CHAPTER IV. COUNTRY PRACTICES IN COMPILING POVERTY STATISTICS

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Introduction

This chapter provides a review of the poverty measurement practices in member countries of the United Nations. It is found that the large majority of developing countries follow the Cost of Basic Needs (CBN) approach in producing income or expenditure-based poverty statistics. The chapter thus concentrates on absolute poverty measures and glosses over others more popularly used metrics in developed countries, such as relative and subjective poverty measures. Practical difficulties confronted by National Statistical Offices (NSO's) in implementing the CBN method are discussed and analyzed systematically and alternative ways of solving some of these difficulties are proposed.

Absolute poverty measures are discussed in Section 4.1. Direct measures of food poverty which lead to more reliable and comparable estimates are presented in Section 4.2. Non-income measures, particularly minimum basic needs or unmet basic needs indicators, are dealt with briefly in Section 4.3. This chapter concludes with Section 4.4, which discusses the main causes of disharmony in countries' poverty monitoring programs and the sources of non-comparability of their poverty statistics. It then offers recommendations for improvement.

4.1 Income- or expenditures-based measurement approaches

The four UNSD sub-regional workshops on poverty statistics (described in Chapter 1) confirmed that the majority of the developing countries that compile poverty statistics follow the CBN approach or some variation of it. In this approach, everyone's basic needs may be thought of as falling into two categories--food and non-food. Broadly, the CBN approach involves a three-step assessment:

- Define the minimum nutritional requirements of a poor person and determine a food basket or bundle that can provide this minimum requirement. The cost of buying the food bundle is a food poverty line (*fpl*).
- Choose an operational definition of a poor person's basic non-food needs that will allow estimating their cost directly or indirectly. Use this non-food basic needs cost to adjust *fpl* upward into a total poverty line (*tpl*).
- Compare *fpl* and *tpl* against some metric, e.g. distribution of income or expenditure per person. The proportion of persons whose incomes (expenditures) fall below *fpl* is an estimate of food poverty incidence. Some countries refer to this also as core poverty incidence or extreme poverty incidence. The proportion of persons whose incomes (expenditures) fall below *tpl* is an estimate of absolute poverty incidence. The same procedure is followed to estimate the number of food poor or absolutely poor persons. In addition to persons, countries also routinely produce poverty estimates in terms of households.

Some countries follow more than one approach and produce multiple sets of poverty statistics. However, in the remainder of this section, the CBN approach, as practiced in many developing countries, will be discussed more thoroughly. Possibilities for harmonization and sources of non-comparability will be highlighted. Ways for improving comparability will also be delineated.

4.1.1 Specify a food poverty threshold

National food poverty lines are based on minimum nutritional requirements or thresholds. A person is counted as "food poor" if the nutritional content of the food(s) he consumes is less than the prescribed threshold. As a simplifying assumption, most countries use dietary energy as a proxy for overall nutritional status, i.e., if a person gets enough energy, then she also gets adequate protein and the other essential nutrients.

Countries are guided by FAO/WHO recommended daily allowance (RDA) for energy, defined as "the amount needed to maintain health, growth, and an 'appropriate' level of physical activity" (WHO, 1985, p. 34).[22] FAO uses 2100 kilocalories (kcal) consumption per person per day as the threshold to estimate the prevalence of undernourishment (Naiken, 2003). The results form the basis of the agency's annual assessment of the State of Food Insecurity (SOFI) for individual countries and worldwide. FAO's measure is also one of five indicators designated to monitor the first

[22] RDA is the term used for any nutrient, e.g. energy, protein, and vitamin A. For energy, the more specific term is recommended energy nutrient intake (RENI). For brevity, RDA is used generically in the chapter.

of the Millennium Development Goals – eradicate extreme poverty and hunger. Some countries have adopted the same 2100 kilocalories threshold.

Many countries rely on FAO/WHO guidelines to initially develop their age-by-sex--specific RDAs. Examples include those for the Philippines and Sri Lanka, shown in Table 1. The weighted average of these RDAs, using the corresponding age-by-sex distribution of the population from a census, is one way to arrive at or justify using a particular energy threshold. Using 1990 census data in the Philippines, the weighted average was found to be 1,956 kcal per person per day, which rounds off to the 2000 kcal official threshold (David, 2003). Similar calculations in Sri Lanka using age-by-sex population distribution derived from the 2002 Household Income and Expenditure Survey led to the official 2030 kcal threshold (Widyaratne, 2004). Thus, different RDA specifications lead to divergent energy thresholds. The tasks of developing age-by-sex RDA tables and so-called food composition tables (i.e., the nutrient contents per unit weight of individual food commodities consumed by the population) usually fall on research institutes under national health or science ministries such as the Food and Nutrition Research Institute in Philippines and the Medical Research Institute in Sri Lanka (See Table1).

Dietary energy thresholds used in most of the developing and transition countries are compiled in Table 2. The modal value is 2100. There is a second minor mode at 2400 made up of small island states in the Caribbean. The range is noticeably wide, from 2000 to 3000 kcal per person per day. These differences in the energy thresholds represent the

first major source of non-comparability of (food) poverty measures among countries. Degree of non-comparability depends on the sensitivity of the results on incremental changes in the energy thresholds used, which could be considerable, as discussed in sub-Section 4.2.2 below.

Some countries, as shown in Table 2, use different thresholds for different population groups, e.g., 2100 and 2400 kcal per person per day for urban and rural areas, respectively, in India. Others use more than one threshold to arrive at different food poverty lines, e.g., 1805 and 2120 kcal for so-called lower (or core) poverty and upper poverty lines, respectively, in Bangladesh.

Table 1. Dietary energy RDAs, Philippines and Sri Lanka, in kilocalories

Age groups	Philippines		Sri Lanka	
	Male	Female	Male	Female
Under 1 year	700	700	818	818
1-3	1350	1350	1212	1212
4-6	1600	1600	1656	1656
7-9	1725	1725	1841	1841
10-12	2090	1930	2414	2238
13-15	2390	2010	2337	2300
16-19	2580	2020	2500	2200
20-39	2570	1900	2530	1900
40-49	2440	1800	2404	1805
50-59	2320	1710	2277	1710
60-69	2090	1540	2024	1520
70 & over	1880	1390	1771	1330

Sources: Food and Nutrition Research Institute, Philippines, and The Medical Research Institute of Sri Lanka.

Table 2. Dietary energy thresholds used by a sample of countries, 2000-2004

Threshold	Country

Single threshold

2000 kcal	Maldives, Philippines (but also specifies 80% of protein RDA which is equivalent of 50 milligrams.
2030	Sri Lanka
2100	Cambodia, China, Indonesia, Laos, Mongolia, Thailand, Vietnam, Fiji, Turkey, Armenia
2124	Nepal
2133	Madagascar
2138	Malawi
2207	Paraguay (all country)
2238	Oman
2282	Moldova
2250	Kenya
2283	Burkina Faso
2288	Albania
2300	Cameroon
2309	Jordan
2300	Iran
2436	Iraq
2400	Senegal, St, Kitt & Nevis, Morocco, Bahamas
2470	Belarus (all country)
2700	Sierra Leone
3000	Uganda

Multiple thresholds

1805 and 2120	Bangladesh--lower and upper poverty lines.
2100 and 2400	India--urban and rural areas.
2180 and 2220	Mexico--urban and rural areas.
2730 and 2110	Russia--able-bodied men and women.

