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Reconstructing Poverty Profiles in the Philippines

by

*Arsenio M. Balisacan**

**Professor, School of Economics
University of the Philippines

Abstract

If the main objective of poverty measurement is to inform policy choices for reducing absolute poverty across space and over time, then the current practice to poverty comparison falls short of adequately informing those choices. What is known, based on official poverty data, about spatial poverty profiles, as well as poverty changes in recent years, is not quite robust. This paper suggests an alternative, albeit practical, approach to measuring poverty for spatial/subgroup comparison, as well as for performance monitoring purposes. It employs this approach to construct new poverty profiles based on nationwide household surveys covering the late 1990s. Using panel data constructed from these surveys, the paper also examines the influence of pre-crisis living standards and certain household attributes on the impact of, and household responses, to the Asian economic crisis.

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INTRODUCTION

Efficient targeting of resources to achieve poverty reduction objectives requires information about the poor and their circumstances – who they are, where they live, what social and economic conditions they face, how they respond to programs and projects intended for them, etc. If it is known, for example, that poverty is concentrated in few geographic pockets of a country, it may be possible to reduce the cost of a given poverty reduction by focusing poverty alleviation efforts to these areas. Put differently, if poverty profile is known, it should be possible to exploit this information to maximize the benefits – measured in terms of, say, reduction in national poverty – of poverty budgets through improved design and implementation.

Construction of poverty profile requires not only good data but also analytically sound procedures for measuring poverty. Perhaps the most controversial aspect of poverty measurement is the construction of poverty standard which is used to identify the poor from a given population. Oftentimes, ambiguity in policy objective adds to the confusion in poverty measurement. For example, while absolute poverty reduction is the central thrust of development policy in the Philippines, the official approach to constructing poverty lines for spatial and intertemporal comparison falls short of fully capturing this concern (Balisacan 1999b). Poverty profiles based on these line may thus fail to inform policy and program choices vis-à-vis reduction of absolute poverty. As shown in this paper, poverty profiles are quite sensitive to poverty norms employed in poverty measurement.

A number of previous studies have characterized the profile of poverty in the Philippines (e.g., Intal and Bantilan 1994; Balisacan 1994, 1995, 1999a; Marquez and Virola 1997; Monsod and Monsod 1999; World Bank 1995). However, these studies have either been outdated, thereby failing to capture the impact of structural and policy shifts in the economy, or fallen short of the demand for comprehensive and accurate data necessary to inform policy responses to macroeconomic shocks, particularly the Asian economic crisis.

The Asian economic crisis is largely over, but its full impact on various social and economic groups will likely linger in the years to come. Yet, not much is known about the profile of population groups most adversely hit by the crisis. Even less is known about the conditions making some population groups more vulnerable than others to a shock, as well as the factors shaping their responses to this shock. Indeed, beyond anecdotal evidence and dubious "rapid appraisals," data on differential impact on, and household responses to, the Asian crisis are virtually non-existent.

To be sure, a number of reports describing the causes and impact of the Asian crisis on Philippine households have appeared since the crisis erupted in late 1997 (e.g., Lim 1998; Reyes et al. 1999; World Bank 1999). Discussions in these studies have, however, been limited by the lack (or inadequacy) of nationwide household data that could be used to describe changes in the economic well-being of various household groups: their economic conditions before the crisis, changes in these conditions during

the crisis, and the impact of government policies and programs implemented to address the crisis. Moreover, none of these studies have systematically explored what makes some households more vulnerable than others to macroeconomic shocks, such as the Asian economic crisis.

Our main objective in this paper is to construct new poverty profiles based on recent nationwide household surveys covering the late 1990s. Specifically, we aim to:

- assess the official approach to poverty measurement vis-à-vis consistency with development policy objectives;
- examine how average living standards and absolute poverty in the Philippines have evolved in recent years;
- generate spatial and socioeconomic profiles of poverty which can be used as a partial guide for poverty targeting; and
- examine how initial living standard and socioeconomic characteristics have influenced household responses to the Asian crisis.

In the section that follows, we describe empirical approach and data employed in the paper to measure poverty. We then discuss differences in average living standards, inequality, and absolute poverty across space and socioeconomic groups, especially in the wake of the crisis. We next attempt to examine how certain household characteristics influence the impact of, and household response to, the crisis. Finally, in the last section, we provide conclusions and implications for policy and research.

POVERTY MEASUREMENT

Partly reflecting what we know – wrongly or rightly – about inequality and poverty profiles in the Philippines are long-held measurement practices and data considerations. Some of these practices have neither been well justified nor informed by recent developments in poverty measurement. Yet, these are the profiles that often inform policy discussions, including proposals for engendering "growth with equity," fostering "adjustment with human face," and "empowering the poor." This section briefly discusses some measurement issues – choice of a broad indicator of economic well-being, choice of income scales for inter-household comparison, construction of poverty standards, and procedure for summarizing household information on well-being into a single aggregate measure – that have important implication for inequality and poverty comparisons, as well as for policy design, in the Philippines.[1]

[1] Extensive discussions of the conceptual and measurement issues are available elsewhere (see, in particular, Ravallion 1994, 1996; Deaton 1997; Foster and Sen 1997). For a discussion of these issues in the Philippine context, see Balisacan (1999a).

Choosing a Welfare Indicator

Identification of the poor requires the use of a broad indicator of a household's standard of living. The Philippine Government uses current household income in its poverty assessment. However, as is well known, income may overestimate or underestimate living standards. If a person can borrow or use his savings, his level of living is not constrained by current income. Even in underdeveloped regions, households typically have some capability to buffer their welfare from temporary variations in income, such as by saving money or goods. Moreover, a household that can share in the income of others may have a higher welfare level than its current income would permit.[2]

Using standard arguments in microeconomic theory, it can be claimed that since welfare level is determined by "life-cycle" or "permanent" income, and since current consumption is a good approximation of this income, current consumption can be justified as a better measure of current welfare. This does not, of course, suggest that consumption does not vary over time. It does, and the change over the life cycle is sometimes large. This is especially true among the poor who do not have access to capital markets (or to interhousehold transfers) and whose current consumption is constrained by current instead of life-cycle income. But even in this case, current consumption is as good an approximation of life-cycle income as current income.

An even stronger case for preferring consumption over income as a broad indicator of welfare rests on practicality and data. The difficulty of acquiring accurate information proves to be more severe for income than for consumption (Deaton 1997: 148-9; Ravallion and Chen 1997). For example, one has to undertake multiple household visits or use recall data to obtain reasonably accurate estimate of annual income, given that such estimate is required for a satisfactory measure of individual welfare, whereas one has to rely only on consumption over, say, the previous few weeks to get a satisfactory measure of individual welfare. Moreover, households may understate their incomes to avoid future problems with tax agencies – a quite common practice especially among self-employed professionals (Krugman et al. 1992; Manasan 1988). The difficulty also extends to imputing "incomes" of households which consume part of their production, such as the case for the large majority of the farming population. Owing partly to cost considerations, the survey instrument used by statistical agencies to acquire information on households is often short of details needed to accurately estimate "net income" from own-production activities, especially farming (e.g., lumping in just few questions the respondent's estimate of *total* costs and gross revenues from all entrepreneurial activities). In short, measurement errors could be expected to be greater for income than for consumption.

