

Although the objectives to which any poverty estimates are put clearly have a bearing on the criteria by which one judges any particular methodology for measuring poverty, they do so chiefly by influencing the relative weight to be attached to various criteria and the severity with which they have to be applied. There are, nevertheless, some criteria of a general character that can be specified fairly independently, although they have to be applied flexibly according to the particular purpose in hand. These criteria may be enumerated as follows:-

Criteria for evaluating poverty measurement methodologies

1. Relevance - i.e. what we are trying to measure is poverty so that the method must seek to capture as fully as possible variations in what are regarded as the essential characteristics of poverty;

2. Comparability - i.e. at the same time the estimates need to be genuinely comparable between different situations, which implies that they should be invariant with respect to irrelevant characteristics of the populations in question;

3. Consistency - i.e. in principle, estimates made for any particular population group should be consistent methodologically with estimates made for any larger group of which the former is a component part. For example, estimates made at a local level should be methodologically consistent with those made regionally or nationally;

4. Feasibility - it must possible, given data limitations, to make estimates matching the methodology adopted without excessive sacrifice of the preceding criteria;

5. Cost-effectiveness - the feasibility criterion merges into the question of the extent to which the costs of preparing the estimates by any particular method are justified in terms of the benefits that may be obtained from them.

The costs include, notably, the staff time and effort required to produce the estimates, and the benefits depend on the extent to which the estimates in question serve the particular objectives that the measures are designed to promote.

II. The Concepts of the Poverty Line Used in the Bank

There are two main concepts of the poverty line recognised in the Bank (and in most literature on the subject), namely the "absolute" line and the "relative" line. The former concept is supposed to correspond to some bare minimum subsistence line, whereas the latter is designed to reflect the fact that people can still be "poor" even well above subsistence level, in the sense that they fall below what is regarded by the society in which they live as

the minimum level of command over goods and services needed in order to be a fully integrated member of that society. Such people may hence suffer from what the sociologists call "relative deprivation".(1) The notion of the relative character of poverty goes back as far as Adam Smith, of course, and has been revived in recent years partly as a result of growing evidence of the evident distress suffered by sections of the community in wealthy countries, who were living above conventional notions of a subsistence standard of living.

As far as the World Bank is concerned the concept of relative poverty owes its existence largely to the fact that if poverty were to be defined solely in terms of some 'absolute' minimum subsistence standards of living and if, in addition, priority were to be given to Bank support of projects and programes in countries that had a significant proportion of the population in absolute poverty, this would bias lending too heavily against a number of countries - notably those in Latin America - in which very small proportions of the population could be said to be in absolute poverty. For operational purposes, nevertheless, it is the absolute poverty line that enters into nearly all [redacted] projects that come under the heading of rural or urban development programs which are specifically designed to reduce poverty, as well as being the concept that is used for purposes of broad international comparisons of poverty and estimates of what total world poverty is to-day and how big it is likely to be in the future. Hence it is the absolute poverty line that has received most attention - and rightly so - in various Bank papers on the subject, although both are defined and used in various contexts. In the Bank the absolute poverty line used for project analysis is the income level "below which adequate standards of nutrition, shelter and personal amenities cannot be maintained", whereas the relative poverty lines is defined as follows:- "Relative rural poverty includes households whose income is equivalent to one-third or less of the average personal income of the country as a whole. Relative urban poverty level is defined

(1) One of the leading researchers into poverty has defined "relative" poverty as "..the absence or inadequacy of those diets, amenities, standards, services and activities which are common or customary in a society. People are deprived of the conditions of life which ordinarily define membership of society. If they lack or are denied resources to obtain access to these conditions of life and so fulfil membership of society they are in poverty" (Peter Townsend "Research on Poverty" in A.B. Atkinson (editor) "Wealth, Income and Inequality", (Oxford, 1980), page 301.

as one third of the national average personal income adjusted by the urban/rural cost of living ratio".(1)

Although it is obvious that the notion of a relative poverty line must incorporate a considerable element of rather arbitrary judgement, e.g. in the definition just given, why one third rather than some other ratio? - it is less obvious that there is no precise objective measure of an absolute poverty line. Of course, nobody in the Bank is under any illusion about this, or believes that there can be some "true" measure of poverty or some "true" definition of the poverty line, even of a line that is supposed to represent the minimum needed for survival. For example, the authors of the concepts (and measures) of the poverty line used for purposes of world total poverty estimates or for inter-country comparisons and so on write that "...the first step in measuring the scale of poverty is to establish a common poverty line to be applied across countries. It is self-evident that such a definition is necessarily arbitrary. Attempts to define absolute poverty in terms of some objectively determinable minimum level of consumption that is necessary for 'continued' survival do not escape this problem, since the notion of continued survival is undefined. At the very least we would need to specify survival through some given life expectancy in a given environment".(2) More briefly, an authoritative internal Bank Memo: stated that "There is no uniquely correct way of measuring the extent of poverty or of rural poverty".(3) All this is beyond dispute. The real issues are

(a) Since the degree of arbitrariness presumably cannot be unlimited, how far does the Bank's methodology respect the essential properties that the poverty line should possess?

(b) given that there is, nevertheless, an arbitrary element in the definition, is the poverty line measured in the Bank in a way that does respect these essential properties.

For example, Ahluwalia et. al. state that their measure (referred to above) "...can provide a useful basis for international policy. For this purpose

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(1) Memo: from Helen Hughes and H.G. van der Tak "Bank's poverty estimates" Nov. 16th 1979. It should be noted that in the phrase "households whose income is equivalent...", the "income" in question refers, of course, to the per capita income of the households. There are, of course, numerous other sources of the same definition, such as the memo: from Mr. Yudelman quoted below, or the memo: from T. Davies and A. Stone "Updating Poverty Income Levels", July 7th, 1078, in which the per capita qualification is explicitly included.

(2) M. Ahluwalia, N. Carter and H. Chenery "Growth and poverty in developing countries", World Bank Reprint Series, No. 118 (page 81).

(3) Memo: from Mr. M. Yudelman "Country specific poverty income estimates", Jan. 19th 1978.

it is less important that the poverty line correspond to some objective criteria for minimal levels than that the absolute level chosen be conservative and roughly comparable acrosss countries". In other words the comparability criterion is rightly regarded as the essential property of the measure adopted, even though the level that is being adopted may be somewhat arbitrarily chosen. The question then arises of how far it is, in practice, possible to apply a comparable poverty line. And this question is important not merely in the context of the type of international rankings shown by Ahluwalia et al., but in other contexts. For example, presumably it is equally important to achieve comparability within countries - e.g. within regions, or rural as against urban areas, since otherwise it will not be possible to obtain meaningful national aggregates or valid comparisons between regions or types of area. Furthermore, the estimates of poverty lines need to be comparable as between projects, since otherwise no valid ranking of projects can be made, and all comparisons of poverty impacts or poverty-adjusted social rates of return are totally meaningless, as are aggregates of the poverty-orientation of programs or lending.

Comparability is not, however, a simple unambiguous criterion. For example, as indicated in the above list of criteria, it implies that the estimates of poverty should be invariant with respect to "irrelevant" changes, such as demographic changes which can sometimes give rise to estimates of increased poverty even if, in some sense that is relevant for welfare purposes, poverty has not really increased.(1) But what changes are regarded as "irrelevant" is not always a straightforward matter, so that the notion of "comparability" is equally uncertain. Nevertheless, given that comparability, in certain respects, is clearly a basic criterion of any measure of poverty in different situations (countries, regions, type of location, or period of time), we may now turn to consider how far the two alternative concepts of an absolute poverty line actually in use in the Bank can be applied in a manner that makes the poverty lines and poverty incidence measures reasonably comparable between different situations, as well as most other criteria, notably "relevance".

(i) The "Ahluwalia-Carter-Chenery estimates (the "A-C-C" estimates)

These are the estimates used for various research studies that may have a bearing on the Bank's general policy, including the study of particular

(1) For example, in countries where higher incomes or more generous pension arrangements have meant that old people tend not to live with their children, quantitative estimates of poverty may be higher even though, in welfare terms, the people concerned are better off, having voluntarily chosen to live by themselves even at the cost, perhaps, of a lower incomes (defined widely).

relationships such as those that may exist between the degreee of poverty alleviation, on the one hand, and growth rates of national product or alternative patterns of growth, on the other hand. The A-C-C estimates of poverty are also used for other [~~purposes~~ objectives listed earlier], such as producing estimates and projections of world total poverty that provide some perspective to the Bank's activities and poverty-oriented policy objectives in the context of certain Bank publications, or speeches by the Bank's President or other officials, or other extremely valuable dissemination of information concerning the Bank's policies, objectives and achievements. This particular role of poverty estimates should by no means be minimised, so that insofar as certain estimates may contribute to this important activity one should not be too purist in assessing the theoretical validity of the methodology used.

The A-C-C methodology is basically as follows. If an absolute poverty line is defined, in India, in terms of minimum calories intakes, it transpires, from various estimates, that between 40 percent and 50 percent of the Indian population were below such a poverty line (in the relatively recent years for which the estimates were made). Hence, A-C-C take a poverty line equivalent to the income per head, in India, of the forty-fifth percentile. Interpolating into the Indian income distribution gives the income level in India accruing to people at the 46th percentile boundary. Applying "Kravis" international purchasing power comparison estimates enables one to estimate what this Indian income level implies in other countries, and this is taken as the corresponding comparable poverty line for other countries.(1) Finally, these poverty lines can be interpolated into income distributions data for other countries to yield estimates of the proportion of the population in other countries that must be below the national poverty lines.

(ii) The Central Policy Staff (CPS) methodology for measuring poverty

The basic CPS definition of absolute poverty has been given above (in the Hughes/van der Tak memo). In the same source, it is stated that the measurement of poverty, given their definition, "involves the following procedures:-

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(1) It is assumed here that readers of this paper are familiar with the International Comparison Project ("ICP") carried out, under the direction of Professor Irving Kravis, on behalf of the World Bank.

(a) identifying the components of a food "basket" (or baskets) representative of that consumed by a "low income group";

(b) estimating the quantities of that food basket necessary to provide the minimum calories and protein necessary for nutritional needs;

(c) costing that minimum food basket; and adding an estimate for the monetary equivalent of non-nutritional essential needs (clothing, shelter, energy, etc.) to derive an expenditure level necessary to maintain a minimum standard of living, i.e. a poverty threshold"

Before examining systematically certain objections that may be raised to this measure of the poverty line, clarification of one particular point in the definition as set out in this memo: is needed. This is because the concept of the "low income group" looks as if it is left rather open. But an earlier "Baum memorandum" (of April 20, 1976, on "Improving the Definition and Measurement of Poverty Income Levels") specified that the food basket of the households at the 20th percentile level should be used (as being roughly the average of the lowest 40% of the population).(1)

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(1) It might appear that this alone is a major conceptual weakness in the method. For consider a county in which about 50%, say, of the population are estimated to be in absolute poverty (there are several such countries according to Bank estimates). It might appear that, in that case, the basket of goods consumed at the 20th percentile might differ greatly from that consumed at the poverty line level around the 50th percentile. Of course, this is not necessarily the case, since given the definition of the absolute poverty line, those who fall below it - even should they constitute the majority of the population - cannot fall very much below it, since they would not, in that case, have survived. However, even if they have a level of total consumption at the 20th percentile that differs little from that at the 50th percentile, they may attain that level with a very different pattern.