Sources: Report of Four UNSD Sub-Regional Workshops (2003-2004) and UNSD Survey of Poverty Measurement Practices (2005).

The choice of energy threshold T directly influences fpl (as well as tpl and other functionally related poverty measures). Exploratory studies in the Philippines showed that the per capita energy consumption cumulative distribution rose by three percentage points for every 100 kcal increase in the threshold in the 1500 to 2100 kcal range (David,

2004).[23] This implies that, given other factors remaining constant, changing the country's threshold from the official 2000 kcal to 2100 kcal used by majority of the developing countries would result in a three-percentage point increase in the estimate of food poverty incidence. Higher sensitivities are exhibited by results from Vietnam (Ministry of Health, 2003). The Bangladesh Bureau of Statistics previously used a variation called direct calorie intake (DCI) method, alongside the CBN method. In the former, households and members, whose calculated per capita energy consumption fell below a predetermined threshold (2112 for urban and 2122 for rural), are considered food poor. The threshold was lowered to 1805 kcal to estimate what the country calls the hard core or extremely poor.

Results from 1983-84 to 1995-96 are summarized in Table 3. The 23.2 percent average difference in poverty incidence between the 2120 kcal and 1805 kcal thresholds imply a more than 7 percent shift per 100 kcal change in the assigned food poverty threshold. Thus, the findings from the three countries raise the possibility that differences in the countries' official energy thresholds (Table 2) could make incomparable national poverty statistics as well as sub-national estimates (e.g., rural versus urban). If further experiences from other countries support these findings, then the need for flexible or robust alternative methodologies take on added importance (see Subsection 4.1.3 and Section 4.2.

[23] This occurs when per capita energy consumption is computed using family sizes adjusted for economies of scale as divisors of the estimated total family consumption. Using unadjusted family sizes led to higher sensitivity of the per capita energy consumption distribution in the same energy range.

Table 3. Bangladesh Food Poverty Incidences from DCI Method and Two Energy Thresholds (%)

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Year	2120 kcal	1805 kcal	Difference
1983-84	62.6	36.8	25.8
1985-86	55.7	26.9	28.8
1988-89	47.8	28.4	19.4
1991-92	47.5	28.0	19.5
1995-96	47.5	25.1	22.4
Average	-	-	23.2

Note: 2120 kcal is the average urban and rural thresholds, weighted by .20 and .80 population proportions, respectively.

Source: *From Counting the Poor to Making the Poor Count*, World Bank, Bangladesh (1998).

4.1.2 Food basket construct and food poverty line (fpl)

The next step to computing the food poverty line is to determine a bundle of food – by item and weight, e.g., rice, 0.25kg and sugar, 0.03 kg – which provides a total (T') close to the specified threshold (say T, in kcal per person per day). The conversion is made through a so-called food composition table from FAO/WHO that is adjusted by individual countries to suit their individual situations. Basic data are obtained through a Household surveys such as Household Food Consumption Survey (HFCS) or Household Income and Expenditure Survey (HIES).

It is important that these surveys provide information for individual food items consumed--by weight and value. Chapter 5 reviews in more details household surveys used for poverty measurements. The composition of the food basket depends on the choice of reference population. Since the object is to identify and count the poor, the reference population is usually some lower percentile of households according to their

per capita income distribution, e.g., lowest 20th percentile, quartile or 30th percentile as reported by some countries.[24] In many countries, the choice of the percentile cut-off point is usually guided by the most recent poverty incidence estimates, what infers that, the reference population should be similar to the poor population. Per-capita food items consumed by this reference population are listed in order of importance, such as with respect to quantity, value, or in some cases frequency of reported consumption by the households. The food bundle is comprised of the top entries in this list, stopping at the item where $\sum kcal = T^{'}$ with $T^{'} \cong T$. Since $T^{'} \neq T$ in general, the sum is rounded to T by multiplying each food item's weight consumed per capita by $\frac{T}{T^{'}}$.

Based on the returns from the UNSD global survey on poverty measurements, the number of items comprising the food baskets ranged from 7 to 205, with a median of 40 items.[25] When different energy thresholds are used, e.g., for urban and rural areas, it follows that the food baskets will vary as well. There are countries that use only one threshold, but which adopt multiple food baskets to reflect differences in food availabilities and consumption patterns for different groups of people or regions. Basic considerations here are the relative importance a country puts on sustaining a constant welfare level upon which the poverty statistics are based versus specificity of the

[24] A few countries use deciles around the median as reference population. Others use a family, e.g., of 4 or 5 members specified by age and sex. However, at the four UNSD regional workshops, a consensus started to emerge on the advantages and desirability for countries to use households occupying some lowest percentiles of per capita income distribution.

[25] The wide range can be explained partly by level of detail that countries group food items. For example, some countries may list rice and rice-based noodles separately while others count them as one (rice). Still, others may classify these items simply as cereal grains.

statistics to sub-national differences in food availability, preferences and consumption.

Let $q_1, q_2, ..., q_f$ denote the quantities of the f items in the food basket that supply $e_1, e_2, ..., e_f$ respectively such that $e_1 + e_2 + ... + e_f = T'$ kilocalories. Let $p_1, p_2, ..., p_f$ be the unit prices of the f food items. The food poverty line is:

$$fpl = \frac{T}{T'} \sum_{1}^{f} q_i p_i \qquad (1)$$

Ideally, the prices should be period averages (usually one year) that the poor – or those in the reference population – paid for the commodities in the food basket. In practice, countries generally do not collect prices specifically for the purpose of compiling poverty statistics. The prices used may come from varied sources, such as HIES or HFCS. Quite often, however, what are collected in these surveys are quantity and expenditure for each food commodity consumed or bought, such that the unit prices, though are not collected directly, are derived by dividing the expenditure by the quantity of each commodity.

Participants in the UNSD sub-regional workshops reported that expenditure can be accurately collected from households. However, quantity is relatively more problematic, especially when the commodity is not traded in standard units. Thus, the unit price derived from the two can at best be as reliable (or as inaccurate) as the quantity estimate.[26] Price quotes used for consumer price index (CPI) compilation are reused routinely particularly, but not exclusively, for updating poverty lines. These have the

[26] There was almost full unanimity in this opinion at the 2004 Sub-Regional Workshop of West African States wherein most of the participants were heads of national statistical offices.

advantage of providing average unit prices for the year for updating the poverty lines, since majority of the developing countries maintain monthly or quarterly CPI series.

4.1.3 Alternative approaches to costing a food basket: Price per kcalorie and household level *fpl*

Some countries avoid constructing a food basket by calculating the total expenditure and total kcal content of all the food consumed by the reference population. The ratio between the two totals is a *price per kcal* estimate. When this figure is multiplied by the energy threshold, it provides an estimate of *fpl* . Once a price-per-kcal estimate is calculated, *fpl* s for as many choices of energy thresholds are easily computed. Indonesia used this approach until 1993 with different lists for urban and rural areas (Maksum,C. 2004). Bangladesh, which as noted above uses two energy thresholds, follows this approach in its direct calorie intake (DCI) method. The approach avoids unit prices, which, as mentioned previously, are more difficult to obtain and may not even be collected in some countries. However, the approach requires as many food expenditures and conversion into energy equivalents as there are food commodities consumed by the reference population.