Thus, from both conceptual and practical grounds, consumption is preferred to income as a broad indicator of a person's living standard. For this reason, this paper employs consumption as the relevant welfare measure.

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[2] Cox and Jimenez (1995) found evidence of substantial interhousehold income transfers – typically from the relatively rich households to poor households – in the Philippines.

Adjusting for Household Size and Composition

The chosen indicator of living standards has to capture differences in household needs, as well as scale economies in household consumption. Households may vary in their "needs" depending on their size or composition. The needs of children, for example, may be less than the needs of adults since children typically have lower nutritional and clothing needs. Scale economies in household consumption, on the other hand, arise from the fact that certain household expenditures are public goods (e.g., housing or electricity), suggesting that, for reaching a given welfare level, per capita cost decreases as household size increases. For a given household size, the extent of scale economies depend on the importance of public goods in total household expenditure.

A common method of handling household heterogeneity is to construct a set of equivalence scales, intended to reflect the extent to which income must increase (decrease) as household size and/or composition changes in order for welfare level to reach that of the reference household. Put differently, the equivalence scale for the *i*-th household is simply the ratio of the *i*-th household income to the income for the reference household, such that welfare level is the same for both households. Suppose the reference household is that of a single-adult household. Then, as in Cutler and Katz (1992), the equivalence scale for the *i*-th household with A number of adults and K number of children can take the form: $N^* = (A+cK)^e$, where N^* is the number of adult equivalents, c is a constant reflecting the resource cost of a child relative to an adult, and e reflects the overall economies of scale in household size.[3]

Several procedures have been suggested in the literature to estimate equivalence scales from household expenditure survey data (see, e.g., Buhmann et al. 1988; Deaton 1997: 241-69). However, there is still no preferred estimation procedure: Any particular procedure involves cardinal assumptions about which there may not be general agreement. Put differently, there exists many different utility functions which may be consistent with the observed data, implying that the estimation of equivalence scales always involves an element of arbitrariness (Pollak and Wales 1979; Lanjouw and Ravallion 1995; Deaton 1997). Thus, for our purposes, we stick to the common practice of adjusting the chosen household welfare indicator only for household size ($c = 1$, $e = 1$), i.e., use per capita expenditure in our welfare comparison.[4] In taking this track, we are also assuming that each individual in a household gets a welfare value equal to the per capita consumption of that household.[5]

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[3] Lanjouw et al (1998) refers to e as *economies of size* and to c as *equivalence scale*. They refer to the two together as *economies of scale*. We stick to convention in referring to the two together as *equivalence scale*. In practice, it is not simple to separate the two concepts from household data.

[4] Kakwani (1986) argues that, for most practical purposes, this is a valid assumption.

[5] For an exploration of the sensitiveness of welfare comparison to alternative specifications of equivalence scales, particularly in reference to inequality comparison in the Philippines, see Balisacan (1999a).

Setting Poverty Lines

When the objective of a poverty measurement is to inform policy choices for reducing *absolute* poverty, an appealing property of a poverty line is that it should not depend on the subgroup to which the person with that standard of living belongs (Ravallion 1994, 1998). Put differently, poverty lines constructed for various subgroups must be fixed in terms of a given living standard. Thus, two persons deemed to have exactly the same standard of living in all relevant aspects but located in different regions would have to be treated as either both poor or both nonpoor. The poverty lines are then said to be consistent; they imply the same command over basic consumption needs.

The Philippine Government's approach (hereafter referred to as *official* approach) to constructing poverty lines starts with the construction of representative food menus for urban and rural areas of each region of the country. The menus, prepared by the Food and Nutrition Research Institute (FNRI), consider local consumption patterns and satisfy a minimum nutritional requirement of 2,000 calories per person per day and 80 to 100 percent of recommended daily allowance for vitamins and minerals. The menus for 1985 were based on FNRI's 1982 Food Consumption Survey, while those for 1988 were on the 1987 Food Consumption Survey. Menus for 1991 and 1994 were the same as those for 1988. Evaluated at local prices, the menus form the *food poverty thresholds*.[6] The Family Income and Expenditures Survey (FIES) is then utilized to determine the average expenditure share of households whose incomes fall within a ten percent band around the food threshold. This share is used to divide the food threshold to come up with poverty line (food plus nonfood thresholds).

By construction, the official approach tends to yield poverty lines that are not consistent, that is, the standard of living implied by the poverty lines varies for each of the regions as well as over time. It is well known that as household incomes rise, consumption of cheap sources of calories tends to decline as consumers shift to higher quality and more varied – but not necessarily more nutritious – food sources.[7] The shift is invariably associated with improvement in standard of living. Hence, since the official approach starts with the local consumption pattern in the construction of food threshold for the urban/rural area of each region of the country, estimates of food (as well as nonfood) thresholds tend to be higher for the economically more progressive regions/areas than for the economically backward regions/areas. Moreover, since consumption patterns prevailing in various years inform the construction of food thresholds, estimates of food thresholds also tend to rise with improvement in overall living standards (as what may happen during episodes of economic growth). In short, the food poverty lines employed for the various regions and years are not comparable since they imply different levels of living standards. They cannot be therefore suitable for either national poverty monitoring or assessing comparative performance across regions, provinces, or areas of the country – if the main *policy objective is to reduce absolute poverty*.

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[6] It should be noted that the food menus have not been validated by any of the statistical agencies.

[7] Put differently, the income elasticity of demand for calories is typically much lower than that for food as a group. See, for example, Bouis and Haddad (1992) and Subramanian and Deaton (1996).

For this paper, we have followed an alternative, albeit practical, approach to deriving poverty lines. The approach respects the consistency feature of an absolute poverty line, i.e., it is assumed that the main purpose of poverty comparison is to inform progress in the reduction of absolute poverty. Its implementation requires (i) setting a bundle of food in each province which is the average consumption of a reference group fixed *nationally* in terms of their expenditure, (ii) adjusting this bundle to satisfy the minimum nutritional requirement of 2,000 calories per person per day, (iii) valuing the adjusted bundle at consumer prices prevailing in each province, and (iv) estimating the non-food spending of the reference households in the neighborhood of the point where *total* spending equals the food threshold. The approach does not require that the same bundle of goods be used in each province; rather it requires that the bundle is typical of those within a pre-determined interval of total consumption expenditure nationally. Put differently, the approach fixes the standard of living used for provincial comparison but not the composition of goods used in each province. Differences in composition may arise as a result of spatial differences in relative prices faced by households.[8] Details of the approach and its implementation, as well as poverty line estimates for the country's 78 provinces, are given in Annex A.

At the outset it should be pointed out that the objective of this exercise is not to derive an alternative estimate of the level of national poverty, but rather to come up with a practical approach to constructing poverty lines that can be used for consistently ranking (absolute) poverty status across provinces, regions, or socio-economic groups, as well as for monitoring performance in absolute poverty reduction over the medium term (say, 5-10 years). The underlying assumption of the exercise is that the main objective of development policy is to reduce absolute poverty across space and over time. A poverty indicator and monitoring system must therefore have to be capable of adequately capturing comparative performance in terms of the changes over time, or differences across space, in absolute poverty.