III General limitations on both measures of poverty

Both concepts of poverty described above are subject to certain general conceptual weaknesses as well as limitations on account of data deficiencies. It does not seem worth while discussing these in great detail here since (i) they are less important than the rather specific weakness inherent in the CPS method - at least, given its application to project selection - that are discussed separately in more detail below and (ii) they are relatively familiar both in the general literature on poverty measurement and in some particular comments, chiefly by Bank staff, onthe Bank's concepts. By contrast, the material presented in later sections of this paper is not so widely known or brought together in one place. Nevertheless, some of the main general weaknesses of the two methodologies should be briefly mentioned.

It should be understood at the outset, however, that there is no clear theoretical solution to many of the problems that arise in connection with the definition of poverty in particular, any more than in respect of the more general concept of inequality. This is essentially because there can be no objective scientific definition of poverty. Theoretical debate, therefore, tends to concentrate on the type of measure that might be best expected to approximate to the welfare of individuals but this must eventually come up against obstacles in the form of either (a) inevitably arbitrary value judgements or (b) unknown positive relationships - e.g. the economies of scale in larger families, or the degree of intra-family sharing of resources, and so on. These two types of impediment to any clear theoretical concensus as to the measurement of poverty are reflected in the following general qualifications to the two measures set out above - though with more relevance to the A-C-C measure than to the CPS measure.

(i) arbitrariness of basic poverty line. In the extract from A-C-C quoted above the authors explicitly state that they do not attach over-riding importance to the extent to which the poverty corresponds to some objective criteria. Although the starting point in their own procedure is an estimate of the minimum daily calorie requirements in India, the earlier quotation from the same document indicates that they are well aware that even such a definition is essentially arbitrary.

How important is the arbitrariness is, however, a question that is rarely posed since it is difficult to see how it can be adequately answered. One

plausible approach is to examine the sensitivity of the results to alternative arbitrary estimates of the poverty line. Table 1 below shows the variations in the incidence of poverty that are obtained if the poverty line is varied by 20 percent above and below the base poverty line used in A-C-C. It can be seen that in some cases, the proportionate rise in the estimated incidence of poverty is very great. For example, using the A-C-C methodology (and data), a 20 percent increase in the poverty line would raise the estimated incidence of poverty by about 50 percent in Chile and Turkey, and by about 60 percent or more in Sri Lanka and Tunisia. Conversely, a reduction in the poverty line by 20 percent implies that the measured incidence of poverty is 35 percent lower in Brazil, 43 percent lower in Chile and 54 percent lower in Guatemala, and so on.

It is true that in many other countries the sensitivity of the estimates is much smaller, so that, taking the total of all the countries covered in A-C-C, the aggregate world poverty estimate, which was 678 million in A-C-C, increases to only 842 million (a 24.2 percent increase) if the poverty line is raised by 20 percent; and if the poverty line is reduced by 20 percent the estimated total numbers of poor people is cut by only 26 percent, to 500 million people. In defence of the A-C-C estimates it may be argued that

(a) for the purposes for which the A-C-C estimates are used, it does not matter much whether the aggregate number of poor people in the world is put at 700 million or 500 million. This seems a valid point, although it remains true that insofar as individual country estimates are sensitive to arbitrary variations in the poverty line to different extents, the other A-C-C claim, namely that their methods at least produce reasonably <u>comparable</u> results as between countries, is considerably weakened; and

(b) since the 20 percent variation used in this test is an arbitrary variation it is not by itself a very good test of the importance of the arbitrarines Again, this is true as it stands, but other evidence and considerations discussed below, especially in connection with the CPS method estimates, suggest that a 20 percent variation is not entirely arbitrary and is, in fact, by no means unduly stringent.

Table 1. Sensitivity of poverty estimates, based on the Ahulwalia-Carter-Chenery method, to variations in the base poverty line: 1975[1]

(estimated % poor in each country)

Country	Base P.L.	P.L. plus 20%	P.L. minus 20%	Country	Base P.L.	P.L. plus 20%	P.L. minus 20%
Argentina	0.4	1.5	---	Uganda	57.5	67.3	45.7
Brazil	16.2	19.9	10.6	Zaire	55.1	67.4	45.7
Chile	12.0	17.9	6.8	Zambia	7.1	20.2	3.1
Colombo	20.2	26.1	14.6	Bangladesh	66.7	76.2	53.1
Guatemala	11.6	16.1	5.3	Burma	66.5	73.6	51.0
Mexico	14.7	17.4	12.1	India	49.3	61.2	35.8
Peru	19.3	23.0	15.5	Pakistan	46.3	56.9	33.3
Egypt	21.4	28.2	14.8	Sri Lanka	14.8	23.5	9.5
Morocco	26.7	31.8	16.8	Korea	8.8	11.4	6.2
Tunisia	6.7	11.1	3.7	Malaysia	13.0	16.5	9.7
Turkey	15.7	23.3	11.3	Philippines	34.9	42.8	27.3
Yugoslavia	0.3	1.4	---	Taiwan	0.4	1.5	---
Ghana	26.3	32.4	19.2	Thailand	35.0	42.5	22.8
Ivory Coast	26.7	33.5	18.7	Indonesia	61.7	73.8	45.2
Senegal	37.0	45.4	29.2	Iran	14.6	20.1	9.8
Kenya	57.0	63.3	47.8	Nigeria	38.4	47.7	27.1
Sudan	56.6	67.6	46.1	Venezuela	3.9	6.0	2.1
Tanzania	52.7	66.4	45.4	Ethiopia	70.0	84.2	53.5

Absolute No: of Poor, Millions, 1975

(1) Base Line P.L. = $ 210 p.a. :- 678.4 million

(2) + 20% P.L. = $ 252 p.a. :- 842.8 million = + 24.2%

(3) - 20% P.L. = $ 168 p.a. :- 499.2 million = - 26.4%

(1) I am very grateful to Mr. N. Carter, for providing me with the latest estimates (from the GINIWL file) of the base case as well as for carrying out the computations that I needed in order to obtain estimates with variations in the poverty line.

(ii) Validity of price comparisons

This problem also applies chiefly to the A-C-C method, since it is this method, rather than the CPS method, that is intended to provide valid international comparisons and world aggregate measures of poverty. The problem is that the international purchasing power comparisons produced by Irving Kravis and his Associates, in the course of their monumental International Comparisons Project may not - and probably do not - reflect the relative prices of goods consumed soley by the poor in each country. Insofar as the relative prices of goods consumed by the poor differ, from country to country (relative to the incomes of the poor in each country), then the poverty lines will be incomparable.(1)

This is quite separate from the point raised by Mr. Paul Isenman concerning the basic methodology of the Kravis studies, namely the fact that the Kravis comparisons are based on prices for services (as for other items of final expenditure) that would be paid in some expenditure-weighted hypothetical "world" average country, which would tend, therefore, to be a relatively high income country. As Mr. Isenman points out, this would mean, for example, that educational output in India (where teachers are relatively very poorly paid) would be valued upwards very much more than food output in India,(2) and this procedure is questionable. How far this argument is valid, however, and how far it does distort the A-C-C poverty estimates raises wider (and deeper) questions concerning the ICP that lie woutside this paper.(3) The point being made above, and which seems beyond dispute, is that insofar as the relative price levels of goods and services consumed by the very poor are not in line with those of the population as a whole, then the use of Kravis weights does not help much in obtaining internationally comparable estimates of poverty lines in income terms. Thus, even if no systematic overall bias is introduced into

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(1) I developed this point at greater length in a review article "Some Reflections on 'Redistribution with Growth'", in World Development, 1977, Vol.5.

(2) See full discussion in Paul Isenman, Inter-Country Comparison of "Real" (PPP) Incomes: Revised Estimates and Unresolved Questions, World Bank Staff Working Paper, No.358; Sept. 1979, notably pages 8-11.

(3) Mr. Isenman specifically considers the impact of this point on the A-C-C poverty measures in a memo: of March 19th, 1980 on "WDR Poverty Measure", which however, seems to conclude that the revised poverty line would be lower than in the A-C-C methodology, so that the number of poor would be higher, whereas, it woul appear that the number of poor would be lower if the poverty line is reduced.

the estimates along the lines suggested by Mr. Isenman, a further element of incomparability is introduced into the estimates of poverty.

(iii) the definition of the income unit

This is the problem arising out of the tendency - explicitly in the CPS method and implicitly in the A-C-C method as far as one can judge - to use income per capita rather than income per adult equivalent unit (AEU). I do not intend to pursue this issue here for two main reasons. First, the theoretical problems involved in specifying a "correct" set of adult equivalent scales are formidable, and although some valuable progress has been made, nevertheless, in applying the analysis of AEUs to actual data in the context of the Bank's Living Standards Measurement Study, the return on attempts to reach agreement on the theoretical issues for purposes of the present exercise seems small given its very limited quantitative importance in the present context.(1) For various estimates suggest that, in the type of context relevant here, poverty estimates are not very sensitive to whether one uses an income per capita or income per AEU. This is shown, for example, in the Datta and Meerman study for the World Bank, as well as in the Visaria paper for the Living Standards Measurement Study.(2) Secondly, although the question of the correct income unit is a major topic for discussion in the context of income distribution or poverty analysis in advanced countries, in many of the very poor countries the concept of the family is, itself, often vague and difficult to define or measure, so that the whole issue becomes very academic.

(iv) head count versus alternative measures of poverty

The problem here is that even given some poverty line there are alternative methods of applying it in order to arrive at some overall measure of the "degree of poverty" in the country or area in question. Counting the number of people who

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(1) There is quite a substantial and distinguished literature on this subject, and the key references are contained in two papers prepared in conjunction with the Living Standards Measurement Study by Professor Angus Deaton, namely Inequality and Needs: Some Experimental Results for Sri Lanka, (Sept: 1980, 1st draft), and "The Measurement of Welfare: Theory and Practical Guidelines", Jan. 1980; esp. paper 54 to 61.

(2) G. Datta and J. Meerman Household Income or Household Income Per Capita in Welfare Comparisons, World Bank Staff Working Paper No.378, March 1980, esp. page 27; and Pravin Visaria Poverty and Living Standards in Asia, (draft of Feb. 1980 esp. page 40). See also S. Bhalla, "Measurement of Poverty - issues and method"; - Jan. 29th, 1980; a preliminary draft for WDR No.3; page 39, for confirmation of this judgement.

fall below the poverty line (the 'head-count' measure) is not the only method of proceeding, although it is the one that is most common. It is also the one that has the most obvious and immediate impact in terms of public information since it is the easiest to grasp. But, from a theoretical point of view, it is known to be a very limited concept, in several respects, if not downright misleading as a guide to policy. For example, the head-count measure of poverty tells one nothing about how poor are the poor - i.e. how big are their poverty gaps (the gap between their incomes and their poverty lines). It may well be that, in one country, only 20 percent of the population are poor, and in another country 40 percent of the population are poor, so that one would tend to deduce that the "degree of poverty" was twice as great in the latter than in the former. However, if the poor in the latter country were only marginally below the poverty line, whereas the poor in the former fell significantly below the poverty line (i.e. had relatively large poverty gaps), this would be untrue in an important sense, so that the obvious policy response - namely to concentrate aid on the latter country - would be misguided. Another way of looking at it is as follows. Consider policy towards the poor if a given amount of money is to be transferred to them. If the objective is posed in head-count terms, and takes the form of wanting to maximise the number of people who are raised above the poverty line, then the best procedure would be to give the money to those who have the smallest poverty gaps; if the objective is to maximise the number of poor who receive something, then the best procedure would be to spread the money evenly over all the poor; if, however, the objective is to make the greatest contribution to the relief of suffering and distress, the best procedure is no doubt to give the money to those who have the largest poverty gaps.[1] In addition, the more is the poverty line over-stated and hence the number of poor exaggerated the more inappropriate will be the head-count based policy.