Some countries do not report *fpl* separately (and related statistics, such as incidence and number of food poor), since they see it merely as a necessary input in calculating the total poverty line (*tpl*) and absolute poverty measures. This is unfortunate because on their own food poverty statistics have important uses. They may also produce more comparable statistics on the local and international levels than *tpl* and other more

composite poverty statistics. Two such more comparables statistics are discussed in this chapter.

Another approach that has been implemented in a number of countries (Jordan, Laos, and Thailand, as described for example, in Kakwani and Krongkaew, 1998, involves taking the sum of the age x sex-specific RDAs of the members of the sample household (∑RDA) (Kakwani, 2001). A household level food poverty line [$hfpl = (\sum_{M} RDA) \times P_{kc}$ where P_{ck} is the price per kcal and M the number of members in the households] is computed and compared with the estimated total income or expenditure (Y) of the household. All the members of the household are considered food-poor if $Y < hfpl$, otherwise not. Note that unlike fpl which is determined on per capita basis, $hfpl$ and Y are household totals. From the survey, the design-weighted estimate of the total of the Ms provides an estimate of the total number of food-poor in the sampled population. This approach circumvents computing per capita energy consumption and per capita income (expenditure) and the attendant problem of finding suitable adult equivalents or scale economy-adjusted household sizes as divisors. (In Section 4.2, a variation to Kakwani's proposal is presented that eschews the use of prices and currencies altogether.)

4.1.4 Computing the total poverty line (tpl)

This computation involves two steps. The first defines essential non-food basic needs and the second incorporates their cost into the food poverty line (fpl) to arrive at

the total poverty line (tpl). Simply put, fpl has to be adjusted upward by an amount equal to or proportionate to the cost of procuring the essential non-food basic needs of a poor or nearly poor person. Clearly, "essential non-food basic needs" requires a definition that can be measured. Developing countries generally follow one of three operational definitions or procedures.

A. List of specified essential non-food needs

This list is created usually by a group of users and stakeholders in association with the national statistics office or the agency charged with producing the country's official poverty statistics. The list is exhaustive, covering items like clothing and footwear, shelter, fuel and light, household goods, health services, personal care, and education. Costs per person are assigned to each item. Hence, if $nfpl$ (non-food poverty line) denotes the sum of the costs, then:

$$tpl = fpl + nfpl \qquad (2)$$

This was the procedure of choice by some countries during their early years of poverty statistics compilation, and some still keep it as part of their official methodology (e.g., Indonesia, see Maksum, op. cit.).

Simplicity is its main appeal. However, the outcome is very much dependent on a highly subjective list. Adding or subtracting from the list affects tpl directly in an additive fashion. It is easy for anyone to criticize why *this* item is included while *that* item is not. Changes in the list would affect the comparability of the tpl time series. Similarly, different lists for different areas or sub-populations result in non-comparable

statistics, for example, bread plus rice in cities versus all rice in rural areas or physician-attended childbirth in urban regions versus midwife-assisted deliveries in rural areas.

B. Regression

This approach comes from the World Bank (see Ravallion, 1992) and is premised on a particular definition of essential non-food basic needs. A household whose total expenditure per capita (te) is equal to fpl still has to spend for items other than food, and those items must be regarded as essential by the household. The set of non-food items availed of by households for whom $te = fpl$ may then be considered to define essential non-food needs. And the average expenditure of the households for the set may be used to estimate $nfpl$ in equation (3.2). The problem is that none or few households will precisely satisfy $te = fpl$. One solution is to run a simple linear regression of the share of per capita food expenditure (fe) to total expenditure, ($S = \frac{fe}{te}$), on $\log(\frac{te}{fpl})$ using data from the reference poor population. That is: $S_i = \alpha + \beta \log(\frac{te}{fpl})_i + error_i$

where i runs through the sample households in the reference population. Let $\hat{\alpha}$ be the estimate of the intercept α . Since $\log(\frac{te}{fpl}) = 0$ when $te = fpl$, it follows that $\hat{\alpha}$ provides an estimate of the food share among households whose total expenditures match the food poverty line. Conversely, $1 - \hat{\alpha}$ estimates the essential non-food share. Hence, $tpl = fpl + (1 - \hat{\alpha})\, fpl$, or $tpl = (2 - \hat{\alpha})\, fpl$ (3)

For example, China used this method in its 1995 Rural Household Survey and obtained food share $\hat{\alpha} = 0.83$, hence $tpl = 1.17\, fpl$ = Renminbi 557. Before 1995, China used $tpl = 1.40\, fpl$, where the 40 percent adjustment was based on what was then the experts' opinion of a 'reasonable food share' of 60 percent. The big reduction in the adjustment factor from 40 percent to 17 percent naturally led to speculations that the pre-1995 estimates are not comparable to those from 1995 onward. However, from 2003, China started recompiling a second set of poverty statistics based on the pre-1995 60 percent food share. Other countries, in particular those who received World Bank assistance to conduct living standard surveys and poverty analysis, such as Cambodia, Mongolia, and Vietnam in the Asian region, have followed the regression approach.

As a food share, α is an Engel's coefficient, albeit in a very restricted sense, i.e., when $fpl = te$. As such, the quantity $\frac{fpl}{\hat{\alpha}}$ is an estimate of the total poverty line as well. However, an Engel coefficient computed directly from the households returns may be the more appropriate divisor for this form of tpl estimate. Also, the inequality $te > fpl$ is expected to hold for most sample households in the reference population. Otherwise, $\log(\frac{te}{fpl}) < 0$. If this happens in a sizable subset of the sample, the regression equation may not provide a good fit to the data. A more attractive alternative in this case is direct estimation of Engel's coefficient.

C. Engel's coefficient

Many countries use a more pragmatic approach to determine the total poverty line. They compute Engel's coefficient $\frac{fe}{te}$ directly from the sample households with expenditures within a given (say ±d) percentage points of fpl. $d = 10$ percent is a common choice among the countries (e.g in Lao PDR and Philippines). Similarly, as in the regression method, tpl may be computed as

$$tpl = (2 - \frac{fe}{te})\, fpl \qquad (4)$$

Why 10 percent and not 5 percent or some other per capita expenditure band around fpl? Countries often base their choice on neighboring country practice or on a consultant's recommendation. It is preferable to base the choice on empirical evidence by calculating $\frac{fe}{te}$ for several values of d. Figure 1 shows an example where $\frac{fe}{te}$ was computed from the Philippines 1994 Family Income and Expenditure Survey data with d ranging from 2 to 20 percent. The Engel coefficient seems to be robust for d in the 2 to 5 percent range. But it begins to decline continuously as d approaches 10 percent. The coefficient behaves differently for rural and urban areas, with the latter exhibiting markedly lower value, hence higher tpl. This is to be expected as urban dwellers generally pay more than rural residents for housing, transport and other essential non-food goods and services. This raises an issue whether one national tpl is all that is needed or whether separate tpl s should be computed for the urban and rural areas.