Figure 1 shows our estimates and the official estimates of 1997 poverty lines for the country's 15 regions, including the two autonomous regions of Cordillera (CAR) and Muslim Mindanao (ARMM).[9] The regions are arranged in ascending order of adjusted mean per capita expenditure in 1997, where the adjustment takes into account regional cost-of-living differences. Evident in this figure is the lack of correlation between our estimates (hereafter referred to as "absolute" lines) and the official estimates, as expected. Moreover, the absolute lines do not rise with mean living standard, as also expected. On the other hand, the official lines tend to rise with mean living standard.[10] The elasticity of

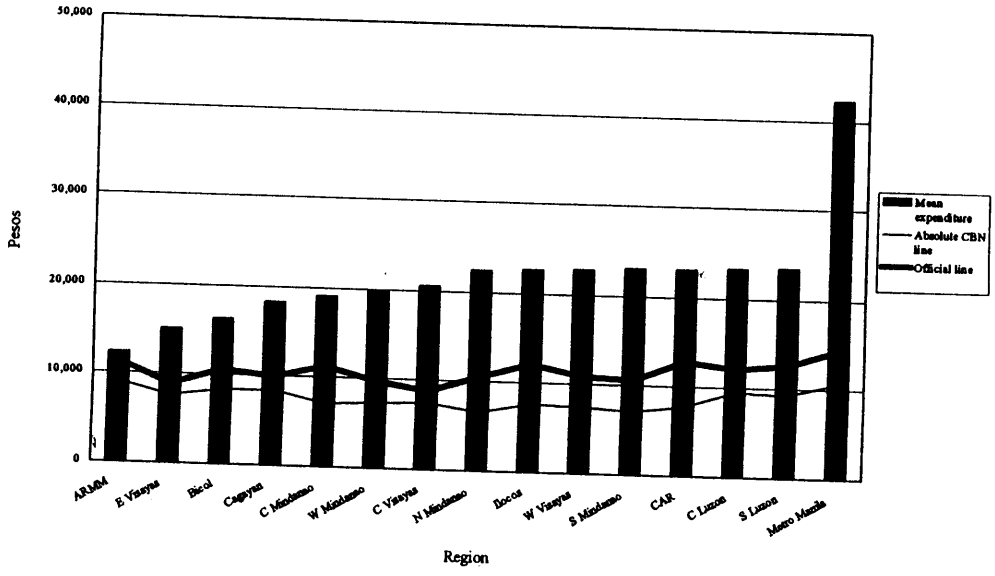
[8] In an earlier work, Balisacan et al. (1998) applied the same procedure, except that they assumed the substitution effect to be zero. The conclusion reached in that work vis-à-vis poverty lines is qualitatively similar to that reached here.

[9] There are no official estimates of provincial poverty lines. For comparison, the regional absolute CBN poverty lines shown in Figure 1 are weighted averages of provincial lines, where the weights are provincial population shares. Provincial poverty lines are given in Annex A.

[10] Regressing the logarithmic values of official lines with the logarithmic values of mean expenditure gives a slope coefficient estimate (i.e., poverty line elasticity) of 0.31, which is significantly different from zero at 2% significance level. Similar regression for the absolute poverty lines gives a coefficient of 0.14, which

official poverty line with respect to mean living standard is 0.31, while that of the absolute line is not significantly different from zero.

Figure 1
Mean Expenditure and Poverty Line



Note: All figures pertain to 1997.
Mean expenditure is average per capita household expenditure adjusted for regional cost-of-living differences.

Aggregating the Information on the Poor

In aggregating the information on the poor into a single measure of poverty, a common procedure is to simply count the proportionate number of the population deemed poor. The resulting head-count index, conventionally interpreted as a measure of the "incidence" of poverty, is what appears in official reports on poverty in the Philippines, as well as in most international poverty comparisons. This measure, however, is silent about the depth and severity of poverty. We report, as the need arises, two other statistical measures to capture these aspects of poverty. The poverty-gap index, defined by the mean distance below the poverty line as a proportion of that line (where the nonpoor are counted as having zero poverty gap), gives a measure of the "depth" of poverty, while the distribution-sensitive measure, defined as the mean of the squared proportionate poverty gaps, reflects the "severity" of poverty. The latter index pertains to the familiar Foster-Greer-Thorbecke (FGT) measure incorporating a society's "moderate" aversion to poverty (Foster et al. 1984: see Annex A). From hereon, we refer to the head-count index,

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is not significantly different from zero. Using real GDP per capita as an instrument for regional mean living standard, the elasticity is 0.16 (significant at 2%) for the official-line regression and not significantly-different-from-zero for the absolute-line regression.

Box A FGT Class of Poverty Measures

Applied to the FIES data, the Foster-Greer-Thorbecke class of additively decomposable poverty measures, P_α, is defined by

$$P_\alpha = \frac{1}{n}\sum_{i \in q} n_i \left(\frac{z - y_i}{z}\right)^\alpha$$

where z is the per capita poverty line, y_i is the per capita expenditure of the ith household, n_i is household size, q is the subset of the population with $y \leq z$, n is total population, and α is a non-negative parameter denoting the society's aversion to poverty. The larger α is, the greater is the emphasis given to the poorest households.

The familiar head-count index, the poverty-gap index and the distribution-sensitive measure are members of the P_α class of poverty measures. The head-count index is obtained when α=0; the poverty gap index is obtained when α=1; the distribution-sensitive index is obtained when α=2.

While there have been other poverty indices suggested in the literature, the above measures have been the more commonly used owing to their appealing properties.

poverty-gap, and the distribution-sensitive FGT measure as incidence, depth, and severity measures, respectively.

HOUSEHOLD DATA

The main data sets for this study are the two most recent nationwide household surveys: the *1997 Family Income and Expenditures Survey* (FIES) and the *1998 Annual Poverty Indicator Survey* (APIS), both of which were conducted by the National Statistics Office. The FIES is the main survey data employed in the generation of poverty and income distribution statistics on the Philippines. Conducted every three years, the 1997 survey covers a sample of 39,520 households and uses urban and rural areas of each province as principal domains. The survey captures a wide range of implicit expenditures, such as use value of durable goods (including owner-occupied dwelling units), consumption of home-produced goods and services, and gifts and assistance or relief in goods and services received by the household from various sources. This makes these data valid for economic welfare comparisons among provinces, between urban and rural areas, and among socioeconomic groups.

The APIS, on the other hand, covers variables other than incomes and expenditures, thereby providing more comprehensive indicators of poverty status than income- or expenditure-based poverty indicators that could be generated from FIES. It contains information about the demographic and economic characteristics of individual household members, as well as items related to health, education, family planning, and family access to housing, water and sanitation, and credit. The APIS also includes two

questions pertaining to the Asian economic crisis. The first question inquires whether or not the household was affected by price increases, loss of jobs, reduced wages and the El Nino. The second question inquires about the response of households and pertains only to those households affected by the crisis.

Intended to be run every year beginning in 1998, the survey does not, however, provide consumption and expenditure data as detailed and robust as the FIES. This even more so for household expenditures, in which the expenditure items in the survey instrument were reduced to just two pages (27 expenditure lines), compared to over 20 pages (over 400 expenditure lines) in the FIES. Moreover, the APIS reference periods were for the second and third quarters of the year, while those of the FIES were for the first and second semesters. Since there is significant seasonality of economic activities across geographic areas, especially in agriculture and agriculture-dependent economic activities, comparability of even the income data from the two surveys is a major problem. Thus the two surveys could not be used for welfare comparison between 1997 and 1998. This is indeed unfortunate considering that the APIS is intended partly to inform changes in poverty for the intervening years when there are no FIES data.