Now it is probably true - as suggested in a memo: by Mr. Pickering - that for certain purposes, notably the Bank's public information activities, it is hardly worthwhile changing the definition in a direction that would take account of

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(1) I develop this topic in detail in my article "The Impact of Income Maintenance Payments on Poverty in Britain, 1975", in The Economic Journal, June, 1979, esp. page 263-265.

this sort of point.[1] But for purposes of project selection and appraisal this does not apply and, ideally, it would be desirable to give priority - other things being equal - to projects that helped most those who are poorest rather than projects that had a greater pay-off in terms of the proportion of poor people affected. However, in view of the general point made in the first paragraph of this section (i.e. that in practice there are more important weaknesses in the CPS estimates) there seems no point in pursuing further this particular weakness of the methodology.

(v) time period

The same probably applies to another whole group of conceptual issues, notably the time period over which the income of the persons concerned is measured, or, in plain language, how long has the poor person been poor? This has both theoretical and practical angles. At the theoretical level the question is largely a matter of the form of one's welfare function. That is to say, is somebody who is mildly poor throughout the year to be treated as being equivalent to somebody who is extremely poor at certain times of the year (e.g. in the weeks leading up to the harvests) but well above the poverty line at other times (i.e. shortly after the harvests)? In advanced countries the conceptual debate tends to be in terms of annual incomes versus life-time incomes, but in very poor countries, with the association in many cases between poverty and the agricultural cycle, seasonality of poverty would be very important, and there is no evidence that account is taken of this in the Bank's assessment of poverty incidence or the poverty impact of projects. At a more practical level, the erratic or seasonal

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(1) Donald C. Pickering "The Definition of Rural Development", memo: to Mr. Baum of May 2nd 1979. This memo: comprises quite a wide ranging review of various problems associated with the Bank's definition of poverty, of which the one referred to here appears in the form of a discussion of the choice between estimates in terms of numbers of beneficiaries as distinct from alternatives such as estimates in terms of shares of beneficiaries in project income. Paragraphs 11 and 15(a) of this memo: echo the point made in the above text concerning how far outside bodies can be expected to appreciate more refined measures of the poverty incidence. Since my own view is rather similar - i.e. I do not believe that the general public would readily grasp the poverty gap concept - I have not thought it worth while expanding on theoretically superior concepts, such as the Amartya Sen poverty measure or the Takayama measure, since both are slightly more complicated.

character of employment and poverty in many developing countries means that the results of any household income or expenditure surveys - either at a national level or at a more local level - will be sensitive to the particular time of the year at which the surveys have been carried out. This probably adds yet another dimension to the limitations on the statistical basis for the whole exercise, to which we now turn.

(vi) statistical data limitations

That the statistical data base for poverty estimates in developing countries is extremely shaky is generally agreed by all those who know anything about the statistics. But this knowledge is perhaps not as widely disseminated as one might expect and, in addition, there is a tendency to shrug off such objections on the grounds that, given the bad data, one must do the best one can and that any estimates are better than none, and that errors will cancel out, and so on. This argument is, however, too easy, and is not always true. In some cases bad estimates, like bad money, drive out good estimates in the sense that they become a substitute for thought about how one should proceed given the weakness of the data and given one's real objectives.

The deficiencies of the particular data used to estimate national poverty lines in the context of the CPS methodology and related project impact appraisal are set out in much more detail in a later section of this paper, as well as some suggestions, in a concluding section, as to the lines along which one might try to proceed in order to produce more valid estimates. But some more general references to data limitations might be relevant here.

As pointed out in the "Fishlow report" commissioned by the Bank, the usual assumption of randomness of errors is particularly unwarranted in the field of income distribution data on account of non-random sources of error such as the size of family.[1] The report specifically points out that, for example, the tendency for poorer families to have smaller sizes can give very misleading results if estimates of the percentages of the population poor are derived, as they often are, from basic data in terms of households that are not adequately adjusted for household size (Appendix A, pages 4-6). More generally, the Fishlow report is highly critical of the inter-country comparability of some of the income distribution and poverty comparisons produced by the Bank.

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(1) Report of the Research Advisory Panel on Income Distribution and Employment; report of a panel under the chairmanship of Professor Albert Fishlow, June 6th, 1978.

The Economic Analysis and Projections Department of the Bank is currently engaged on an analysis of the quality of income distribution data in a number of countries (in conjunction with the I.L.O.), and some improvement in the quality and comparability of income distribution data in some countries can be expected to emerge from this exercise. But, at present, it appears from my own discussion with various people at the Bank who have some knowledge of the data in most of the developing countries, that the quality of the data is only reasonable in about half a dozen of them. This is, after all, not surprising. Having now worked on poverty estimates in about ten advanced countries during the course of the last few years I have found that the data base was only really adequate in about four or five of them. If the data base was inadequate in the other five or six advanced countries it is hardly surprising that it is far worse in most developing countries, taking account not merely of the limitations on trained personnel and government resources for this sort of activity but also of the often insurmountable technical difficulties arising out of the nature of their economies and societies, which render concepts such as annual income or expenditure or family size and so on far more nebulous than is the case in advanced countries, not to mention the degree to which respondents can be expected to provide accurate information.

In the A-C-C methodology, of course, the income distribution data play a key role. As explained above, given the poverty line the incidence of poverty is then estimated by interpolation into the income distribution data. If the latter are very unreliable then the interpolations will be very inaccurate. Differences in the degree of reliability will therefore introduce a further degree of incomparability into the national estimates. And insofar as the income distribution data are also generally biassed - notably an exaggeration of the incidence of poverty on account of (i) the family size effect referred to above in connection with the Fishlow report or (ii) a greater under-estimate of poor peoples' living standards than for the population as a whole - for a variety of obvious reasons, then the global estimate of poverty will also be too high.

Conclusion

It appears that, even before coming on to a more detailed analysis of the defects in the CPS estimates of poverty that, in my opinion, are their most important defects, there are enough other conceptual and practical deficiencies in the methodology used in compiling both the A-C-C estimates and the CPS estimates, to make both sets of estimates virtually worthless for all but very

rough orders of magnitude of global poverty - if that. These deficiencies are related to issues that are fairly well-known in the general literature on poverty measurement. But whilst I think that some of them are relevant to developing countries I do not think that they should be examined from the point of view of how allowance might be made for them in order to arrive at a better aggregative monetary measure of the poverty line or of poverty. This is because, as will be argued below, the attempt to produce an aggregative uni-dimensional measure of poverty in developing countries is probably misplaced from the outset.

IV Estimates of poverty used for project selection

In principle the poverty impact of projects is estimated on the basis of national poverty lines that have been calculated by the country economists. These are obtained, in principle, in accordance with the guidelines referred to above (in the Helen Hughes/van der Tak memo: and others). These poverty lines and the related assessment of the poverty impact of projects also enter into estimates of the poverty orientation of the Bank's lending activities in general or its rural or urban development activities in particular. But there are numerous weaknesses in these estimates, in addition to the more general weaknesses discussed in the previous section of this paper. Before embarking on a discussion of the pros and cons of the CPS concepts involved, however, it should be emphasised that the difficulties inherent in the methodology are well-known to most Bank personnel and most of the criticisms discussed below have turned up in one Bank document or another or have been pointed out to me by Bank staff. My role here has been largely to put the gist of the information together in one place, in conjunction with other aspects of the problem, and to try to see what the implications are. But there is no doubt that the weakness of the estimates is no great discovery. In fact, the memo: quoted above (on the definition of the poverty line, by Helen Hughes and van der Tak) goes on to summarise succinctly some of the major difficulties which the accepted poverty concept encounters, as follows:-

> "These calculations (i.e. those referred to earlier in the definition of relative and absolute poverty lines) are obviously plagued by the lack of reliable data. For example, the "representative food basket" may vary from region to region within a country, reflecting different dietary patterns and habits. Differences in levels of expenditure, both within and between countries, affect the variety and composition of diet that can be afforded. The

identification of the local food basket of a prototype lower income household (i.e. bottom fifth of the income distribution) is perhaps the most difficult task, especially in rural areas. The data come mainly from official household expenditure or consumption surveys. Calorie requirements vary significantly according to the activity pattern of work; prices of commodities also vary significantly through space (urban/rural/farm-gate/market) and time (seasonal scarcities) and are often not reported in sufficient detail to enable a full calculation of appropriate urban rural average prices.(1) Similarly, estimates of relative poverty require per capita income data from household surveys or national accounts and are only as reliable as are the accounts themselves. Since rural poverty income level is defined as 1/3 average national per capita income, practical problems arise in using appropriate urban-rural price differentials to derive urban relative poverty income levels."

A similar awareness of the limitations on the scope for making accurate estimates of the poverty line as defined is shown in some of the comments attached to the estimates of country poverty lines sent in by respondents to the memorandum just quoted. For example, the covering note to the estimates for Mexico stated that "...all such estimates, for Mexio at least, are more exercises in imagination than reasonably firm results",(2) and earlier estimates for Mexcio were accompanied by a note to the effect that "After having done the exercise (i.e. estimate Mexican poverty levels) I am more doubtful than ever of its utility, not so much because of the time involved, but also because it adds to the increasing emphasis on numerical results regardless of their accuracy which seems to be overtaking our work, with its obvious result in terms of professional dis-satisfaction".(3)

Another respondent drew attention to the sensitivity of the estimates of the incidence of poverty to variations in the estimated poverty line, namely that in the country in question (Thailand), the revisions to the poverty line (10% and 23% increases in the rural and urban poverty lines respectively) had led to 25% and 45% increases in the estimated incidence of rural and urban poverty. Other

(1) Vinod Thomas's studies on "The measurement of spatial differences in poverty: the case of Peru" (World Bank Staff Working Paper No.273; June 1978) contains a detailed analysis of the manner in which inadequate allowance for spatial difference in prices can distort poverty estimates.

(2) Memo: by Mr. Joel Bergsman, of August 30 1979, covering response to the Hughes/ver der Tak survey mentioned above.

(3) Memo: of Oct. 2nd 1978, covering previous estimates for Mexico, sent by J. Villargee to T. Davis and A. Stone.

replies give estimates that imply such enormous revisions by comparison with earlier estimates that the credibility of the whole exercise is completely undermined. For example, the estimates for Honduras indicate a revision of the incidence of rural poverty from 10% in the earlier estimate to 55% in the latest estimate.

In some cases, where some details on the methods and data used have been given, the implausiblity of the methodology, given the data, is very obvious. For example, some estimates for Zambia show that over 90% of rural households are below the absolute poverty line and that the average calories they can obtain, given their income levels, would amount to only 605 per day (compared with the estimated minimum needs of 2,350 in their case).

There are many other anomalies and implausible features of the estimates that are too numerous to set out in detail - and such a list would anyway be confined to those estimates for which a reasonable amount of detail has been provided, which is the exception rather than the rule. Probably the basis of the estimates is even shakier in most of the other cases. One striking - but perhaps coincidental-feature of the estimates is that, in accordance with the basic instructions, country economists have been advised to use income or expenditure data for a neighbouring or similar country where data for their own country are not available. I have been struck by the number of countries whose poverty estimates seem to have been based on the data for El Salvador! (e.g. Nicaragua, Costa Rica and Honduras). (However, it is comforting that El Salvador is not the only country used as proxy. For example, in the latest estimates based on the Ahluwalia-Carter-Chenery method, Venezuela was used as a proxy for distributional data in Iran on the grounds that it was better to use another oil producing country that satisfied certain other criteria in terms of approximate income levels!)