Figure 1. Ratio of Food Expenditures to Total Expenditures, 1994, Philippines

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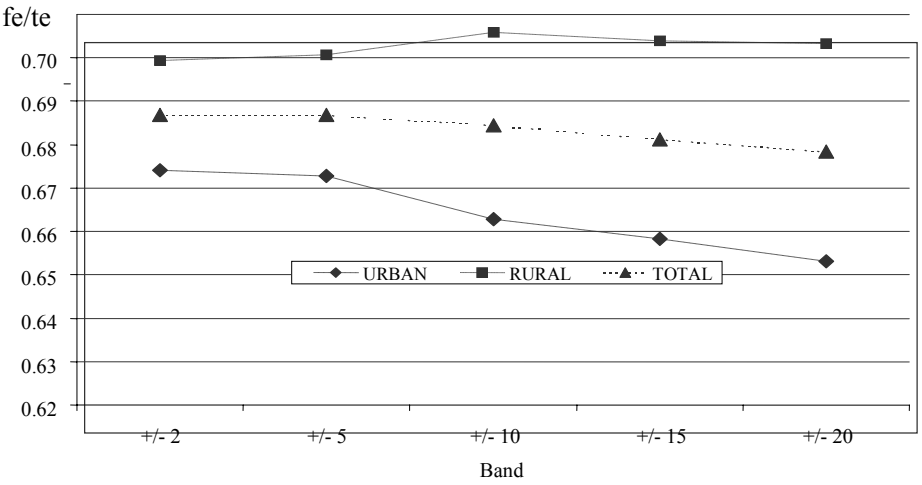

Source: David and Maligalig (2002).

D. Comparative performance of the three procedures

Aside from being highly subjective, a fixed list of essential non-food goods and services is unaffected by both differences in purchasing power between households and between measurement periods. And since the total cost of the list is simply added to fpl, it is easy to see that change in tpl will be slow. A list could also be susceptible to criticism and pressures to add or drop items, which would increase or decrease the incidence of poverty. As mentioned, Indonesia uses the list method. In the early 1990s, the country's $tpl = 1.10\, fpl$, i.e., only 10% of fpl was allowed for essential non-food basic needs.[27] Later experiments with the regression method resulted in Engel coefficients ranging from 0.70 to 0.75, or a 20 to 25 percent adjustment. This produced

[27] At about the same time, the Philippines $tpl = 1.70\, fpl$ which was based on Engel's coefficient that at the time was computed from all the sample households. The difference in the methodology for computing tpl was found to be the main reason why Indonesia's official poverty incidence was much lower than that of the Philippines (Asra, et.al., 1993).

significantly higher poverty incidence levels. These coefficients, however, have not been adopted, and the current official methodology remains based on separate lists of essential non-food goods and services for the rural and urban areas (Said and Widyanti, 2001).

Regression and direct use of Engel's coefficient can be expected to lead to similar $tpls$, particularly when the latter is computed from a sub-sample of households falling inside a narrow band, say those with per capita expenditures within ± (2 to 5) per cent of fpl. The sub-sample, however, gets smaller as the band is narrowed. Since a bigger sub-sample implies a more precise $\frac{fe}{te}$ estimate, there are instances where a band as wide as 10 percent is justified. Compared to running regressions, estimating $\frac{fe}{te}$ directly may be less taxing to the national statistics office, especially if this has to be done for every HIES. This also avoids problems resulting from a poor linear regression fit.

Instead of scaling up fpl to tpl in a linear fashion, as in equation (2), some countries opt to use the non-linear estimate:

$$tpl = \frac{fpl}{\hat{\alpha}} \qquad \text{or} \qquad tpl = \frac{fpl}{\frac{fe}{te}} \tag{5}$$

In other words, the total poverty line is the ratio of the food poverty line to Engel's coefficient. The Philippines' official poverty statistics, for example, are computed based

on the second of these equations. More recently, following Ravallion (1998), the first poverty report of Bhutan (2004) made use of the first equation.

For reference populations used in poverty measurements in developing countries, empirical Engel's coefficients usually fall in the 0.50 to 0.75 range. This is certainly the case with Asian countries wherein the coefficients were observed to take on a modal value close to 0.66 (David and Maligalig, op. cit.). Thus, the use of equation (5) would result in higher tpl's than the use of (3) or (4), which can be seen from the values that $(2-\frac{fe}{te})$ and $(\frac{1}{\frac{fe}{te}})$ take for different values of $\frac{fe}{te}$:

$\frac{fe}{te}$	$(2-\frac{fe}{te})$	$\frac{1}{\frac{fe}{te}}$
0.50	1.50	2.00
0.66	1.33	1.50
0.75	1.25	1.33
1.00	1.00	1.00

4.1.5 Updating poverty measures and estimating poverty trends

In the interest of continuity of the poverty statistics series, food baskets, energy thresholds and reference populations are seldom changed. This means that countries can and do update their food poverty lines (fpl) anytime that new unit prices of the commodities in the food basket become available. When the method of estimating the total poverty line (tpl) is the sum cost of essential non-food goods and services, new prices are required to update tpl. In countries where tpl is computed via regression or

Engel's coefficient, updating is sometimes done by using the same coefficient for the years that a HIES is not done. It is assumed implicitly that the coefficient either does not change or changes very slowly in the reference population during a one-to-two year period. Coefficients are recomputed only when there is a new HIES round.

Sometimes the CPI is used (e.g., the food CPI and non-food CPI) to update the food and non-food components of the total poverty line. It has been noted, however, that the CPI as currently constructed in most countries might not reflect the consumption pattern of the reference population used in determining the poverty lines (see discussion in Subsection 4.1.2). Another key limitation is that the basket of goods used for the CPI may vary significantly from the one used to construct the poverty lines. These limitations can be more pronounced when estimating sub-national poverty lines. Some countries address these issues by using sub-national CPIs constructed from household survey data (e.g., Sri Lanka, Vietnam and Thailand). Sticking to the same mode of updating is important for the country's poverty lines to be comparable across time. Updating the statistics on the number and proportion of poor persons or households will require new estimates of per capita income (expenditure) distributions which in turn require a new HIES round. Very few users would be willing to assume that these distributions remain constant even over a single year because doing so would nullify the need to update the poverty statistics in the first place. These updates are discussed in greater detailed in Chapters 5 and 7. As obvious as this seems, its practical implications seem to be lost to some users at times. It is not unheard of that users want annual updates on the estimates of the number and proportion of poor persons (households), which means that a HIES is

conducted yearly at great cost. And sample sizes, hence human and material requirements, rise even more as users demand that the updates be done for progressively smaller sub-populations.[28]

Some of the countries that update poverty counts and incidences annually (e.g., China) simplify the methodology by having one national poverty line and releasing national level estimates only. This keeps the survey sample size relatively small. Doing otherwise, such as updating annually at sub-national levels, could quickly lead to very large surveys. For example, Indonesia's annual socio-economic survey has a sample size of 200,000 households (see Surbakti, et. al, 2001). This would delay release of results, defeating the purpose of updating yearly. If user demands are not aligned with the technical and material resources available to the national statistical system, the poverty monitoring system soon becomes unsustainable.

The frequency in which poverty incidences and counts are updated for various countries-- which coincides with the frequency of conducting household income and expenditure surveys--is shown in Table 4. The frequency ranges from one to five years for nations with a poverty monitoring program. This is not to say that countries that follow the same updating frequency of, say every three years, track the same reference years. Many countries still have no regular schedule of updating, inasmuch as a HIES is conducted only when funds become available, usually from an external donor. Of the 107 countries that responded to the UNSD 2005 Survey of Poverty Measurement Practices,

[28] What matters is little n, not n/N , where n is the sample size in the smallest domain of interest -- is a truism that needs repeating every so often.