The 1998 APIS covered 38,710 sample households; the sample households came from the same sampling frame as that of the FIES. Both surveys (1997 FIES and 1998 APIS) have a sample overlap of about 58 percent, i.e., over one half of the sample households interviewed for both surveys can be formed into panel or longitudinal data. We exploit this feature of the two data sets to inform the influence of certain household characteristics (socioeconomic and initial income conditions prevailing in 1997, the year immediately preceding the onset of the Asian economic flu in the Philippines) on the relative welfare impact of, and household responses to, the crisis.

POVERTY PROFILE

To be effective, anti-poverty programs need to be informed by sound understanding of the nature (who the poor are, where they live, what economic activities they are involved in, etc.) and causes (why they are poor, how public policies can influence their welfare, etc.) of poverty. This section employs the measurement approach discussed above to update what is known about the poverty profile in the Philippines. It is beyond the scope of this paper to also explain the causes of poverty.[11]

Poverty in 1994 and 1997

Table 1 shows estimates of the three dimensions of poverty – incidence, depth, and severity – for 1994 and 1997. Estimates based on the official poverty lines are also

[11] See Balisacan and Fujisaki (1999) for a recent examination of various themes on the nature and causes of poverty and inequality in the Philippines. See also World Bank (1995, 1998).

shown for comparison.[12] Note, however, that the interest here is not on the absolute magnitude of poverty for any particular year, but the *change* in poverty depicted by each of the two approaches in measuring poverty. Recall that the approach adopted in this paper, hereafter referred to as absolute cost-of-basic-needs (CBN) approach, differs from the official one in three respects: (i) it makes use of current consumption expenditure rather than current income as broad indicator of household/individual welfare; (ii) it imposes consistency in the construction of absolute poverty lines; and (iii) it does not depend on a food consumption survey -- for food menu construction -- independent of the household expenditure survey used for identifying household welfare levels.

Both sets of estimates show a reduction in national poverty during 1994-1997, regardless of the particular aspect of poverty depicted. However, the percentage-point reduction portrayed by the absolute CBN estimates is higher than the that by the official estimates. The incidence index, for example, falls by about six percentage points for the CBN estimates compared with about three percentage points for the official estimates. This conclusion holds true for the other two poverty measures. Thus, the overall reduction in absolute poverty during the growth period of 1994-97 is much higher than that reflected in official estimates. This reduction – approximately two percentage-points per year – is quite impressive since real per capita household expenditure grew by only percent a year during this period. This suggests that, *contrary to common claims in policy discussions (presumably aided by officially available poverty statistics), income growth in recent years was a pro-poor growth.*[13]

The contrast in the conclusion drawn from the poverty profile of urban and rural areas is also apparent in Table 2. Official incidence estimates suggest that rural poverty hardly changed between 1994 and 1997, while the absolute CBN estimates suggest that it did – and substantially, from 45 percent to 37 percent. The two other poverty measures suggest the same conclusion. On the other hand, in the case of urban areas, the percentage-point reduction in poverty shown by the two estimates is quite similar.

[12] The official lines applied for 1997 are, in real terms, the same lines applied for 1994. In this paper, what are referred to as "official estimates" pertain not to officially published estimates but to our own estimates using official methodology, i.e., using official lines as poverty norm and per capita household income as welfare indicator. All poverty estimates reported in this paper pertain to total population.

[13] The same conclusion was arrived at by an earlier paper (Balisacan 1998) in which the poverty lines were also fixed in real terms but the "food menu" was invariant to geographic area.

Table 1
National Poverty Estimates, 1994 and 1997

	1994			1997			Population Share (1997)	Contribution to Total Poverty*		
	Incidence	Depth	Severity	Incidence	Depth	Severity		Incidence	Depth	Severity
National							100.0			
Absolute CBN lines	32.1	8.7	3.4	25.0	6.4	2.3		100.0	100.0	100.0
Official lines	40.6	13.5	6.1	37.4	12.5	5.6		100.0	100.0	100.0
Urban							47.5			
Absolute CBN lines	18.6	4.4	1.5	11.9	2.6	0.9		22.6	19.5	17.6
Official lines	28.0	8.8	3.9	21.9	6.4	2.7		27.8	24.4	22.5
Rural							52.5			
Absolute CBN lines	45.4	13.0	5.2	36.9	9.8	3.6		77.4	80.5	82.4
Official lines	53.1	18.2	8.3	51.4	18.0	8.3		72.2	75.6	77.5

*Based on 1997 data.
Source: Author's estimates based on the *Family Income and Expenditures Survey, 1994 and 1997.*

In any case, rural poverty accounts for a significant proportion – about three fourths – of national poverty. Thus, *poverty in the Philippines is still a largely rural phenomenon despite rapid urbanization in recent years*. This is apparent for poverty measurement approaches that respect the consistency feature of a poverty norm (i.e., that two individuals with the same standard of living are treated the same way regardless of their geographic location), such as the one suggested in this paper,

Regional and provincial profiles

The official approach to poverty measurement also provides a remarkably different picture of the regional poverty profile from that given by the absolute CBN approach. As shown in Table 2, only in 2 of the 15 regions are the ranks identical for both absolute CBN and official estimates. In some cases, the two approaches provide substantially different poverty ranks. For example, if the regions are arranged in ascending order of poverty incidence, official estimates would show that Central Visayas is the 5th least poor region, but the CBN estimates would indicate that this region is the 5th poorest in the country. On the other hand, official estimates show that CAR is ranked 11th (i.e., one of the 5 poorest regions), but the CBN estimates indicate that the region is just a step away from being one of the 5 least poor regions. On the whole, the rank correlation between the absolute CBN estimates and official estimates is 0.69 for the incidence index and 0.54 for the depth index.

Table 2
Regional Profile, 1997

Region	Incidence			Depth		
	Absolute CBN	Official	Reranking*	Absolute CBN	Official	Reranking*
Metro Manila	3.5	8.7	0	0.6	1.7	0
Ilocos	20.8	44.3	2	4.0	15.0	3
Cagayan	30.1	37.9	-5	7.5	10.8	-4
Central Luzon	13.2	19.4	0	2.5	4.8	0
Southern Luzon	19.6	30.2	0	4.5	9.2	-2
Bicol	45.6	57.8	1	12.6	20.4	0
Western Visayas	21.8	47.8	4	4.7	16.1	3
Central Visayas	35.2	39.1	-6	10.3	13.2	-7
Eastern Visayas	50.6	45.4	-5	16.0	15.8	-5
Western Mindanao	35.2	48.7	-4	8.2	16.6	-3
Northern Mindanao	29.9	54.7	4	7.6	20.8	5
Southern Mindanao	27.8	44.6	0	7.1	16.0	1
Central Mindanao	33.1	55.9	3	9.2	22.5	4
CAR	22.1	49.7	5	4.4	19.1	7
ARMM	50.5	63.1	1	15.1	19.6	-2

*Official rank less absolute CBN rank, where rank is from 1(least poor region) to 15 (poorest region).