In the course of the same exercise, the country economists responsible for the poverty line estimates were also asked to give their own opinion as to how far their estimates were satisfactory, as well as to comment on other aspects of their estimates. The summary of these results shows that of about 90 countries that had previously reported some poverty estimates, only 61 responded to the survey in question and of these for only one country were the estimates thought to be "very good" and for only another ten were they thought to be "good".[1] Of the

(1) Memo: to Mrs. Hughes from Michael Hee "Poverty Estimates: Summary Findings", June 18th 1980.

36 countries for which assessments were provided of the quality of the estimates of the incidence of poverty therein, only seven were thought to be very good or good.

The difficulties faced by respondents were of various kinds, the most general reported difficulties being[1]

(i) the identification of the food basket of the prototype "lower income households",

(ii) the availability of detailed commodity/food prices at the retail level, and

(iii) the absence of reliable income distribution data.

Of course, the absence of adequate data and the resulting three difficulties mentioned above as having been experienced most generally by respondents to the survey in question, is well-known and hardly needs further elaboration. But another major weakness of the country estimates that has received less attention is the method used to proceed from the pattern of food consumption consumed by typical low income households to the cost that they would have to incur in order to consume a minimum amount of calories per day. Broadly speaking, most of the country estimates start with some breakdown of food expenditure in low income households, which is then converted into calories, and the resulting total calories intake is compared with assumed "minimum needs". To adjust upwards the actual expenditure to the level needed to provide the minimum calories (assuming that the former is below the latter which is not always the case.[2] one can proceed in a variety of plausible ways. Country economists seem to have used different methods (one of many ways in which comparability will be destroyed). In many cases the actual low income expenditures have been brought up to the level needed to provide the minimum calories simply by multiplying the ratio of the minimum calories to the total estimated amount of calories provided by the diets of the low income households. This method assumes, of course, that if the incomes of the poor were raised to the requisite level they would increase their consumption of all foods in the same proportion - i.e. that the income elasticity

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(1) ibid.

(2) For example, the estimates for Turkey start with the national average pattern of food consumption, which gives an average per capita calorie intake of 3,500 per day in urban areas, which is then scaled down, pro rata, to the assumed needs of 2,450 per day. (Cf. attachment to memo: from K.A. Saito, "Turkey - Urban and Rural Poverty Estimates for 1978" Jan. 16th 1980).

of demand for each of the foods they consume is equal to unity, which is a rather far-fetched assumption. Other country economists have proceeded differently, such as putting the whole burden of adjustment on to one or two foods, such as those that provide the bulk of the calory intakes. One or two estimates even seem to have been based on full-scale least cost estimates of how to achieve minimum nutrients (though whether a linear programming method or some less sophisticated method has been used has not been clearly specified in the responses to the exercise in question).

Again, the shakiness of the whole procedure is probably sufficiently well-known and appreciated by everybody concerned that there is little need to elaborate the point, but one or two features of the estimates in some cases might usefully illustrate the point (out of many that one might choose). For example, in one country, for which relatively detailed food expenditure data are provided, it is clear that "least'cost" considerations must play little part in the selection of diets even of the poor in question. Apart from one major source of calories, namely milled rice, the distribution of expenditures over other foods shows no correlation at all with relative prices whether these are in terms of prices per calorie or prices per gram. This is true even if comparisons are made, between rural and urban areas, of the respective shares of individual foods in the total baskets of each in relation to relative prices - a less stringent test. It is also obvious that the price data recorded as having been used must be highly dubious. For example, it is difficult to believe that the price (per kg.) of eggs, rice and sugar is exactly the same in both rural and urban areas in the country in question.

For a few countries I have made estimates of the range between the highest and the lowest poverty line that would be estimated according to whether minimum calories needs were obtained by exclusive use of the cheapest food (in terms of price per calorie) or by the most expensive food. The latter is obviously a wildly unrealistic assumption and the actual pattern would no doubt be highly concentrated on the cheapest source of calories. But, not wanting to embark on a very sophisticated exercise just to establish a fairly non-controversial point, this did at least give some indication of the maximum range that is arithmetically possible. In Thailand the range is about twenty to one, and in Turkey it is about ten to one. A much more realistic exercise was possible for Nigeria, where it was possible to estimate simply how much the poverty line would vary if, instead of following the proportionality method indicated above, it was assumed that the

whole of the difference between actual calories consumed and minimum requirements was made up of only the cheapest form of calorie. In this case, the estimated poverty line is 25% below the estimate supplied by the country economist concerned at the time. Given the preceding reference to the sensitivity of estimates of poverty incidence to variations in the poverty line, clearly even a small variation in the assumed dietary adjustment could significantly affect the estimated incidence of poverty in the country in question.

Another important assumption used in the estimates is that relating the share of "essential" non-food expenditures to food expenditures in arriving at the amount that has to be added to the minimum food expenditures in order to arrive at the final total poverty line income. There is a tendency to use a 30% mark-up in several countries, presumably because country economists have been advised, in the absence of specific detail, to use this figure "as a first approximation", although they are also advised that "In colder climates, where shelter and clothing take a larger share of poor's budget, 40% may be more appropriate" (e.g. in memo: by Ted Davis and Alastair Stone, to Country Economists, on "Updating Poverty Income Levels", July 7th, 1978.) But, as pointed out in Mr. Hee's memo: referred to above, there was a wide range of assumptions made concerning the ratio of non-food to food-expenditures ranging from a high of 150% in one country to 20% in another. Naturally, one would expect some variation between countries, but given that we are supposed to be defining some minimum subsistence level, one would not expect the share of non-food expenditures in total to be very great in any of them. (As is well-known, and is also the subject of discussion in many other Bank documents, the percentage share of total expenditure devoted to food can be regarded as quite a good proxy indicator of poverty).(1)

Of course, one could carry out many more realistic variations on the theme of the sensitivity of the estimated poverty lines to alternative assumptions with respect to many of the variables entering into the estimates, such as the allocation between different calorie-intensive foods discussed above; or the importance of allowing for other characteristics of the food, such as protein intake, or sheer bulk; or the sensitivity of different assumptions concerning relative prices used to convert expenditures into food quantities; or the assumed ratio of non-food to food expenditures; or the data on which the starting estimate of food expenditures patterns were based; and so on. In many cases these errors may cancel out, but in others they will accumulate and hence

(1) See, in particular, Bhanoji Rao "Measurement of deprivation and poverty based on the proportion spent on food", June 1980.

lead to enormous errors in the final estimated poverty line. But it does not seem worthwhile pushing such illustrative exercises any further since the margins of error in the estimates are, by now, probably beyond dispute.

Apart from all these defects in the current poverty line estimates, most of which arise out of the inadequacy of the available data, there are the other objections to the basic methodology that is specified to the country economists that are more or less independent of the degree to which it is possible for country economists to apply it and that have been briefly enumerated in the previous section on conceptual limitations on both the CPS and the Ahluwalia-Carter-Chenery method. But two further conceptual weaknesses need to be mentioned here since they are particularly relevant to the CPS method and its application.

First, the notion of some more or less accurate and precisely measurable figure of minimum calorie needs has been the subject of much debate and has been discussed in various Bank staff papers. The debate is wide ranging and almost non-stop, so that the state of the battle depends on the precise point in time at which one observes it. Since strong differences of opinion on this issue can be found amongst people who are far from ignorant of the substance of the arguments and evidence,it would be futile to attempt a synthesis here that would convince everybody concerned. My own view is that the balance of the evidence so far casts serious doubt on the validity of the estimates of minimum nutritional requirements which, it will be recalled (page 11, sub-para (b) above) is a key step in the CPS methodology.

This view is based chiefly - but not wholly - on evidence and arguments provided in Bank docments in which attention has been drawn to various weaknesses in this part ofthe estimation procedure, such as (a) the individual variations around average needs; (b) the possibility of very large deviations between food consumption estimates as obtained from data on expenditures and prices (even if these were accurate) and estimates that took account also of unreported home-grown food, which, according to one source, probably accounts for 80-90 percent of food consumption of poor, small, farmers in many countries; (c) payment in kind for farm labourers and (d) food consumed on the job - i.e. outside the household. Furthermore, there are significant variations in estimates even of average calorie needs, with for example, the FAO standards being about 10-15 percent higher than

the official USA estimates.(1) The authoritative "Fishlow Report" commissioned by the Bank stated that "Beyond the income distribution measurement problem, there are the further difficulties of estimating minimum nutritional standards, as well as the elasticity of intake of nutrients with respect to income. The former are still a matter of controversy among nutritionists. The latter are not constants to be readily applied: they surely must very widely with custom, and intrusion of advertised processed foostuffs, the rural-urban mix, let alone traditional economic variables like the prices of other goods".(2)

In a very wide ranging survey of the whole issue of poverty measurement Surjit Bhalla quotes variations in estimates of poverty in Brazil according to different surveys of food consumption and different standards of minimum needs.(3) Depending on which data and which standards one used the percentage of the population in Brazil suffering from malnutrition varied from 35 percent to 90 percent. This sensitivity is far too great to be assigned chiefly to the fact that any estimates of the head-count incidence of poverty [is sensitive ~~is sensitive~~] to variations in the poverty line, and it reflects mainly the scope for different estimates of the [extent ~~content~~] to which the populations concerned were attaining minimum nutritional standards.(4) The data also implied that, in urban areas, people were suffering malnutrition up to a per capita income (in 1970) of US$2885, which was four times the average income of Brazil in that year!

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(1) An even more extreme divergence can be found between, say, the World Bank and FAO estimate of minimum calorie needs for an average adult male of 2,350 per day, and the estimate in an expert report by the Indian Council of Medical Research, which put the figure at about 2,800 (see I.C.M.R. Dietary Allowances for Indians, 1968; quoted in R. Cassen, "India: Population, Economy, Society, (London, 1978) page 99).

(2) "Fishlow Report" (Report of the Research Advisory Panel in Income Distribution and Employment, a report of a panel chaired by Professor A. Fishlow, May 1st, 1978.

(3) S. Bhalla "Measurement of poverty - issues and method", draft of Jan. 29th, 1980, for WDR.

(4) For example, as shown in Table 1 above, for the average of all the countries covered, the elasticity of the estimate of the numbers of people in poverty with respect to variations in the poverty line is barely over unity, and in Brazil it is considerably less than unity.

Various other writers have drawn attention to similar cases of unreliability of calorie intakes or other indicators of food intake in general as measures of poverty and, in particular, the tendency for measures of poverty based on food intake to over-estimate the incidence of poverty. As has been pointed out in papers by Michael Lipton and Srinivasan, the over-estimation of poverty incidence tends to prevent anti-poverty policies from being sufficiently selective to concentrate on the poorest among the poor.(1) In an earlier paper, Srinivasan also refers to some estimates by P.V. Sukhatme concerning poverty in India to the effect that "...if, instead of using a poverty line based simply on average calories requirement, allowance is made for variations in individual calorie requirement, the estimated incidence of poverty is brought down from about 50 to about 25 percent in urban areas, and from about 40 to about 15 percent in rural areas".(2)

Another internal Bank paper, by Bhanoji Rao, which contains a very comprehensive review of the relationship between food expenditures and poverty, confirms the above results. For example, it shows that, as between various States in india, there was no close relationship between the levels of poverty and the average calorie intakes, and that some very poor states appeared to have very high levels of average calorie intakes, and vice versa.(3) One piece of evidence of the unreliability of food expenditure information as a guide to poverty estimates appears in a quite different type of source, namely a technical report on the provision of water services to urban areas in Monrovia, Liberia, in which it can be seen that, among the households defined in the survey in question as having low incomes (with estimated average incomes of $176 per month for a family of 4 persons, only 27.8 percent of the total income was spent on food.(4)

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(1) Michael Lipton The Poor and the Poorest, draft paper for the PPR Dept: ....