16 have yet to initiate programs for measuring poverty. Thus, the desirable goal of synchronized poverty measurement and monitoring requires agreement among countries on the frequency and timing for the supporting household income and expenditure surveys.

Table 4. Updating frequency of poverty incidences and counts in selected countries.

Frequency	Countries
Yearly	China and Indonesia
Every 2 years	Thailand and Iran
Every 3 years	Jordan, Mongolia, and Philippines,
Every 5 years	India, Malaysia, Sri Lanka, and Vietnam
Irregular, depending on funds availability	Bangladesh, Cambodia, Laos, Fiji, and the Central Asian Republics
Not yet measuring poverty	16 of 79 countries that responded to the UNSD 2004 Survey.

Source: Preliminary tabulations from the UNSD 2005 Survey of Poverty Measurement Practices.

Sampling errors of counts, like the number of food-poor or absolutely poor, can be computed using design-based variance estimators (See Chapter 5 for a broader discussion on variance estimation). Frequent monitoring is justified when the poverty incidence is high and falling rapidly, or conversely, when it rises quickly. The former situation is exemplified by China during the last two decades of 2000. On the other hand, the Asian financial crisis that started in 1997 caused spikes in the poverty incidence

among severely affected countries such as Thailand and Indonesia. This had been described as transitory poverty brought about by stagflation--economic contraction and precipitous currency devaluation. Poverty monitoring frequency was briefly increased to twice a year and then reverted to a yearly frequency in these countries. Now that the poverty incidence in Thailand has returned to pre-crisis levels of about 10 percent, monitoring has been scaled back to once every two years. As mentioned previously, China and Indonesia continue to update their poverty incidence levels annually. With China's official (rural) poverty incidence estimated under 6 percent, the amount of reduction that can be achieved in a year's time is naturally very much constrained. Hence, the chance of detecting a change through statistical means will require a very efficient and large household income survey. (Although China uses both income and expenditure, the former is the basis for the officially released poverty statistics.)

4.1.6 Relative and subjective income/expenditures based poverty lines

Income-based relative poverty lines often are simple functions of the median or mean of the per capita income distribution. These relative poverty lines are much easier to establish and are suitable for quickly finding out who are poor and where they live. When applied to small areas, they could be used to classify individuals as well as rank communities, thereby enabling sharper allocation of poverty reduction resources in a relatively short time. However, estimates are influenced by shifts in the central values as well as shape of the per capita income distribution. Therefore, they are not meant to be used to monitor the poverty situation from one period to another.

Relative poverty lines are more frequently used by developed than developing countries and it practice varies also among the countries. A number of countries in The Economic Commission for Latin America & the Caribbean (ECLAC) region for example have used 50 percent of the median per capita income (Rio Group Report, 2003). Oman instead defines as poor a person with income less than 40 percent of the population's median per capita income (UNSD-ESCWA Sub-Regional Poverty Statistics Workshop Report, November 2004) while Iran uses 50 percent of both the mean and median per capita incomes (UNSD-ESCAP Sub-Regional Poverty Statistics Workshop Report, October 2004)

Country experience in subjective poverty lines is very limited and still not well established. In the Philippines, a private market research organization asks heads of households about their income: whether they consider themselves poor, and if so, how much more income would they need not to consider themselves as poor. This 'self-assessed poverty' approach yields what are sometimes referred to as subjective poverty estimates. Like many opinion poll-type investigations, these surveys are small. They typically involve 1200 - 1500 sample households, enabling the results to be released very quickly. Egypt's national statistical system has constructed a subjective poverty line based also on minimum income that household heads believe is necessary for an adequate standard of living. The experience of Egypt showed, however, that this methodology overestimates poverty, especially in urban areas where expectations of educated household heads tend to exceed current income levels by a large margin (UNSD-ESCWA, op. cit).

4.2 Direct measures of food poverty

4.2.1 Estimating the empirical cumulative distribution function (cdf) of per capita energy consumption

As implemented by countries, the cost of basic needs (CBN) approach discussed in Section 4.1 yields one set of food poverty statistics for each specification of the energy threshold T. This means non-comparable statistics for countries and sub-national domains that adopt different Ts (see Table 2**)**. One way out of this predicament is to estimate the entire per capita energy consumption cdf, that is, divide the calculated total energy consumption (∑kcal) of the household by some measure of the number of consuming members. This is done in some countries, but generally not in the agencies charged with producing official statistics. For example, Vietnam's General Statistics Office (GSO) uses the CBN method in compiling the official poverty statistics from its Multipurpose Household Survey and Vietnamese Living Standards Survey. The official population food poverty incidence estimates for 1998 and 2002 were 15.0% and 10.9%, respectively (Vietnam Development Report 2004). The National Institute of Nutrition of the Ministry of Health conducts a General Nutrition Survey (GNS) in which household food consumption is obtained via a different data-capture method described as a 24-hour recall combined with weighing of some of the food items .

From the 2000 GNS, which sampled 7,658 households nationwide, the institute determined the following three points about the empirical per capita energy consumption cdf (*General Nutrition Survey 2000 Report*):

Energy cut-off	< 1500 kcal	< 1800 kcal	<2100 kcal
% of population below cut-off	4.1%	17.9%	45.1%

Based on direct un-monetized dietary energy consumption, it was estimated that 45.1 percent of the population were food-poor, having consumed less than the official 2100 kcal threshold. One significant advantage of having the empirical cdf is that the proportion of persons (or households) consuming less than any chosen energy threshold is readily available. This means that for any group of countries with empirical cdfs, an agency or any user can easily interpolate estimates of food poverty incidence for any choice(s) of energy thresholds.[29] Moreover, the method eschews prices, choosing a reference population, estimating a poverty line in money terms, and estimating an income or expenditure distribution. As a consequence, the only remaining significant sources of non-comparability among countries' estimates would be RDA specifications (see Table 1), food composition or conversion tables, and the method of data collection (i.e., survey design and methodology for obtaining household food consumption). Furthermore, from a primary data point of view, improving the accuracy of the food poverty estimates is reduced to improve survey design and the method of collecting the consumption quantities of food items.

[29] This method can be applied to other nutrients such as protein. It also extends readily to joint cdfs, including energy and protein.

The 45.1 percent National Institute of Nutrition estimate of the food-poor is much higher than the 12 to 13 percent official estimate from GSO for 2000. There are two major sources of this difference: the methods of data capture and the choices of denominator for computing per capita kcal consumption. These are illustrated more clearly by a second example from the Philippines.

The Food and Nutrition Research Institute (FNRI) in the Department of Science and Technology, Philippines, conducts a National Nutrition Survey (NNS) every five years. The survey has a food consumption module that uses a one-day weighing of all food items cooked by the sample household. The sample households are randomly surveyed over the seven days of the week.[30] Left over portions fed to pets were also weighed. Family members who ate outside were asked to recall their precise meals, and estimated food consumption by guests who ate with the family was netted out.

The total energy consumption, (∑kcal), of each sample family is derived from the net amounts of food commodities consumed converted into energy using FNRI's own food composition table. Per capita values are generated by dividing (∑kcal) by some measure of family size. As discussed in the next Subsection 4.2.2, the choice of divisor is not trivial, and various choices could lead to substantially different food poverty incidence estimates.