Ranking inconsistency also hounds the provincial profile. This is seen in Table 3 which lists the 10 poorest and the 10 richest provinces based on incidence estimates. Only 4 of the 10 poorest provinces based on absolute CBN estimates appear in the list of 10 poorest provinces based on official estimates. The match is significantly better for the other end of the poverty spectrum, i.e., top 10 provinces with lowest poverty incidence. Here, only 3 of the 10 provinces characterized as least poor based on official estimates do not come from the list based on CBN estimates.

Table 3
Provinces with highest and lowest poverty incidence

Absolute CBN	Rank	Official Line	Rank in CBN
A. 10 provinces with highest incidence (ascending order)			
Sorsogon	69	Mt. Province	42
Tawi-Tawi	70	North Cotabato	63
N. Samar	71	Lanao del Sur	61
W. Samar	72	E. Samar	77 *
Biliran	73	Agusan del Sur	54
Siquijor	74	Ifugao	41
Romblon	75	Abra	25
Masbate	76	Sulu	78 *
E. Samar	77	Masbate	76 *
Sulu	78	Romblon	75 *
B. 10 provinces with lowest incidence (ascending order)			
Metro Manila	1	Metro Manila	1 *
Pampanga	2	Cavite	6 *
Bataan	3	Batanes	24
Laguna	4	Rizal	9 *
Ilocos Norte	5	Bulacan	7 *
Cavite	6	Pampanga	2 *
Bulacan	7	Bataan	3 *
Nueva Viscaya	8	Laguna	4 *
Rizal	9	Batangas	15
Ilocos Sur	10	Zambales	11

*Also included in the 10-province CBN list.
Source: Author's estimates based on the *1997 Family Income and Expenditures Survey.*

The above estimates thus show that what is known about the spatial profile of poverty is not quite robust. Put differently, *given that the policy objective is reduction of absolute poverty, the practice of using official estimates of regional poverty to inform policy decisions vis-à-vis geographic allocation of public investments stands on a shaky ground.*

Table 4 shows the complete list of 78 provinces with corresponding poverty incidence estimates based on the absolute CBN approach. The table also gives estimates

of average living standards, defined simply as mean per capita household expenditure adjusted for provincial cost-of-living differences. It is clear that there is a substantial interprovincial variation in poverty incidence and living standards, even within a region. To what extent this variation is correlated with provincial living standards? Figure 2 shows that this correlation is quite high: Provinces with high average living standards have relatively low poverty incidence. Note, however, the substantial variation around the "average" line, suggesting the importance of factors other than average living standards in poverty reduction. Largely similar picture emerges for the other two poverty measures (not shown).

Sectoral Profile

Households whose heads derive their main source of incomes from agriculture represent about 40 percent of the total population (Table 5). But this group accounts almost two-thirds of the country's total number of the poor, simply because poverty incidence is much higher in agriculture than in any other sector of the economy. Agriculture's contribution to total poverty is even higher – about three-fourths – when it is taken into account that the severity of poverty is higher in agriculture than in most sectors of the economy. Only mining comes close to agriculture with respect to poverty severity, but this sector accounts for only a small fraction of the total population.

Note that agriculture's contribution to total poverty almost parallels that for the rural sector as a whole (see Table 1). This is not surprising: In rural areas, the agricultural population accounts for 63 percent of the total population. Also, a large proportion (15 percent) of agriculture-dependent households are located in urban areas. In the Philippines, the classification of a geographic area as either "urban" or "rural" has to do more with population density than with economic structure and income normally associated with urban development in more advanced countries (Balisacan 1994b).

The above observation suggests that *poverty in the country remains not only a rural phenomenon but also largely agriculture-driven.* It is thus apparent that any serious effort aimed at addressing the poverty problem in the Philippines must grapple with the fundamental causes of underdevelopment in agriculture and rural areas.

Table 4
Provincial Living Standard and Poverty, 1997

Province	Average living standard* (Pesos, 1997)	Poverty	
		Incidence	Depth
Metro Manila	42,367	3.5	0.6
1 Ilocos			
Ilocos Norte	27,514	8.3	1.2
Ilocos Sur	24,526	13.3	2.0
La Union	21,858	22.6	5.8
Pangasinan	21,291	25.2	4.7
2 Cagayan			
Batanes	23,189	21.7	3.3
Cagayan	16,276	31.7	6.5
Isabela	17,299	36.1	10.3
Nueva Viscaya	25,414	10.8	2.5
Quirino	22,210	18.5	3.4
3 Central Luzon			
Bataan	30,304	7.0	1.2
Bulacan	23,295	10.1	1.8
Nueva Ecija	16,222	26.7	6.1
Pampanga	24,619	5.8	0.6
Tarlac	23,035	15.4	3.0
Zambales	25,399	13.8	2.5
4 Southern Luzon			
Aurora	20,385	19.2	3.5
Batangas	23,496	17.4	4.2
Cavite	26,043	9.1	1.7
Laguna	28,616	8.2	1.4
Marinduque	18,081	38.2	10.8
Mindoro Occidental	21,356	17.3	3.3
Mindoro Oriental	17,947	32.8	7.7
Palawan	19,789	26.1	5.6
Quezon	21,065	30.3	7.4
Rizal	26,209	12.3	2.2
Romblon	13,301	61.5	17.5
5 Bicol			
Albay	16,880	49.8	13.8
Camarines Norte	18,212	39.5	9.7
Camarines Sur	17,646	35.1	8.5
Catanduanes	19,070	29.6	6.7
Masbate	12,601	64.9	20.6
Sorsogon	14,384	50.3	14.6
6 Western Visayas			
Aklan	20,684	32.8	7.0
Antique	23,206	23.5	5.0
Capiz	22,723	26.0	4.7
Guimaras	19,002	17.5	3.7
Iloilo	22,749	21.7	4.8
Negros Occidental	22,271	18.8	4.2

Table 4 (continued)

	Average living Standard*	Poverty	
		Incidence	Depth
7 Central Visayas			
Bohol	16,784	43.0	11.9
Cebu	20,317	31.8	9.8
Negros Orient.	21,510	35.1	9.3
Siquijor	14,368	57.5	18.1
8 Eastern Visayas			
Biliran	13,345	57.0	15.4
Eastern Samar	11,931	70.9	25.1
Leyte	16,700	41.9	13.2
Northern Samar	14,048	55.0	19.5
Southern Leyte	15,083	45.9	12.2
Western Samar	14,407	55.5	15.6
9 Western Mindanao			
Basilan	15,714	30.2	5.9
Zamboanga del Norte	18,408	44.2	12.0
Zamboanga del Sur	19,871	31.9	6.9
10 Northern Mindanao			
Bukidnon	22,876	23.1	4.9
Camiguin	17,650	33.6	9.1
Misamis Occidental	18,582	37.1	10.9
Misamis Oriental	29,367	22.9	5.8
11 Southern Mindanao			
Davao del Norte	19,978	26.2	6.4
Davao del Sur	26,013	21.6	4.6
Davao Oriental	16,738	40.2	12.4
Sarangani	16,223	25.4	6.9
South Cotobato	20,520	28.9	7.9
12 Central Mindanao			
Lanao del Norte	22,346	32.9	9.4
North Cotobato	17,130	42.7	13.4
Sultan Kudarat	19,302	21.6	3.2
14 CAR			
Abra	23,465	22.0	4.7
Apayao	19,781	19.7	4.7
Benguet	23,808	19.7	4.6
Ifugao	20,470	31.3	4.4
Kalinga	24,066	16.3	2.2
Mt. Province	17,935	31.4	5.9
15 ARMM			
Lanao del Sur	12,520	40.8	10.4
Maguindanao	17,043	24.0	4.0
Sulu	7,755	87.5	33.1
Tawi-Tawi	13,121	52.1	13.4
16 CARAGA			
Agusan del Norte	20,070	32.3	9.2
Agusan del Sur	19,567	36.3	8.8
Surigao del Norte	16,065	43.0	10.8
Surigao del Sur	19,176	36.4	10.0

*Mean per capita household expenditure adjusted for provincial cost-of-living differences (see Annex A).