(2) T.N. Srinivasan, Development, poverty and basic human needs: some issues, World Bank Reprint Series, No.76, page 20. The reference is to a paper

and T.N. Srinivasan Malnutrition: Some Measurement and Policy Issues, World Bank Staff Working Paper, no. 373

by P.V. Sukhatme, Nutrition and Poverty, Ninth Lal Bahadur Shastri Memorial Lecture, Indian Agriculture Institute, New Delhi, 1977.

(3) Bhanoji Rao Measurement of Deprivation and poverty based on the proportion spent on food: an exploratory exercise (June 1980; for Economic Analysis and Projection Dept. See also similar conclusion in survey by Wolf Scott "Concepts and Measurement of Poverty", U.N.R.C.S.O., Geneva, 1981.

(4) Operations Review and Support Unit, Urban Projects Department, The World Bank, consultant's report on "Liberia: Monrovia Water, Power and Urban Projects. Analysis and Strategies for improved Access to Services by the Urban Poor" September, 1980, Table 3, page 8 (as distinct from Table 3, page 7).

The major weakness in poverty estimates based on nutritional requirements however is that even if it was possible to obtain accurate data on exactly how much food people consumed and how well they converted it into nutrients and how income elastic was the demand for individual food items in the region of the poverty line, the fact is that the notion of some minimum nutritive diet is nothing like as objective and scientific as may seem at first sight. In addition to the wide divergencies of views as to total calorie needs referred to above, nutritionists are still revising their views about the minimum levels of certain nutrients that are needed and about the body's biochemical reactions to shortages of different kinds of nutrient and methods of converting other nutrients to replace them.(1)

Furthermore, even if minimum levels of individual kinds of food intakes could be specified there must still be a certain arbitrariness about how they are combined together. For example, nutrition can be broken down into various sub-components, and one classification used in a recent very interesting Japanese study of poverty used four items, namely calories, proteins, fat and oil intake, and the percent of calories occupied by cereals. But this study, by Toshiyuki Mizoguchi, shows that the percent of the population that could be defined as below the minimum level of intake under each of these four headings varies considerably from one item to another. For example, in 1963, the calorie intake indicator would show zero poor, but there would be a very high percentage of the population poor on the fat and oil intake count.(2)

X Finally, there is a dilemma at the heart of the whole procedure, which arises out of the fact that, in general, the more a product is regarded as a necessity the more will saturation point be reached at fairly low levels of income, since, by definition, even the very poor must consume the minimum amount of necessities, otherwise they would be dead. This implies, in turn, that the variation in consumption of necessities, as between income groups, will generally be very much less than the variation in consumption of other foods. Very rich people do not spend a hundred times as much as poor people on bread, or salt, for example, but they may do so on cigars or caviar. This implies, in turn, that either a product is a necessity, in which case the estimated incidence of poverty will be too sensitive to small variations in the precise postulated minimum level of the necessity in question; or it is not a necessity, in which

(1) (See discussion of application of this issue to India in R. Cassen, op. cit., pages 94 et seq)

(2) Toshiyuki Mizoguchi, "Statistical Indicators Defining Poverty Levels; Japanese Examples", Institute of Economic Research, Hitotsubashi University, Tokyo, Discussion Paper Sereis, No. 5, August 1978.

case it is not much use in defining poverty since it does not satisfy the "relevance" criterion specified in Section I, page 6 above.

For example, if poverty were defined as being below 90% of some minimal specified level of intake of various nutrient indicators, instead of being below 100% of the same indicator, then the number of people below the poverty level for cereals will fall much more than the number of people below the poverty level for proteins. And this is, indeed, borne out by Mizoguchi's results. For example, it can be seen from one of his tables (Table 2.2 page 20) that if the poverty level is set at 90% instead of 100% of the minimum intake levels taken as a base, the incidence of poverty falls from 65% to zero using the cereals intake, but from only 50% to 7% using protein intake (both in 1963). In other words, the more a product is really a necessity and hence suitable for purposes of poverty measurement, the more will the measurements be unreliable on account of their greater sensitivity to the precise level of the item in question that is taken as the minimum requirement.

The fact is that an aggregate such as food, is far too complex to bear the type of relationship with subsistence that would be needed to make it a reliable indicator of subsistence levels of income. This applies both to the physiological and technical utilisation relationships involved and to the economic relationships between price and income constraints, on the one hand, and patterns of food expenditure on the other. The latter depend very much on the precise definition of 'food' used and on the level of aggregation. If, for example, cereals are defined in aggregate (and this is already a sub-division of total 'food'), the saturation point in rice may have been reached a long time ago in certain poor Asian communities, but their expenditure on cereals has continued to rise as their incomes rise on account of a shift towards bread in place of rice, and will no doubt continue to shift with, eventually, a large expenditure on chocolate éclairs flown in fresh every day from Fauchons in Paris.

To conclude this discussion of the use of the minimum diet concept, therefore, it appears that (i) any estimate of the minimum nutritional diet is still very uncertain - both in itself and in any estimate of how far any particular group is actually getting the minimum diet; and (ii) even if there were not much variability in the estimate of the minimum nutritional requirements, insofar as any poverty estimates based on this standard is believed to be particularly sensitive to small variations in the dietary estimates, then the concept is really of little use for measuring the incidence of poverty after all.(1)

(1)Some Bank reports give the whole game away. For example, the report on a rural project (the Rompin-Endau Area Development Project, in Malaysia, Feb.20th.,1981) refers (para: 7.04, page 43) to the fact that the average settler family in the target group had an income 60% below the absolute poverty line! Since the latter is supposed to represent a minimum subsistence level of income, it is suprising that they were still alive!

However, in my view another conceptual deficiency of the Bank's methodology, that is much more important and paradoxical given the nature of the Bank's programmes to relieve poverty seems to have almost escaped comment. This is the omission from the definition of the poverty line of any public service. In other words, it is an entirely income based line (notwithstanding that the method by which it is estimated begins with calorie needs), and no account is taken of the varying degrees to which people have free or subsidized access to public services of all kinds, particularly water and sanitation, but also health and education services and facilities such as basic shelter.(1) The paradox is that in certain fields of activity, notably in tackling urban poverty, the response to the Bank's anti-poverty objective takes the form of much more emphasis on projects that are designed precisely to make up the deficiencies in public services to provide certain basic needs. This leads to the absurd situation in which success in providing more of such services and hence in alleviating poverty in a significant manner will not necessarily show up at all in the official Bank's measure of poverty. Indeed, theoretically, it could even show up as a rise in poverty given

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(1) A few studies do, however, draw attention to the importance of differences between regions with respect to the provision of public services. For example, the Vinod Thomas study referred to above ("The Measurement of spatial differences in poverty: the case of Peru", World Bank Staff Working Paper, No.273, Jan. 1978), refers to the fact that "...In the case of Peru, food is available much more uniformly than other goods, and the most acute deficiencies are in the availability of basic services...Our inability to incorporate public services in the analysis may have led us to underestimate the extent of poverty in rural areas. Future work could usefully attempt to build from a broader definition of a poverty basket, of food and non-food categories, including access to public services." (page 82) The same point is made by Bhanoji Rao, in the paper referred to above, who draws attention to the influence on poverty of the varying degrees of governmental provision of basic public services and of governmental intervention in other ways, such as rent controls and subsidies. (op. cit. p. 18). ← continued at foot of page 31

the official methodology.(1) Of course this applies much less to most agricultural and rural development projects where the focus is much more on how far the incomes of the beneficiaries are to be increased, rather than on their consumption of particular goods and services.

V Obstacles to estimating the impact of projects on the poor

The discussion so far has been confined to the conceptual and statistical basis for the measurement of the poverty line, and hence, by implication, for certain related estimates widely used by the Bank, notably of the incidence of poverty, and more particularly, the degree to which its lending operations impact on the poor. The latter concept, however, requires that, given some poverty line, estimates have to be made of the degree to which individual projects benefit the poor. Whilst, strictly, speaking, this is a separate issue from the main issue to which this paper is addressed, it cannot be avoided in any discussion of how important for project selection is a better definition of the poverty line. For

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(1) For example, in some cases the provision of more easily accessible water supply at some modest charge might induce many poor people to pay for the water instead of spending an excessive amount of time and effort fetching water from a more remote - if free or cheaper - source of water. Or, again, more provision of education could lead to additional non-food expenditures by families in order that their children are able to go to school. In either case, welfare has presumably risen (insofar as the rise in non-food expenditure was a free choice given the new opportunities made available). But food expenditures will be reduced somewhat. Hence, the estimated food intake would be found to be lower in any survey. Given the methodology for measuring poverty, therefore, the ratio between the actual income and the income needed to bring the poor up to the minimum calories level would be increased, so that the estimated poverty line would have to be raised, so that more people would be counted as falling below the poverty line. Of course, in practice the effect is (i) indeterminate, because in most cases the provision of better public supplies reduces the prices that the poor have to spend on the services in question ahd hence, possibly, increases their food consumption, so that the incidence of poverty should fall - if for reasons that do not directly reflect the programs or projects in question, and (ii) the proportion of the total population a ffected by such programs is, no doubt, too small in most cases to have a statistically significant effect on the estimated average food intake of the 20th percentile.

Continuation of fn. 6 page 30 The Ahluwalia-Carter-Chenery paper, Growth and Poverty in Developing Countries, (Wordl Bank Reprint Series: No: 118) does explicitly state that their measure takes no account of the provision of "essential public services" which, they rightly add, "are of crucial importance in designing a balanced program of poverty alleviation" (page 305).

the fact is that, at least for purposes of project selection and appraisal, there is not much point in improving the definition of the poverty line if the subsequent estimate of the impact of the projects on the poor is subject to far greater margins of error. There are various types of difficulty that have been reported, notbably:-

(i) impossibility of adequately estimating the indirect effects of projects

For example, in connection with rural development projects, there may be large numbers of indirect beneficiaries such as those hired farm labourers whose employment increases. As is pointed out in one memo: (Donald Pickering, to Warren Baum, "The Definition of Rural Development", May 2nd 1979) "Hypothetically, the total benefit of a project could accrue in large part to such low income workers, while the direct or measured benefits accrue largely to farmers who are not, in majority, poor. Such a project would be excluded from the category of rural development projects using the current definition". The definition referred to here is not the definition of the poverty line but the definition of a rural development project as one in which 50 percent or more of the direct project benefits are expected to accrue to low income rural households (the target group)

(ii) impossibility of allocating share of total benefits to poor

Obviously, very few projects can be directed solely at the poor, apart from certain exceptional cases, such as providing water services to the worst slum areas of certain cities. In other cases it is usually difficult, both conceptually and statistically, to say exactly what proportion of benefits accrue to the poor. Again, numerous examples of this can be found, such as the difficulty, in connection with many urban projects, of saying how far, for example, urban transport projects benefit the poor[1] or how many of the benefits of a teachers' training program will enable the poor to be educated. Similarly, it is impossible to allow for second round increases in output and incomes reflecting the fact that output of certain goods may be more or less infinitely elastic over the relevant range.