[30] The sampling unit is the family, which differs from the household, because it excludes helpers such as maids and drivers. In the reference (poor) population, there is little difference between family and household.

Cdfs are estimated parametrically through models such as lognormal or gamma models.[31] Alternatively, model-free empirical cdfs estimates may be used. The latter are more common and almost routinely constructed by national statistical agencies during the processing and analysis of household sample surveys. This can be seen in the following representation:

Let:

$\Delta_{(a_i)} = 1$ if $a_i \geq 0$

$\Delta_{(a_i)} = 0$ if a_i π 0

△

Let $\pi_i, i = 1,2,...,n$ be the inclusion probabilities of the sample units (households), which in practice are adjusted for non-response, non-coverage and other perturbations in the implementation of the survey. Let $x_i, i = 1,2,...,n$ be the per capita energy consumption estimate of the ith sample unit for a particular choice of denominator. A design-based Horvitz-Thompson estimator of the empirical cdf of x is given by Chambers and Dunstan (1986)

$$\hat{F}(t) = \sum_{i=1,2,..n} \pi_i^{-1} \Delta_{(t-x_i)} / \sum_{i=1,2,...n} \pi_i^{-1} \qquad (6)$$

This is a formal representation of a weighted cumulative distribution table. Cumulative frequencies and cumulative relative frequencies are computed for the upper

[31] This is behind FAO's methodology for estimating the proportion of the population consuming less than 2100 kcalories per capita per day, which is indicator number 5 of the UN Millennium Development Goals (see Naiken, 2003).

class boundaries, say t = 1200, 1500, 1800, 2100, 2400, … kilocalories. The points may be connected to "draw" the empirical cdf in its entirety.

4.2.2 Household size for per capita calculations

An obvious candidate for divisor of total household energy consumption is household size M. Since poor households tend to be bigger and with proportionately more children, the result will underestimate real per capita consumption and consequently lead to higher food poverty incidences.[32] Another candidate divisor is an *adult-equivalent* adjusted $M^* = \sum w_i$, where $\{ 0< w_i \leq 1; i = 1, \ldots, M\}$ are age- and sometimes sex-differentiated weights assigned to household members. For example, a maximum of 1 may be applied for working age males with lower weighting for adolescents, children and females. (Note that $M^* \leq M$).

Using the RDA specifications for dietary energy as basis for defining M* is an intuitively appealing idea. For example, the RDAs for the Philippines in Table 1 may each be divided by 2,570. Doing the same for Sri Lanka, with 2,530 as common divisor, leads to a different M*, which points to the desirability of herding countries towards adopting more uniform RDAs.

Other choices for divisor involve models of M* that adjust further for scale economies. For example, Palestine (UNSD-ESCWA Poverty Workshop Report, 2004)

[32] The same holds for estimates of the non-food poverty line, total poverty line and per capita income (expenditure), distributions, more so on account of economies of scale for both food and non-food needs.

uses $M^* = (A + PC)^f$, where A = number of adults, C = number of children, P = child-to-adult proportionality factor (0.46), and f = scale economy factor (0.86). In the Philippines, the double-log function between family food expenditure (F), income (Y) and size (M) had been tried on an experimental basis but not adopted in the official methodology: $\log F = \alpha + \beta \log Y + \tau \log M$

F/Y connotes levels of welfare, and it is Engel's ratio when Y is replaced by expenditure. For F/Y constant, the family elasticity of income is: $\varepsilon = (\partial \log Y)/(\partial \log N) = \tau/(1-\beta)$

Bantilan *et al*. (1992) ran a regression of the model on the 1985 Family Income and Expenditure Survey data and obtained an elasticity estimate of 0.7. Thus, $M^* = M^{0.7}$ may be used for per capita calculations. As an illustration, the empirical cdf of family per capita energy consumption was estimated from the Metropolitan Manila sub-sample of the 2003 National Nutrition Survey (NNS) of the Food and Nutrition Research Institute described above, first using M and then $M^* = M^{0.7}$ (see Table 5).

Table 5. Per Capita Energy Consumption Distributions (% of Population) Using M and $M^{0.7}$ as Divisors, Metropolitan Manila - Philippines, 2003

Divisor/Cut-Off (kcal)	<1500	<1800	<2000	<2100
Family Size, M	48.0	74.0	83.0	88.0
$M^* = M^{0.7}$	7.9	16.0	22.5	26.3

Source: David *et al*, 2004.

Predictably, the results with M lead to very high food poverty incidence rates. At the official 2000 kcal threshold, it is an unrealistically high 83 percent. Other researchers observed this phenomenon, and it appeared in the Vietnam case mentioned above. The empirical cdf, with scale-economy-adjusted family size as divisor, leads to much lower food poverty incidence rates. One advantage of a cdf estimate is seeing the effect that a change in energy threshold will have on the incidence. For example, moving the Philippines' official 2000 kcal threshold to 2100 kcal, which is used by the majority of Asian countries, would mean about a four percentage point increase in the estimated food poverty incidence for metropolitan Manila, from 22.5 percent to 26.3 percent.

From the UNSD's regional workshops and 2005 poverty practices survey, it appears that many of the developing countries use household size (M) to compute per capita food and non-food consumption, as well as per income and expenditure. Others use some adjustment only a step or two removed from M. For example, Senegal uses only two weights: $w_1 = 0.5$ for household members below 15 years old, and $w_2 = 1.0$ for all others. Some use adult equivalents based directly on the RDA specifications. But this is usually for calculating per capita food consumption only. Very few use any adjustment in estimating per capita income or expenditure. The likely effect could be overestimated poverty incidences and counts.[33] Alternatively, in so far as food poverty is concerned, per capita food consumption, thresholds, income and expenditure may be circumvented altogether.

[33] Countries that attended the UNSD sub-regional poverty workshops expressed significant interests in technical information and assistance in implementing adult equivalent and/or economies of scale adjusted per capita methods.

4.2.3 Eschewing per capita calculations

Most countries have developed their respective per capita RDAs for dietary energy, as well as for other nutrients, for different age-by-sex groupings of their populations (see Table 1). Those that have not, have either adopted their neighboring countries' standards or the latest recommendations of FAO or WHO. Instead of resorting to a per capita threshold for the household, it is natural to regard the sum of the RDAs of a household, ∑RDA, as the energy threshold for that particular household. Thus, if ∑kcal represents the estimated daily total energy consumption of the same household, the inequality ∑kcal < ∑RDA can be used directly to classify households and persons therein as either food poor or non-food poor.

More than one set of RDAs may be considered, giving rise to as many thresholds and food poverty estimates. For example, a 1971 FAO/WHO Expert Committee on Energy and Protein Requirements accepted a 15 percent coefficient of variation of energy requirement between individuals in a population or group with similar demographics (WHO, 1985, p. 6). Hence, reducing the individual RDAs proportionately by 15 percent and by 30 percent will yield ∑RDAs that correspond approximately with minus one and minus two standard deviations from the original respectively. Similarly, increasing the individual RDAs by the same amounts will correspond with plus one and plus two standard deviations from the original ∑RDA. Six-point estimates together provide a fuller understanding of the relationship between RDA specifications and thresholds, along with poverty measures. Comparable food poverty estimates across and within a country can be interpolated easily for any given choice of household threshold within the

(1 ± 0.3) ∑RDA interval.