Note: Cities are incorporated in provinces in which they are located.

Source: Author's estimates.

Figure 2
Mean Living Standard vs.Poverty Incidence

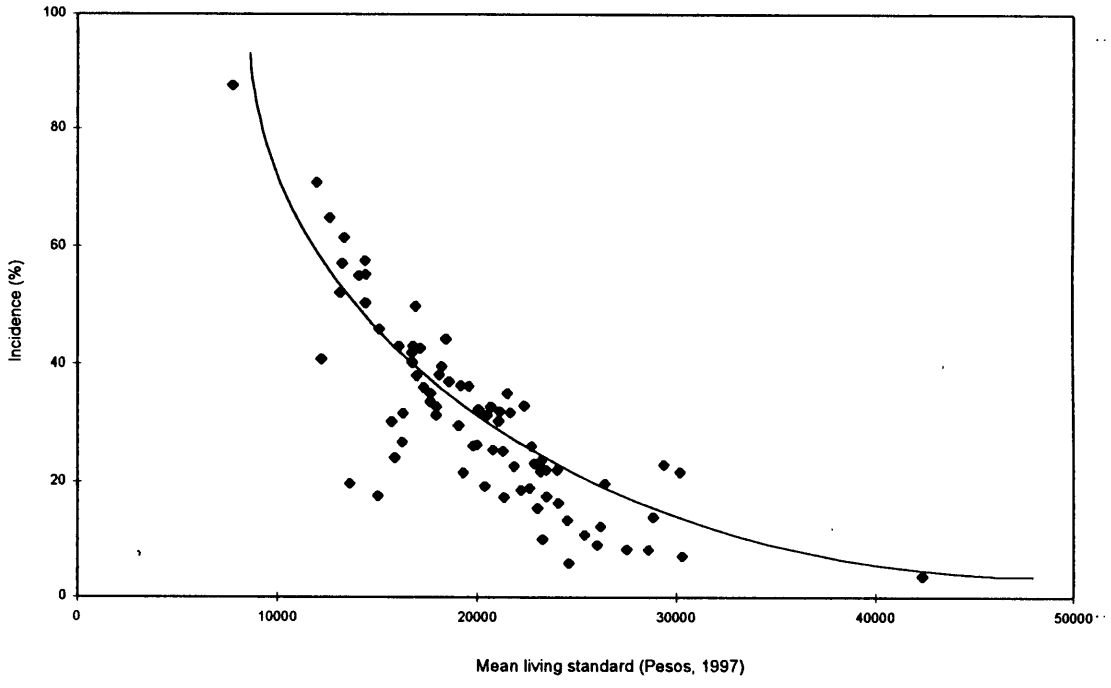

Table 5
Poverty by Sector of Employment, 1997

Employment sector of HH head	Population share*	Poverty			Contribution to total poverty*		
		Incidence	Depth	Severity	Incidence	Depth	Severity
Agriculture	40.1	42.3	11.5	4.3	67.8	71.9	74.5
Mining	0.6	30.0	10.0	4.5	0.7	0.9	1.1
Manufacturing	7.0	13.5	2.7	0.9	3.8	2.9	2.6
Utility	0.7	9.5	2.4	0.9	0.3	0.3	0.3
Construction	7.7	23.1	5.0	1.6	7.1	6.1	5.4
Trade	8.8	13.5	2.9	0.9	4.7	4.0	3.5
Transport	8.0	13.7	2.8	0.9	4.4	3.5	3.2
Finance	1.9	3.0	0.5	0.1	0.2	0.1	0.1
Services	12.5	9.9	2.2	0.7	4.9	4.4	4.0

*Figures do not add up to 100 owing to the exclusion of households whose heads were unemployed (representing 12.7% of total households).
Source: Author's estimates.

Poverty by Household Characteristics

Other poverty correlates relating to household characteristics are given in Table 6. On average, poverty is higher for male-headed households than for female-headed households, irrespective of poverty measure and age of the household head. The former account for over 90 percent of total poverty. This result, while not new (see, e.g., Balisacan 1994 and Marquez and Virola 1997), contradicts the widely held view that female-headed households are poorer than male-headed ones.

Most poor households have married heads; they account for about 90 percent of total poverty. While the poverty of households headed by widows (or widowers) is equally high, these households account for only about eight percent of total poverty.

Poverty is positively correlated with household size. It is highest among households with seven or more members. Families with five or more members account for over three-fourths of total poverty. Their poverty appears to have little to do with extended family system. Single families are, on average, poorer than extended families; the former account for about 80 percent of total poverty.

The educational attainment of household head is negatively correlated with poverty status, as expected. The poorest households are those whose heads did not receive any formal schooling, although these contribute less than 10 percent of national poverty. It is the households whose heads had no more than elementary education that contribute the bulk – about 80 percent – of total poverty.

Relative Importance of Spatial, Sectoral, and Household Characteristics

The above description of poverty profiles provides a snapshot of poverty correlates. The analysis, however, falls short of providing an indication of the *relative importance* of various socioeconomic and geographic factors in explaining the variation in household living standards. In this section, we use a parametric procedure to systematically explore the contributions of each of these factors to the observed variation in living standards. Specifically, we estimate a simple regression model in which the dependent variable is (the natural logarithm of) cost-of-living-adjusted per capita household expenditure. For our purposes, we have randomly selected a sub-sample representing one-fourth of the sample size for the 1997 FIES. To eliminate household outliers that may unduly influence the estimated parameters of the regression model, we have eliminated observations belonging to one percent of each tail of the sub-sample distribution, leaving us with a final sub-sample of 9,374 households. The estimated parameters, together with the shares accounted for by the household and spatial characteristics in the total variance explained by the regression model, are summarized in the second and third columns of Table 7.