It is customary, in cost-benefit analysis, to cling to the notion of benefits that reflect increases in the economy's productive potential - in order to avoid double counting. But where the economy is operating below its production frontier to begin with, the effect of an outward shift in the frontier that generates incomes may also be to take up some of the existing unused capacity in the economy.

(1) See, for example, explicit references to this problem in memo: by N. Lethbridge "Draft Guidelines on How to Distinguish Urban Poverty Projects using the Consumption/affodability Criteria", May 17, 1977.

(iii) trade in assets effects.

A special instance of the above difficulties that is sometimes mentioned is the tendency for some beneficiaries to trade in the cash value of the benefit they have received from the project in various ways. For example, in rural development, an irrigation project that raises the value of land can lead to an influx of people from other areas who buy the land from some of the initial beneficiaries. The same applies to those who sell their urban dwellings, the value of which has risen as a result of certain urban development projects. Of course, in a perfect market, this might not detract from the validity of the initial calculations, since the capital gains made by the original beneficiaries should equal the present discounted value of the benefit to them in terms of future income equivalents. And even though one cannot assume a perfect market, it may well be that the ex-post change in the amount of benefits and their distribution amongst different groups does not matter much. After all, suppose one knew that a certain poor beneficiary would merely spend his extra income on wine, women and song; would one therefore scale down the estimate of the amount by which he benefitted? More generally, does the validity of any initial estimate of the amount by which any particular socio-economic group benefits from a project depend on the wisdom and economic efficiency with which they subsequently enjoyed the benefits in question. Presumably not; except in very paternalistic societies.

(iv) substitution possibilities

This refers to the possibility that if a Bank supports a particular poverty-oriented project, it may merely reduce the extent to which the national government - or other donors - support the project in question. But this is a much broader issue that goes beyond the question of the poverty impact of projects and can apply to all sorts of other projects. Hence, I do not propose to spend any time on this issue, which looks as if it is probably intractable anyway.

(v) slips between cups and lips

A much more important difficulty seems to be that, in practice, projects have to be continually amended and reformulated in the course of the implementation process. Hence, an analysis of the poverty impact at the time of initial appraisal may not bear a close relationship to the impact by the time the project has been completed.

(vi) problems of implementation and supervision

The main objection to taking the poverty impact estimates too seriously seems to be that the most important obstacle to the implementation of poverty-relief projects is not the identification of more or less poor groups, but the difficulties of identifying projects that can be successfuly implemented, given local management capabilities, or given the sheer technological problems involved. For example, the problems of, say, organising primary education facilities in rural areas of Sierra Leone where most of the population will be scattered amongst villages having populations of not more than about 2,000 people, and of ensuring that they will continue to operate, and that the children will stay on at school, are administrative and managerial problems. It is of no importance to know whether the target groups comprises 70 percent or 90 percent of the population. If such a project can be devised and implemented it should go ahead, irrespective of the precise definition of the poverty line or of the proportion of the beneficiary population that would fall below the poverty line.

(vii) Relationship between the Bank and borrowers

It would be quite unrealistic to assume that in all cases the Bank has a free hand in deciding on the structure and content of projects independent of the political context in which they take place and the relationships between the Bank andthe borrowing government. But, as pointed out in the Introduction to this paper, this issue lies outside the scope of this paper.

Conclusion. Although some of these points may be less important than others, or even of little weight, there seems little doubt that the accumulation of such reservations concerning the extent to which precise estimates of the poverty line and the poverty impact can influence the choice of project suggests that the final extent to which project managers and operational personnel can - or indeed should - take account of precise poverty estimates must be very limited. And, indeed, as is argued in the next section/this is precisely what happens in practice, namely, the estimated poverty lines and related impacts of any project on the poor do not, in fact, play a role in project selection - at least not in any precise manner and hence not in a manner that would be sensitive to variations in the definition of poverty that is used, as long as this definition is confined to some sort of income concept and takes no explicit account of basic needs provision.

VI How far do the poverty lines influence project appraisal in practice?

Although various estimates may be found of the precise proportion of beneficiaries of certain projects who are poor, or of the poverty impact content of Bank lending, and although reports on projects in the key sectors do attempt to show what the poverty impact is expected to be on the basis of the primary project appraisals, few of the people actually involved claim that the selection and design of projects takes account of the poverty lines or the precise proportion of poor in the total of beneficiaries, and several sources - including some authoritative sources - categorically concede that no conceivable variation in the poverty line estimates provided to them by the country economists would have had any effect on projects selected and implemented over the last few years.

In some cases the reason for the failure to quantify more fully the poverty impact of projects is put down to the fact that the projects in question may be of a type that is of relatively recent vintage so that the necessary experience in obtaining the requisite data has not yet been acquired (e.g. in "Regional submissions and CPS summary on impact and implementation of rural development projects", Ag. and Rural Dev. Dept: 1 Nov. 1978.) In other cases, it is argued that the whole context in which projects are being formulated makes precise targetting on the poor impossible. For example, the same document states that "...the targeting of project benefits on poverty groups in the prescribed manner is precluded in South Asia by the socio-economic structure prevailing in rural areas (particularly the extreme skewness of land holding) and that experience shows that small farmers have not shared fully in project benefits principally because of deep-seated social and political constraints....Most of what is known about 'impact' is impressionistic".

A similar story applies to urban lending. For example, a recent memo: from Warren Baum ("The Urban Poverty Program", of Sept. 23rd 1980) indicated dis-satisfaction with the monitoring of the UPP through the urban information system and that "spot checks indicate that data are often highly questionable, and a growing proportion of the lending program is not being identified as to its location or poverty impact". More categorically, a very recent note states that with reference to urban projects designed indirectly to assist the poor "...we have not been able to apply satisfactorily the Bank's internal concepts of UPP monitoring. It becomes exceedingly difficult to quantify project impact on the poor".

On the other hand, the source in question claims that the application of the poverty impact analysis for urban projects designed directly to assist the poor is much more successful. Also some sources, whilst conceding the unsatisfactory state of the present attempts to incorporate poverty impacts into project appraisal and evaluation, suggest that this is due to factors such as lack of experience with the new type of project in question, and that further improvements in the methods together with more emphasis on the need for such analysis and poverty impact reporting should eventually lead to improvements. Whether it is desirable to make further efforts along the present lines in view of some of the comments made at various points in this paper is, however, a debatable matter which is considered in the final section.

However, paradoxically, none of the above implies that pursuit of the poverty objective did not have a major influence on project selection and design. All that it implies is that the methodology laid down has been inapplicable and, not surprisingly therefore, not applied in practice. It does not mean that operationally concerned personnel have not attached considerable importance to the identification of suitable projects. But, at the project selection level, the methods by which the poverty alleviation objective were pursued, depended more on the common sense application of the basic policy objectives by those in the field than to precise estimates based on the agreed methodology. Furthermore, the above comments on the poverty impact methodology in no way detracts from the effectiveness of special programs, such as special programs in the field of primary health care, nutrition, primary education and the rural development and urban development programs which automatically provided an institutional framework in which poverty alleviation projects would be given a greater weight in the Bank's operations.

As regards the validity, and the desirable role, of the official poverty impact methodology in project appraisal, there does seem to be some difference between, on the one hand, the central Bank staff (particularly in the Central Project Staff) and, on the other hand, the technical personnel directly concerned

with project appraisal and design.(1) The former are more inclined to believe that, for example, "...the spatial identification of the urban poor on a city-wide scale is essential to developing programs for meeting the basic needs of the poor in sectors such as water supply and sanitation, education, health, nutrition, energy and shelter". Of course, this is not going very far and does not claim that this identification should be based on precise estimates either of the poverty lines or the proportion of the population in each area that is below the prescribed poverty line. Nevertheless, it differs from what seems to be carried out in practice in that it does imply the need for identification of the poor in terms of their incomes, whereas, in practice, the emphasis is more often placed on their access to certain basic needs or on certain characteristics of their economic situation. In the case of urban development programmes the emphasis tends to be on access to certain basic needs whereas in rural projects the emphasis is more on certain characteristics or productive capacities of the population in question, such as their average size of landing holdings, their access to irrigation, their employed-landless status, and so on, although reference to these characteristics is invariably invoked on the grounds of their relationship to the likely poverty-status of the populations concerned.(2)

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(1) This is not to say that there is uniformity of view in either case. For example, some internal memoranda by central Bank staff are openly highly sceptical of the value of the poverty impact estimates. One very outspoken comment by a member of the West African Division was that "I find the poverty figures fascinating but have yet to be convinced, at least in the context of Africa, that the production of such figures have any practical effect in alleviating poverty over a simple statement that it is the Government's intention to direct as much attention as possible to better the poor. The thing that will alleviate the plight of the poor most is properly designed and well-implemented projects, and that is not done through the compilation of this sort of statistics. You can see the plight of the poor if you just walk around with your eyes open". (Memo: from J.R. Peberdy, to Mr. van Gigh,: "Poverty Impact Analysis - Comments", Nov. 7th, 1979).

(40-41) L (2) See pages [redacted] below.

In fact, on the basis of detailed descriptions of project appraisals or methodology in a sample of cases it appears that although, in some cases, lip service is paid to the poverty impact estimate, in the end the poverty line is never used in any precise manner. Even where quite a lot of effort has been out into thepoverty impact part of the study the conclusions do not seem to have played any part in the final design, with no obvious adverse effects on the extent to which the project nevertheless would primarily benefit the poor.

One example of this is the report on the Brazil (Minas Gerais) Water Supply and Sewerage Porject III (Nov. 1979) which is worth spelling out in some detail since it is a very clear illustration of an exceptionally conscientious, diligent

and intelligent attempt to respect the Bank's injunction to take account of the poverty impact of a project, the methodology of which is fully documented. This particular example is selected, therefore, not because it is more open to criticism that others, but because it has set out more clearly than most its explicit and detailed attempts to meet the Bank's requirements.

The project in question involved the supply of water to a certain city, which was divided into a number of zones. For each zone estimates were available, or could be made, of the total population and the number of households having access to water. Estimates were also made of the numbers of families in each zone that were below an assumed poverty line (not, as it happens, the Bank's official poverty line to begin with). It was then assumed that 95 percent of the non-poor in each zone had access to water, from which it was possible to estimate the absolute number of non-poor families with water, and hence how many water outlets were available for the poor population and hence the percent of the poor that had access to water. Now it happens that this method implies that, in the region of the actual numbers that applied, on the average, to the zones in question, the elasticity of the estimated percentage of poor with water with respect to the assumed percentage of non-poor with water is very high (about -9.0).[1] For example, if the assumed proportion of non-poor with water were raised from 90% to 91%, the implied percentage of poor with water would fall by 9 percent. And data in the study showed that, in fact, the proportion of non-poor with water can vary by much more than 1 percent either way. In short, the whole calculation is highly sensitive to a very debatable assumption.