The weighted sum of the energy shortfall among the food poor households is a direct estimate of an energy gap:

$$\text{Energy gap} = \sum w\{\sum \text{RDA} - \sum \text{kcal}\} \quad \text{if } \{\sum \text{RDA} - \sum \text{kcal}\} > 0 \qquad (7)$$

$$= 0 \text{ otherwise}$$

where the inner summations run through the members of the household, w denotes the design weight of the sample household, and the outer summation runs through all sample households. The energy gap estimates the amount of dietary kilocalories needed to bring all the food poor families up to their respective food poverty thresholds. If desired, this can be expressed in monetary terms by multiplying by the cost per kcal (obtained from the reference population). This simple and straightforward interpretation of this statistic can have mass appeal to policy makers and lay persons alike.

4.3 Non-income measurement methods

The minimum basic needs (MBN) (also called unmet basic needs (UBN)) approach has been used in a number of countries in lieu or in addition to the income-based basic needs approach. In this approach non-monetary indicators representing different dimensions of poverty are chosen, estimated and monitored. The subset of

Millennium Development Goals [MDGs] minus the income indicators provides excellent examples:

- Proportion of underweight children to represent malnutrition;
- School enrollment, primary school completion, and youth illiteracy rates to represent basic education;
- Infant and under-five mortality rates, maternal mortality ratio, and births attended by skilled health staff to represent primary health care; and the
- Ratio of girls to boys in primary and secondary school, ratio of literate females to males, proportion of seats held by women in parliament, and share of women employed in the non-agriculture sector to represent the gender equality dimension or goal.

Many, though not all, of these indicators are long-term outcomes or output indicators. Case in point: a child being underweight is the result of years of chronic undernourishment. Also, these UBN indicators are expressed in different units of measure. This has made producing a composite index a difficult and perpetually subjective task. However, this has not prevented agencies, particularly international bodies, from constructing such indexes. These include the Human Development Index (HDI) and other indices that UNDP puts out annually for each country in *Human Development Report.* These may have added value more as devices for advocacy than as monitoring tools. Few developing countries compile composite indexes, preferring to use the indicators individually and collectively in much the same way that they will be used to monitor progress in the MDGs.

National statistical systems have also been compiling many of the UBN indicators long before the international development agencies declared poverty reduction their overriding strategic objective. Many are extracted from population and housing censuses, demographic and health surveys, civil registries and other administrative reporting systems. In fact, choice of indicators in a country's UBN information system is often determined by existing data collection systems; seldom is a new system established just to meet the additional requirements for new indicators. This is the case in Bangladesh, for example, where infant mortality is used as a proxy indicator for the primary health care system, primary school enrollment rate for basic education, and housing characteristics (access to tap water, toilet facilities, and electricity, and building materials used) for living conditions.

Nearly all countries in ECLAC have UBN poverty monitoring systems in place (Rio Group Report, May 2004). However, unlike income poverty statistics compilations, there are differences in the selection of dimensions and indicators for the basic needs, partly owing to variations in data availability. The three broad categories of basic needs often considered are dwelling characteristics, access to safe water, and access to sanitation facilities. Basic education and economic capacity (e.g., GDP growth rate) are sometimes included in an expanded UBN set of indicators. In the ECLAC, the UBN approach has a solid conceptual foundation as it measures actual satisfaction or dissatisfaction of needs rather than the capacity to satisfy them. In this light, it is complementary to the income poverty line approach. Dimensions of basic needs chosen

are often those highly correlated with income, so much so that they have been used to identify households under extreme poverty.

Assessment and monitoring of poverty through the UBN approach is far from widespread in Africa. Only three of the 10 members of the Economic Community of Western African States (ECOWAS) acknowledge having a UBN system in place. The main poverty dimensions considered are basic education, primary health, and housing characteristics, such as access to safe water, toilet facilities and building materials used. UBN methods can and are being brought down to sub-national levels. For example, China monitors community level indicators, such as percent of villages accessible by roads, percent with land-line phone connections, percent with electricity, illiteracy rates, child enrollment rates, and labor migration rates.

4.4 Conclusion

National statistical information systems have evolved to a point that developing countries more or less follow similar updating frequencies for certain parts of their socioeconomic databases. Thus, censuses have a ten-year cycle, demographic and health surveys five years, nutrition surveys three to five years, and agricultural surveys one season or one year. Being relatively new, poverty statistics have not had enough time to be part of this evolution. The IMF has formalized the frequencies of statistical series in its General Data Dissemination System (GDDS) and Special Data Dissemination System

(SDDS). For example, countries that subscribe to GDDS agree to update their price indexes monthly, and those that sign up on SDDS agree to compile national accounts quarterly. However, poverty statistics are not covered adequately in these dissemination systems.

As seen in Table 4, the frequency of updating of poverty incidence and related statistics varies significantly at the national level. Individual countries have their own reasons for choosing a particular updating frequency. The choice is often a compromise between the users' desire for more frequent updating at smaller domains versus the limited resources available to fund surveys repeatedly. Ultimately, financing and the desired accuracy and timeliness of the results are the key factors determining survey frequency.

As mentioned previously, poverty lines can be updated more frequently using new price data. However, updating poverty incidences and counts require current estimates of per capita income or expenditure distributions, i.e., a new HIES round. The high cost of an HIES makes the majority of developing countries decide on a three-to-five-year poverty monitoring program. If more frequent updating is desired, one strategy that has some chance of being sustained is where this is done for national level estimates only and based on a smaller sample; sub-national estimates may be updated less frequently for which a relatively larger sample is required.

Variations in updating frequency increase when poverty information compilation and monitoring at sub-national levels done by stakeholders, other than the national statistical office, are included. Demand for sub-national poverty statistics come from local officials, central government agencies, non-government organizations (including resident missions of international bodies that focus their interventions on specific disadvantaged groups or areas), and analysts.

Central governments, analysts, and international agencies require country-level poverty statistics. Some need annual updates to feed into their global monitoring activities, including the UNDP's *Human Development Report,* World Bank's *World Development Report,* FAO's *State of Food Insecurity,* and the UN Secretary General's annual progress on the MDGs report to the General Assembly. These agencies put up internal capacities for estimating, interpolating, or projecting from past and current (but partial) information from countries. These agencies are the main sources of poverty information at the regional or global levels. They do not run into problems of inconsistency or non-comparability since countries are not involved in similar activities. It is when the international agencies also publish their own produced national estimates that non-comparability with the countries' statistics can and do arise.

In general, national statistics offices (NSOs) are able to provide some of the needed data at the level of villages, districts, ethnicity and other socio-demographic groupings during census years only. Traditional inter-census national sample surveys can provide reasonably precise statistics for only large domains, such as urban and rural

regions. NSOs will have to continue these surveys to monitor poverty at these macro-levels, as well as to provide input data for monitoring at the global level.

They could not hope to have the time to muster resources required to successfully launch sample surveys with adequate sample sizes for areas below regions and domains of special interest, such as ethnic groups, the handicapped, and similar vulnerable segments of the population. However, information is needed for these smaller domains for more efficient targeting of poverty alleviation, as well as for monitoring and evaluating the impact of such interventions.