Table 6
Poverty Profile and Household Characteristics

	Population share	Poverty			Contribution to total poverty		
		Incidence	Depth	Severity	Incidence	Depth	Severity
National	100.0	25.0	6.4	2.3	100.0	100.0	100.0
Sex and age group							
Male	87.8	26.4	6.7	2.4	92.4	92.5	92.7
Below 20	0.0	17.5	5.8	2.5	0.0	0.0	0.0
Between 20 to 30	6.8	27.0	6.3	2.1	7.3	6.7	6.2
Between 30 and 40	24.7	32.4	8.8	3.3	31.9	33.8	35.3
Between 40 and 50	26.5	28.8	7.4	2.7	30.4	30.9	30.9
Between 50 and 60	18.2	20.1	4.9	1.8	14.6	14.1	13.8
Greater than 60	11.6	17.5	3.8	1.3	8.1	7.0	6.3
Female	12.2	17.0	3.8	1.3	7.6	7.5	7.3
Below 20	0.0	9.6	2.8	0.8	0.0	0.0	0.0
Between 20 to 30	0.5	9.7	1.8	0.6	0.2	0.1	0.1
Between 30 and 40	1.9	15.7	4.6	1.8	1.2	1.4	1.4
Between 40 and 50	2.6	16.4	4.6	1.7	1.7	1.9	1.9
Between 50 and 60	3.2	15.8	3.6	1.2	2.0	1.8	1.7
Greater than 60	3.9	15.6	3.7	1.3	2.4	2.3	2.1
Marital status							
Single	2.0	9.6	2.2	0.8	0.8	0.7	0.7
Married	86.7	26.1	6.7	2.4	90.3	90.6	91.0
Widowed	10.1	20.4	5.1	1.8	8.2	8.0	7.7
Divorced/Separated	1.1	14.6	3.8	1.3	0.6	0.7	0.6
Unknown	0.1	27.3	5.5	1.9	0.1	0.0	0.0
Educational attainment							
No education	3.8	46.2	13.8	5.5	7.0	8.1	9.0
Elem. undergraduate	22.8	41.6	11.4	4.4	37.8	40.8	42.9
Elementary graduate	24.5	31.4	7.8	2.8	30.8	29.9	29.2
HS undergraduate	11.5	24.4	5.7	1.9	11.2	10.3	9.5
High school graduate	18.6	13.5	2.9	0.9	10.0	8.5	7.5
College undergraduate	10.5	6.3	1.2	0.3	2.6	1.9	1.5
Degree holder	8.2	1.7	0.3	0.1	0.6	0.4	0.3
Not reported	0.2	3.1	0.0	0.0	0.0	0.0	0.0
Family size							
1-2	10.4	8.5	1.8	.6	3.5	2.8	2.5
3-4	32.4	15.8	3.3	1.0	20.4	16.9	14.4
5-6	32.2	28.0	6.9	2.4	36.0	35.0	34.0
7-8	16.9	39.4	11.4	4.5	26.6	30.0	32.7
9 & above	8.2	41.3	11.8	4.6	13.6	15.2	16.5
Type of household							
Single family	73.2	27.7	7.2	2.6	80.9	82.2	82.8
Extended family	26.4	18.0	4.3	1.5	18.9	17.6	16.9
With unrelated members	0.4	7.1	2.6	1.2	0.1	0.2	0.2

Source: Author's estimates based on the *1997 Family Income and Expenditures Survey.*

Table 7
Relative contribution of spatial and household characteristics to variance of living standards

Variable	1997 FIES		1998 APIS	
	Regression coefficient	Contribution to variance explained	Regression coefficient	Contribution to variance explained
Constant	9.652		8.691	
Household head		*55.4*		*62.2*
AGE	0.006	2.9	0.010	4.2
AGESQ	0.000 *	0.5	0.000 *	-0.9
MALE	-0.048	0.9	-0.120	2.4
MARRIED	-0.072	-1.1	-0.030 *	0.4
ELEM	0.129	-3.9	0.150	-4.2
HIGHSCH	0.415	14.0	0.464	13.1
COLLEGE	0.964	39.8	1.077	47.2
Economic sector		*18.9*		*18.0*
AGRI	-0.229	15.4	-0.204	12.1
MINING	-0.067 *	0.0	0.089 *	0.0
MANUF	-0.007 *	0.0	0.040 *	0.2
EGW	0.284	0.6	0.359	0.5
CONST	-0.199	1.2	-0.198	1.4
TRADE	0.034 *	0.4	0.075	0.7
TRANSP	-0.044	-0.1	-0.009 *	0.0
FINANCE	0.107	0.6	0.225	1.3
SERVICES	0.035 *	0.9	0.068	1.7
Location		*25.7*		*19.6*
URBAN	0.170	10.4	0.175	9.6
REG1	-0.142	-0.5	-0.153	-0.1
REG2	-0.189	0.3	-0.080	0.1
REG3	-0.197	-0.7	-0.254	-0.3
REG4	-0.173	-1.3	-0.106	-0.9
REG5	-0.445	3.3	-0.319	1.5
REG6	-0.125	-0.4	-0.149	0.0
REG7	-0.322	1.1	-0.319	1.3
REG8	-0.498	4.8	-0.375	2.5
REG9	-0.226	0.5	-0.232	0.7
REG10	-0.283	0.5	-0.291	0.7
REG11	-0.167	0.0	-0.192	0.2
REG12	-0.343	1.2	-0.123	-0.1
CAR	-0.152	-0.2	-0.016 *	0.0
ARMM	-0.480	5.8	-0.374	3.5
CARAGA	-0.308	0.8	-0.300	1.0
Sample size	9,374		9,524	
R squared	0.408		0.367	
Adj. R squared	0.406		0.364	

Note: Dependent variable is natural logarithm of (cost-of-living-adjusted) per capita household expenditure. See Annex A for indices of provincial cost-of-living differences and Annex Table 4 for definition of variables.
*Coefficient not significantly different from zero at 5% level of significance.

Strictly speaking, one can only interpret the estimates in Table 7 as explaining the variation in household welfare conditional on past decisions concerning employment and human capital development. They do not explain the process by which households have chosen employment or have accumulated human capital. To the extent that selectivity in employment and human asset accumulation takes place, the benefit to a typical household of finding employment or owning a certain asset could be overstated. Despite this limitation, these estimates can reasonably be taken as providing the order of magnitude of the importance of employment and human capital in explaining differences in household welfare.

In general, the regression results shown in Table 7 confirm the observations made above concerning spatial and household correlates of poverty. The household head's educational attainment and experience (proxied by the household head's age) positively influence household welfare. Households headed by males have lower welfare levels than those headed by females, holding other factors constant. Together, household characteristics, most especially educational attainment, explain over one half of the variance explained by the model.

Location characteristics account for another one-fourth of variance explained by the model. Households located in urban areas tend to have higher welfare levels than those in rural areas. Households in regions other than Metro Manila have lower welfare levels than those in the capital region, all else remaining the same.

Sector of employment contributes about one-fifth of the variance in living standards explained by the model. Employment in agriculture is negatively associated with household welfare. This factor in fact contributes the bulk – over 80 percent – of the variance explained by the employment variables.

As noted earlier, the household expenditure data in the 1998 APIS are not directly comparable with those in the 1997 FIES owing to differences in reference periods and survey details. However, the APIS consumption data may still be useful for a parametric investigation of the *relative* importance of certain location and household characteristics in explaining the variation in household welfare. The last two columns of Table 7 summarize the results of such investigation. The procedure followed in generating the data used is the same as that for the FIES regression, i.e., a sub-sample of one-fourth of the total sample size is chosen, and outliers representing one percent of each tail of the sub-sample distribution are dropped. The final sub-sample consists of 9,524 households. In doing the regression, it is assumed that the measurement errors in the dependent variable – per capita household expenditure adjusted for provincial cost-of-living differences – are not systematically related with any of the explanatory variables.