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(1) Where x = proportion of poor with water; r = proportion of non-poor with water; p = proportion of poor in total population of zone; and t = proportion of total population of zone estimates to have water; the method outlined above can be summarised in the following equation:-

$$x = \frac{1}{p}\left[t - r(1 - p)\right]$$, from which it follows that the elasticity of x with respect to r is $\left[\frac{r(1 - p)}{r(1 - p) - t}\right]$, which is - 9.0 when $r = 0.9$; $t = 0.7$; and $p = 0.3$ (all very representative values in the case in question)

But, in the end, it is not clear how the results of the calculation were fed into the project selection and/or design, or whether it ought to have done so. For the basic data included estimates of the proportion of the population in each zone that had water - presumably far more reliable data than any data on their income levels. Hence, it might be asked, why not just design projects to serve areas that were badly supplied with water since, on the whole, it can be safely assumed that the vast majority of the population therein will be poor? It is not as if the project were designed to fill gaps in peoples' supplies of caviar, or to build swimming pools for every home! Rich people simply rarely live in areas lacking in basic water supplies. Furthermore, since the object of the operation was to give people water, not income supports, it was the lack of water that mattered. If one is trying to fill unmet needs for a basic need, water, all that is required is to know where poeple lack water. Only if the objective was to raise incomes in some sense would it be necessary to know what their incomes are. The income/poverty criterion has already been adopted since, by deciding to give people basic needs such as water, rather than heated indoor swimming pools, the poverty criterion has already been built into the project! And in the end, the project design does seem to have been based on the sensible criteria of where water was most lacking.

Other detailed reports on specific projects of a similar urban character seem to have adopted the same common-sense approach without worrying so much about the attempt to quantify the poverty impact. For example, the staff appraisal report on the "Philippines: Third Urban Development Project" (Feb. 26th 1980), only contains one paragraph on the "urban poverty impact", in which, without going into details, says that one part of the project would affect people of whom about 80% would fall within the poverty group" and another part would affect people "of whom some 75% would fall below the poverty threshold", which would seem to be quite adequate given the nature of the project in question, which covered provision of basic services, including drainage, sanitation, water supply and street improvement to low income communities suffering from bad environmental conditions, plus the provision of some basic educational and health services, as well as efforts to improve the income and employment opportunities of the residents of the areas in question.

A similar common sense approach is described in a report on power and urban projects in Monrovia[1]. This points out that it was not difficult to identify

(1) Consultants' report "Liberia: Monrovia water, power and urban projects. Analysis and Strategies for improved access to services by the urban poor"; Operation Review and Support Unit, Urban Projects Dept:, September 1980.

areas where most of the inhabitants were poor, since between 60% and 70% of Monrovia's population is estimated as being below the Bank's official poverty line (although it should be noted that one of the tables in the report shows that they spend less than 25% of their incomes on food!) Various surveys have then been used to set out certain features of the zones identified such as access to water or housing conditions. In the light of these the data - and not poverty income data - allocation of projects in these two sectors is assessed, as between different areas of the city.

Similarly, in the staff appraisal report on the Indonesian third urban development project, the analysis of the impact on the poor is very sketchy, but, as the report points out, they are concerned with projects in areas in which about 70 - 80 percent of the inhabitants are poor and where the rapid growth of the urban population has surpassed the increase in the urban infrastructure with the result that there are flagrantly bad conditions from the public health point of view. The report points out that given the undoubtedly high incidence of poverty in the areas concerned, which would be the case whatever precise concept of poverty is adopted, the projects in question can be expected roughly to help mainly poor beneficiaries.(1)

Another example of the common sense way in which, in practice, the projects have been allocated to the poor communities is the report on the planning of water supply projects to serve the poor based on the experience in the Sudan. This report, like most of them, pays some lip service to the Bank methodology for measuring poverty line incomes, but then makes no explicit use of it in the description of the methods actually adopted. Instead this involves more or less directly mapping poor areas in terms of housing conditions and specific deficiencies in water supply, sanitation and drainage. More or less the same sensible approach is described in the staff appraisal report on "Brazil: Medium sized cities project" (May 21 1979). That is to say, after identifying what are fairly clearly the poorest sections of a city, direct evaluations are made of the type of services in which they are most deficient.

Quite a different point that emerges from some studies, particularly those concerned with rural development and agricultural projects, is the importance of identifying not so much exactly how many people are poor or what their precise income level is, but what are their characteristics, in terms of, for example, whether or not they are small farmers; landowners; have access to irrigation; are old, sick, unemployed, etc: etc.: This also seems to be a more fruitful

(1) "Indonesia; Third Urban Development Project; Staff Appraisal Report"; Urban Projects Dept:; Dec: 12th, 1978.

basis for targeting and for devising appropriate projects than further refinement of the poverty concept. For example, the document "A guideline for poverty impact analysis in appraisal reports on agricultural projects", sets out a pro forma type of analysis in which it suggested that a typical appraisal analysis might state that "Farm budget data indicate that a holding of about....ha is usually required to generate per capita incomes approximating to the country poverty income threshold (PIT) of US$.....equivalent....." (page 3). Consequently, innumerable similar examples can be found in the agricultural appraisal reports, such as in the report on the Karnataka Tank Irrigation Project in India, of Feb. 26th 1981, in which it is stated that "The project is directed towards farmers which are at present virtually without irrigation, more than 60% of them living in areas which are considered moderately or severely drought prone. Incomes under these circumstances are near the subsistence level, which is reflected in estimated farm budgets for some typical farm sizes without the project" (page 39).

Of course, it is true that these characteristics of the target populations are only regarded as significant insofar as they are supposed to be good proxies for income levels, and the "guideline" document referred to above is clearly not based on any illusions concerning either the accuracy of the poverty line estimate or the closeness of the correlation between the proxies in question and actual income levels.

But in that case, one has to ask what weight - if any - is attached to the income level estimates in project selection and design? In all the agricultural project appraisal reports that I have been able to study it has been shown that quite a high proportion of the beneficiaries would be below the poverty line (without the project). But this appears to be much more a form of post-hoc justification for the selection of the projects in question in terms of the official methodology than an element in the selection procedure, which seemed to be based on the other characteristics of the populations in question. The crucial test would be whether any projects selected and designed on the basis of the other (non-income) characteristics were subsequently rejected at the appraisal stage because the proportion of the population below the poverty line was found to be too low. If not, or if only rarely, one is driven to the conclusion that relatively little use has to be made of shaky income data in order to identify, in the field, that rural population groups lacking in certain facilities - such as irrigation or minimum size land holdings, etc. - are manifestly and patently very poor by any standard, and that if the country estimate of the poverty line

seemed to show that the population affected by any such project was not, after all, poor, then the project personnel would be likely - quite rightly in view of preceding observations on the way in which these poverty lines are calculated - to ignore the country poverty lines or to make their own local estimates, which they might as well have done in the first place.

Conclusion

The weaknesses of the basic methodology have not prevented the Bank from implementing programs and projects that help the poor. The methodological difficulties have been circumvented by a common sense approach to the problem. This includes, amongst other things, direct assessment of the deficiencies in basic needs in areas where most of the population are poor by almost any criterion, where the project is concerned largely with remedying these deficiencies, or identifying the characteristics of the poor, particularly where the project is concerned with remedying the basic causes of their poverty rather than the resulting deficiencies in goods and services. Both these conclusions have a considerable bearing on the later section of this paper which is concerned with the direction in which further work should proceed.

VII Impact of Methodology on Bank's Achievement of Poverty Alleviation Objective

In spite of the above reservations about the degree to which the methodology can be, and has been, applied, the fact is that there has been a big increase in Bank lending for projects addressed primarily to poverty alleviation. For example, in the last two years, the proportion of total Bank lending (including IDA) for agricultural projects that has been absorbed in "rural development projects", which, as indicated in Section I, are aimed primarily at reducing poverty, has been about 50%. And the percentages of beneficiaries below the national poverty lines directly benefitted by rural development projects has been over 50% even taking all other agricultural projects into account.(1) A similar picture emerges in connection with the urban projects, although precise targeting onto poverty groups apparently did not start until much later than in the case of rural poverty.(2)

The rise in the poverty alleviation content of Bank lending since 1973 seems to be the result of two main factors, namely (i) the special programs mentioned already, namely in the field of basic needs (nutrition, primary health and education) and the introduction of the special "rural development" and "urban development" programmes to complement more traditional lending outlets in conventional "productive" sectors with high rates of return, including much investment in basic industries or infrastructure and (ii) a shift towards a poverty alleviation component in lending in the traditional sectors. The former

(1) CF. Annual Reports: Analysis of FY 1979 and FY 1980, Lending operations for agriculture and rural development; June 29, 1979 and June 30 1980; also, memo: from M. Yudelman "Country specific poverty income estimates" Jan: 19th, 1978.

(2) See, for example, "Summary of the UPP Water Supply/Sanitation Report" (April 2, 1980) page 2.

would include, for example, a shift from basic infrastructure, such as electricty and transport, towards a "more comprehensive program aimed at growth, provision of basic services and better income distribution" (Warren Baum "The Project Cycle", Dec: 1978, page 2). The percentage of Bank and IDA lending devoted to "sectors directly linked to increasing the productivity of the poor" has risen from 7.8% in 1970 to 30.5% in 1980, whilst lending for infrastructure has fallen from 58.3% of the total in 1970 to 37.2% in 1980. (Mahbub ul Haq "An international perspective on basic needs" in Poverty and Basic Needs, Sept: 1980, table on page 34).

In view of the preceding reservations about the extent to which poverty lines were explicitly used in the selection and planning of projects, it might appear paradoxical that the Bank has, nevertheless, succeeded in bringing about a major shift in the direction of its lending in favour of poverty alleviation programs. But this is not really as paradoxical as it might seem at first sight.

The introduction of the urban development and the rural development programmes explicitly required that the poverty reduction objective be given high priority, and, as described above, operational personnel have been able to take account of this objective on the basis largely of common-sense utilisation of such relevant data as were available, without being too much constrained by precise poverty impact evaluations. Secondly, within traditional Bank lending areas there has been a shift towards poverty impact evaluation that has been successful, again, to the degree to which operational project personnel have been willing and able to take account of the ~~board~~ broad new objective without necessarily doing so in a precise manner.

This raises, however, one of the main contentious issues in this area, namely the degree to which, in the absence of pressure to produce precise estimates of the impact of projects on poverty, the poverty-alleviation objective would, in fact, be pursued vigorously and the "resource utilization" objective referred to on page 4 above thereby promoted. Almost everybody concerned inside the Bank seems to agree that (i) the Bank's estimates of poverty lines and hence also of the proportions of poor people who benefit from projects (or the proportion of poor people in a country), are almost worthless and (ii) poverty lines are not, in fact, used in a precise and/or significant manner in project selection, so that variations in the definition of poverty would not have any noticeable impact on project selection. But some of the staff concerned maintain that the existence of requirements to produce precise poverty line estimates as well as detailed appraisals of the impact of projects on the poor are important in ensuring that staff give due weight to the poverty alleviation target. As indicated earlier, this question is difficult for an outsider to evaluate, given its highly subjective character.

VIII What do we want and how to go about getting it

What poverty measure one wants obviously depends on the use to which the measure is to be put. The various objectives enumerated on page [4] above can be conveniently summarised and re-grouped into the following threefold classification of the main roles played by poverty measures in the Bank:-

(i) global estimates of world poverty are used for purposes such as President's speeches, World Development Reports summary statistics, and other education, information, and public relations activities.

(ii) poverty estimates are also used as an input into research studies, such as those showing the relationship between poverty, on the one hand, and alternative growth strategies on the other hand, which are designed to influence general Bank policy.

(iii) poverty estimates are used for the operational purposes discussed in some detail above - i.e. in selecting and designing projects, evaluating their impacts, supervising the share of Bank lending to poverty-oriented projects, and so on.

I am persuaded that one does not need the same precision for the first purpose as for the other two. For it seems legitimate to maintain that, for the first purpose, the chief criterion is that the estimates should make a strong impact on the audiences concerned, and that this does not depend on the precise accuracy of the estimates - i.e. on whether the aggregate figures of world poverty, say, vary by a couple of hundred million one way or another.