Strategies for filling these data gaps in small domains are critically needed. Specialized agencies and ministries responsible for planning and implementing sub-national poverty reduction programs will help generate needed information at these levels.

For example, Thailand's Ministry of Interior conducts an annual Basic Minimum Needs Survey to identify villages eligible for poverty alleviation assistance. There were attempts in Cambodia and Laos to construct district vulnerability indexes from village-level participatory poverty assessment censuses or surveys. A complete enumeration of households is carried out by Vietnam's Ministry of Labor, Invalids and Social Affairs (MOLISA) to identify poor households that qualify to receive subsidies. Indonesia's Central Bureau of Statistics and National Planning Board collaborate to annually measure the welfare level of each household, to identify those eligible to receive poverty

subsidies, and to determine the amount of assistance (Surbakti *et al*, 2001). Moreover, administrative records of the above ministries as well as those of education, health, and civil registrations are important sources of poverty information for small domains.

It is important not to expect results from these different sources and methods to be consistent or comparable. Many update at different frequencies. And they serve different purposes. Monitoring and evaluating at aggregate levels should remain anchored in the more quantitative and replicable methods, and hence in the NSO national surveys. If these are broken down to state or regional levels, inconsistencies and inaccurate comparisons are avoided if the information from the other sources is not aggregated up to these levels. At the same time, some countries endeavor to improve comparability of data from different sources over the long term by giving NSO and research institutes the additional responsibility to promote use of similar concepts, methods and indicators, e.g., through training, provision of technical assistance, and joint implementation of certain poverty monitoring activities.

References

Asra, A., I. P. David and R. A. Virola. (1997). Poverty assessment in the Philippines and Indonesia: A methodological comparison. *Jour. Of Philippine Development*, Vol XXIV, No. 2, Manila.

Bantilan, C. S., J. M Pattugalan and M. de Castro (1992). Adult equivalent income and expenditure distributions: measures of poverty and inequality in the Philippines, 1985 and 1988. Presented at the Consultative Workshop on the Methodologies for an Integrated Analysis of Poverty and Income Distribution and Their Uses for Policy Formulation, 21-24 July 1992, Quezon City, Philippines.

Chambers, R. L. and R. Dunstan .(1986). Estimating distribution functions from survey data. *Biometrika*, **73,** pp.597-604.

David, I. P. (2003). Discussion of L. Naiken's paper, in *Proceedings of International Symposium on Measurement and Assessment of Food Deprivation and Undernutrition*, Rome, 26-28 June 2002, pp. 43-47.

_____. (2004). Some Observations and Suggestions for Improving Agricultural and Rural Statistics in Developing Countries. Keynote paper read at the Third International Conference on Agriculture Statistics, 2-4 November 2004, Cancun, Mexico.

_____ and D. S. Maligalig. (2002). Issues in estimating the poverty line.. *Asia-Pacific Social Science Review*, Vol 3, No. 3, pp. 1-18, Manila.

_____, W. L. Molano, Ma. R. A. Pedro and Z. VJ. Albacea. Estimating Food Poverty and Hunger Prevalence Directly from Food Consumption Data. Paper presented at the UN Statistics Division Regional Workshop on Poverty Statistics, 7-8 October 2004, Manila.

FAO. *The State of Food Insecurity in the World (SOFI)*. Annual Series, Rome.

Foster, J.E., J. Greer and E. Thorbecke. (1984). A class of decomposable poverty measures. *Econometrica*, 56(1), 173-177.

Government of India, Press Information Bureau. (2001). Poverty Statistics for 1999-2000. Press Release, 22 February, 2001, New Delhi.

Kakwani, Nanak (2001). On specifying poverty lines. Presented at the Asian Development Bank Asia and Pacific Forum on Poverty, Manila, 5-9 February 2001.

_____ and Medhi Krongkaew. (1998). Poverty in Thailand: defining, measuring and analyzing. Working paper no. 4, Development Evaluation Division, National Economic and Social Development Board, Bangkok.

Kish, L. (1965). *Survey Sampling.* John Wiley, New York.

Maksum, Choiril. (2004). Official Poverty Measurement in Indonesia. Paper presented at the International Conference on Poverty Statistics, 4-6 October 2004, Mandaluyong City, Philippines.

Ministry of Health – National Institute of Nutrition. (2003). *General Nutritional Survey 2000 Report.* Medical Publishing House,. Hanoi.

Naiken, L. (2003). FAO methodology for estimating the prevalence of undernourishment. In *Proceedings of International Symposium on Measurement and Assessment of Food Deprivation and Undernutrition*, Rome, 26-28 June 2002, pp. 7-42.

National Statistics Bureau, Bhutan (2004). *Poverty Analysis Report Bhutan.* August 2004, Thimphu.

Ravallion, M. (1992). *Poverty Comparisons: A Guide to Concepts and Methods.* Living Standards Measurement Study Working Paper No. 88, World Bank, Washington, D. C.

_____ (1998). *Poverty Line in Theory and Practice.* Living Standards Measurement Study Working Paper No. 133, World Bank, Washington, D.C.

Rio Group. (2003). Report of the Sixth Meeting of the Expert Group on Poverty Statistics. 12-14 November 2003, Rio de Janeiro.

Said, Ali and W. D. Widyanti (2001). The impact of economic crisis on poverty and inequality in Indonesia. Presented at the Philippine Institute of Development Studies – World Bank Institute Workshop on Strengthening Poverty Data Collection and Analysis, 30 April – 3 may 2001, Manila.

Surbakti, S., P. Surbakti, La Ode Syaffudin and W. Imawan. Indonesia: Poverty Data Policy, Management, and Implementation. Presented at the Regional Workshop on Strengthening Poverty Data Collection and Analysis, 30 April – 3 May 2001, Manila.

UNDP. *Human Development Report.* Various issues. New York.

UNSD. (2004). Report of the Regional Workshop on Poverty Statistics in Latin America and the Caribbean. 1-13 May 2004, Rio de Janeiro.

_____ (2004). Report of the Regional Workshop on Poverty Statistics in the Economic Community of Western African States, 26-30 July, Abuja.

_____ (2004). Report of the Regional Workshop on Poverty Statistics in the Asian and Pacific Countries. 7-8 October 2004, Manila.

_____ (2004) Report of the Regional Workshop on Poverty Statistics in Western Asia. 25-28 November 2004, Amman.

Vietnam Development Report 2004. *Poverty.* Joint Donor Report to the Vietnam Consultative Group Meeting, Hanoi, December 2-3, 2003.

Widyaratne, Suranjana .(2004). Official methodology of poverty line and poverty statistics for Sri Lanka. Presented at the International Conference on Official Poverty Statistics, 4-6 October 2004, Mandaluyong City, Philippines.

World Bank. (1998). *Bangladesh*: *From Counting the Poor to Making the Poor Count*. Washington, D. C.

World Bank. *World Development Report.* Various issues. Washington, D. C.

World Health Organization. (1985). *Energy and Protein Requirements*. Report of a Joint FAO/WHO/UNU Ad-hoc Expert Consultation. WHO Technical Report Series, No. 724, Geneva

Yan Fang (2004). Poverty statistics in China. Paper presented at the International Conference on Official Poverty Statistics, 4-6 October 2004, Mandaluyong City, Philippines.