But, although I accept this argument, it should not be pressed too far. In the first place, if the estimates are too shaky they will eventually be brought into disrepute and their impact will be lost entirely. Secondly, if they are too shaky they may be very erratic, so that any attempt to monitor progress against poverty will be handicapped by erratic changes in poverty over time (or between countries) that do not represent real changes but represent, instead, the inevitable statistical effects of bad concepts or inappropriate concepts given the data limitations. Furthermore, it is not self-evident that public relations exercise conducted in terms of some vague concept, namely "poverty", does have as much impact on the public imagination as exercises conducted in terms of the main particular deficiencies from which the poor actually suffer - notably of food, shelter, water, and so on. The public to which much of the public relations exercises are addressed, which is largely the public in richer countries, may tend to think of poverty as being a condition rather like that of the poor in their

own countries - for whom many of them may not have much sympathy. But poverty in terms of the hunger or deprivation of certain basic human needs on the scale found in many developing countries is a much more concrete and vivid notion that may more effectively encourage support for policies aimed at reducing it.

As regards these first two uses of poverty estimates, therefore, the conclusion seems to be that

(i) global figures may be useful and not too misleading - since it really does not matter much whether the number of the world's poor is put at 500 million, 600 million or some other similar figure. There is probably no reason to abandon such estimates so that the deficiencies of the methodology used to obtain them does not really matter. At the same time, the public relations role of such estimates is probably further strengthened insofar as they are accompanied - as they have been to a certain extent in recent years - by information on the condition of the poor with respect to certain relatively concrete deficiencies in basic needs.

(ii) the related estimates for individual countries - particularly when used for research purposes - need to be based on better methodologies than those used so far if any progress is to be made in the research and if the results can be used for drawing policy conclusions.

It is in connection with the third main use of poverty estimates in the Bank, notably their use for project selection and appraisal that the main doubts arise and where further thought and work needs to be directed in order to improve the cost-effectiveness of the methods currently used. If some of the detailed discussion above is ignored for the time being, it would appear that a full list of candidates for alternative methodologies would include:-

(i) improved ~~ban~~ practice (i.e. along existing lines)
(ii) a multi-dimensional/basic needs/deprivation measure
(iii) the share of food expenditure in total consumption
(iv) minimum levels of calorie intakes (i.e. as physical data, not converted into income levels as with current Bank methodology)
(v) The Living Standards Measurement Study (LSMS)
(vi) common sense
(vii) other

In the light of the preceding discussion, however, it will be obvious that I would rule out much prospect of any further progress being made with (i), (iii) or (iv), and there is no need to recapitulate here the reasons for this conclsuion. In particular, as regards (i), I see little basis for confidence that the current CPS methodology can, or should, become operationally useful in the foreseeable future. This is not so much on account of the various basic theoretical weaknesses rapidly enumerated in Section III above. It is more on

account of (a) data limitation and uncertainties surrounding key assumptions in the method, such as heavy reliance on calorie intake estimates and (b) the uni-dimensional concept of poverty used and its failure to take account of basic needs indicators. This is particularly important in view of the "relevance" criterion specified on page [6] - i.e. that the poverty measure ought to vary with respect to relevant differences. The most important difference that I have in mind here is in the supply of public services, particularly those connected with the provision of basic needs. As pointed out already, it is the failure to take account of these that, in my opinion, is the biggest weakness of the two types of poverty measure circulating in the Bank. And there are other relevant differences, given the multi-dimensional character of poverty, that also need to be taken into account.

In other words, of the remaining candidates on the above list the most favoured line of approach would be (ii), though it is hoped that there might also be a useful input from (v). It goes without saying that (vi) should always be used, but not by itself and unaided by any attempt at systematic quantification. The case for pursuing work along lines (ii) and (v) seems to be implied by the following four propositions:-

(i) the present methodology for estimating country poverty lines and the incidence of poverty is inconsistent with the Bank's actual response to poverty, which in many cases takes the form partly of introducing projects that improve the basic needs situation without necessarily reducing at all the estimate of poverty;

(ii) in practice, operational personnel engaged in many types of projects concentrate on deficiencies in basic needs, or on other characteristics of the populations served that capture far more effectively both (a) the multi-dimensional nature of poverty and (b) the type of situation in which poverty-alleviation projects are likely to be effective. They are frequently, if not invariably, unable to apply the poverty methodology, or do not make much effort to do so since it is usually obvious on the spot that it is superfluous;

(iii) given the deficiencies of data in general and particularly of income distribution data in most developing countries, measures must be used which explo a wider field of data and that are also directly relevant to the type of poverty alleviation project and program that the Bank has been expanding over the last fe years;

(iv) it is desirable to use and develop the data that are relevant to the authorities of individual countries for purposes of setting norms and targets for themselves in those areas that are most important for poverty alleviation.

All this clearly implies that the sort of measures that should be used would include a large element of data on basic needs and on various relevant socio-economic characteristics of the population to be served by individual projects. This is, of course, an area in which the Bank has already made major pioneering contributions. The multi-dimensional character of poverty has long been recognised in the Bank. It is all the more incongruous, therefore, that the Bank should have continued with the attempt to provide one uniform standard for measuring poverty - i.e. a standard in terms of some income equivalent based on one criterion, namely calorie intakes. Of course, the weight of the tradition in economic accounting to the effect that the measuring rod of money is a good approximation to economic welfare is considerable. It is also true that in more advanced countries even poverty can probably be measured more or less adequately in terms of income equivalents.(1) But this tradition should not be allowed to play a decsive part in the Bank's use of poverty estimates for project selection and appraisal.

Poverty in developing countries should be defined in a manner similar to that which one would use if one wanted to measure sickness. Instead of seeking some aggregative measure that captured all the different components of sickness one would simply say that a person was sick if he satisfied any one of various sufficient conditions, such as having arthritis,or some other chronic illness. In the same way one should say that a person is "poor" if he suffers from any one of a number of major deficiencies, such as income, food, water supplies, santitation, shelter, basic health or education facilities, and so on.(1) Of course, most of these deficiencies go together in most situations, and one must not arrive at totals of the poor that involve double counting. The answer is not t provide an alleged total but to provide, instead, only sub-totals of the numbers of people who are estimated to be deficient in each one of the items enumerated. I doubt whether this would detract from the public relations impact of the estimate in fact, I would suspect that it would increase it since it would bring home to the average citizen of richer countries what poverty actually means in the developing countries. Such estimates would probably be adequate for aggregative comparisons, for monitoring progress over time, and for providing authorities in individual countries with some rough comparisons for purposes of setting norms and targets for their own countries as well as automatically indicating the areas that deserve priority.

In fact, it might be better to drop the term "poor" altogether and to concentrate instead on measuring "deprivation". One cannot talk about people being deprived without instantly conjuring up the question "deprived of what?" - a questi

(1) This seems to be precisely the approach adopted in the United States AID programme. (See the Agency for International Development "The Congressional Mandate: Aiding the Poor Majority", Washington, D.C., April 1975, page (i), para:2).

that cries out for a concrete answer in terms of basic needs. Such a response would fit much better into the exercise of making an impact on the public, as well as into the exercise of finding out what particular projects or programs are relevant in different circumstances.

For project selection and design I would propose further disaggregation. This is because for this purpose the poverty problem in each case has to be seen in its context, which will vary from one country or region or twon to another. Depending on the context, the social indicator data on the relevant basic needs have to be supplemented by more detailed data on the socio-economic characteristics of the particular population group in question. This is partly because "basic needs" are context-specific - e.g. they depend on custom, family characteristics, occupation, and so on - and partly because the full indirect impact of a project depends very much on the socio-economic situation of the people concerned.

Such data are necessary not merely to obtain a more accurate and operational estimate of the poor but also for purposes of evaluating the like impact of projects - both before, during and after the project - taking account of indirect benefits and other secondary effects. For example, work along the lines of being developed in connection with Social Accounting Matrices, which seeks to establish links between certain economic characteristics of the population and their socio-demographic characteristics, has brought out the importance of secondary indirect benefits from certain projects (e.g. in the Duloy/Bell study of the Muda project in Malaysia). The absence of this sort of data, at a specific project level, can mean that the impact on poverty of any project is considerably under-estimated in any follow up evaluations. For example, the rapid growth of agricultural output in the Punjab as a result partly of the "Green Revolution" was matched by a larged inflow of labour from Bihar, so that poverty in Bihar was alleviated; not in the Punjab. A conventional approach to the impact of the project would fail to show this indirect benefit.

Of course, this type of information requires special surveys, and the feasibility and cost of carrying out such surveys will have to be weighed against the contribution that they can make to improvement of project selection and the

monitoring of their impact. How difficult it is to obtain the necessary information is not a subject on which I am able to pass an independent informed judgement. The "Fishlow Report" states that "Such information on socio-economic groups provides a more direct link to the production process than data regarding the size distribution (i.e. of income). This makes them easier to obtain accurately and on a continuing basis over time. It also facilitates the construction of economic models that are more naturally related to these groups than the individuals and households that underline the size distribution".(1) This report also endorses the Bank's work in the field of basic needs indicators in general, and also includes surveys on characteristics of socio-economic groups amongst the four priorities for future work on income distribution that it selects.(2)

In other words, for project selection, what is needed, in principle, are more specific surveys of the various characteristics mentioned above - both on basic needs and on the socio-characteristics of the populations to be served. The type of data will clearly vary somewhat from one context to another. Progress in this direction will not only make project selection and design more effective but will also lay a sounder foundation, in the longer run, for analysis of the consequences of alternative strategies to alleviate poverty and the relative impact of different kinds of project.

It must be emphasised, therefore, that the above criticisms of the present Bank's estimates of the national poverty line used for project selection does not imply that progress should be made, or can be made, by improving the estimates of those national poverty lines - e.g. by finding better relationships between poverty and calorie intake, or better methods of adjusting for different income elasticities of demand for individual foods, and so on. On the contrary, the conclusion that emerges from the above is that it is pointless to try to ride two horses at once - i.e. to produce valid analysis of poverty for purposes of project selection that can be based on the same national poverty line estimates that may be relevant for macro-economic comparisons - either as between countries or over time in individual countries. There is, no doubt, scope for such rough national estimates. It is important to draw attention to the global magnitude of poverty and also to demonstrate - insofar as it is true - when and where economic growth and overseas aid has reduced the incidence of poverty. But this is a separate exercise from project selection.

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(1) "Fishlow Report" op. cit. page 11.

(2) ibid. page 12.

One reason for measuring poverty in rich countries was that, until relatively recently, it was not believed that there was much. Once it was confirmed that, contrary to widespread belief, poverty was still significant in rich countries, the next step was to identify the characteristics of the poor in order to assess what policies were required - e.g. was poverty a matter of inadequate old age pensions, or large family size, or irregular employment and so on.? In most LDCs there is no need to ascertain that there are plenty of poor people, although it may be desirable, from time to time, to remind the richer countries of the world about it as well as to check how far any progress is being made. But the real problem - as in the rich countries - is to identify the characteristics of the poor. And in LDCs, these are far more project and area specific than in rich countries, where income is a reasonable criterion and where populations are sufficiently homogeneous with respect to their relevant characteristics. In LDCs, however, this is not the case, so it is an illusion to believe that aggregative income-based poverty lines - like those used in rich countries - can be of any use for planning poverty alleviation projects and programs in LDCs. The data ideally required may not be easy or cheap to obtain, but this does not mean that there is any point in continuing, meanwhile, to sacrifice time and resources in attempting to improve estimates of an irrelevant concept which, in practice, is not really used anyway.