The regression results for the APIS data set are broadly similar to those for the FIES. Characteristics pertaining to household heads account for 62 percent of the total variance explained by the regression model. Location characteristics contribute another 20 percent. As in the FIES regression, educational attainment is the single most important

explanatory variable, contributing over one half of the variance explained by the regression model.

POVERTY PROFILE IN THE WAKE OF THE ASIAN ECONOMIC CRISIS: NATIONWIDE PANEL DATA

The 1998 APIS includes two questions pertaining to the crisis. The first question inquires whether or not the household was affected by price increases, loss of jobs, reduced wages and the El Nino phenomenon. The second question inquires about the response of households and pertains only to those households affected by the crisis. Responses to the two questions could yield useful information on the differential welfare impact of, and household responses, to the crisis. Is there a systematic link between a household response to a macroeconomic shock and certain socioeconomic characteristics, including initial household living-standard?

In addressing this issue, we exploit the panel feature of the 1997 FIES and the 1998 APIS. As noted in Section 2 above, both surveys have a sample overlap of about 58 percent, i.e., over one half of the sample households interviewed for both surveys can be formed into panel or longitudinal data.[14] In Tables 7 and 8, households responding to the APIS crisis questions are linked with their relative position in the expenditure distribution prior to the crisis (i.e., using the panel portion of the 1997 FIES).

The number of households affected by price increases and the El Nino phenomenon seems to vary with the relative location of households in the expenditure distribution. There were more households coming from poorer households who were affected by price increases. Loss of jobs within the country, as well as reduction in wages, seems to have affected more of the middle deciles, while loss of jobs overseas affected more of the upper expenditure deciles.

Most households responded to the crisis by changing their eating patterns. However, the proportion decreases as one considers households from the upper expenditure deciles. Increasing work hours also seems to be a major response, especially for households in the lower deciles. A disturbing trend is the greater proportion of households coming from the poorest decile who took their children out of school.

The proportion of households who received assistance from relatives and friends was more than the proportion who received assistance from the government. Interestingly, for private income transfers, responses across expenditure deciles exhibit little variation, suggesting that recipients of such transfers do not have to be the poorest groups in society.

The above results suggest a possible link between a household's pre-crisis living standards and its response to a macroeconomic shock. More generally, one could ask: Is

[14] The construction of the panel data has benefited from an earlier paper (Balisacan and Edillon 1999) which examines unemployment spells during a macroeconomic shock.

there a systematic link between the household's socioeconomic characteristics, including pre-crisis living standards, and its response to an economic shock? Put differently, what household attributes and economic conditions make some households more vulnerable than others to economic shocks?

In formally examining this issue, we employ a Probit regression technique to the panel data, regressing the qualitative responses to the crisis-related APIS questions with household attributes, including location and living-standard variables, observed in the 1997 FIES. The regression results are summarized in Table 10.

The probability of households changing their eating patterns, taking children out of school, migrating to other places, and increasing working hours is inversely related with pre-crisis living standard. It thus appears that a macroeconomic shock, such as the Asian crisis, tends to systematically hit hardest the poorest groups in society. On the other hand, the probability of receiving assistance/relief from the public sector, as well as other households, is higher for the poor than for the non-poor. It is, of course, possible, that the total amount of income transfers received by the poor is lower than that received by the non-poor. Unfortunately, the data do not contain information on the type and amount of income transfer received from either the public or the private sector.

As shown earlier, some households, especially the poor ones, have responded to the crisis by taking their children out of school. The probability that this occurs is higher if the household depends for incomes primarily from construction or mining, all else remaining constant. Interestingly, this probability is lower if a household is located outside of Metro Manila, as demonstrated by the negative and significant coefficients of virtually all the region dummy variables.

A household in agriculture or mining has higher probability of receiving assistance from government than that from manufacturing (the control variable). But compared to a household located in Metro Manila, an average household located in any other region (with the exception of some Mindanao regions) has a low probability of receiving government assistance during a crisis. If the spouse of the household head is employed, the probability that the household head receives government assistance is higher. It is possible that the spouse's employment enhances information acquisition vis-à-vis government assistance programs.

Table 8
Impact of Economic Crisis and El Niño

Per Capita Expenditure Decile (1997 FIES)	Percent of Households Affected by				
	Price increases	Loss of domestic job	Loss of overseas job	Reduced earnings	El Nino
1 (Poorest)	93.5	17.0	3.8	15.4	78.6
2	91.5	16.6	3.2	13.9	72.7
3	90.9	18.3	2.9	15.5	68.3
4	91.7	18.5	4.1	17.1	64.5
5	90.0	21.5	4.5	17.1	61.7
6	90.2	20.5	3.8	16.8	55.0
7	89.7	20.7	4.7	17.1	51.4
8	89.6	19.4	4.8	15.2	45.2
9	88.3	18.3	5.1	14.2	43.5
10 (Richest)	84.7	14.7	4.8	11.2	37.8
Overall	90.0	18.5	4.2	15.3	57.9

Source: Panel data (23, 150 households) constructed from the *1997 Family Income and Expenditure Survey* and the *1998 Annual Poverty Indicator Survey.*

Table 9
Household Responses to Crisis

Income Decile (1997 FIES)	Total HHs Responding	Percent of HH Responding to Crisis by					
		Changing eating pattern	Taking children out of school	Migrating to city or other countries	Receiving assistance from other households	Receiving assistance from government	Increasing working hours
1	2,256	56.7	12.4	7.8	16.5	10.7	37.5
2	2,223	52.3	9.3	5.4	17.1	8.8	36.8
3	2,211	50.7	7.3	5.4	16.3	8.4	33.6
4	2,206	51.0	8.7	5.2	17.0	6.8	33.1
5	2,180	47.8	7.1	4.5	17.2	5.9	29.4
6	2,155	48.3	5.6	3.8	16.4	5.7	27.0
7	2,138	47.0	5.0	3.7	15.0	4.5	26.1
8	2,125	44.1	3.5	3.4	12.5	2.9	22.3
9	2,097	41.4	3.2	3.1	13.8	3.9	23.1
10	2,011	33.3	1.2	3.5	12.0	2.6	18.2
Total	21,602	47.5	6.4	4.6	15.4	6.1	28.9

Source: Panel data (23, 150 households) constructed from the *1997 Family Income and Expenditures Survey* and the *1998 Annual Poverty Indicator Survey.*

Table 10
Socioeconomic Determinants of Household Responses to Shocks
(Probit Regression Estimates based on Panel Data)

Variable	Changed eating pattern	Taken children out of school	Migrated to another place	Received assistance from other HH	Received assistance from government	Increased working hours
Intercept	1.939 *	0.421	-1.925 *	0.575 *	0.410	0.314
Household attributes						
AGE	0.019 *	0.143 *	0.068 *	-0.001	-0.006	0.008
AGESQ	0.000 *	-0.001 *	-0.001 *	0.000	0.000	0.000 *
HDMALE	0.044	-0.033	-0.348 *	-0.160 *	-0.045	0.208 *
MARRIED	-0.017	0.145	0.208 *	-0.017	0.126	0.073
WIDOW	0.075	0.147	-0.088	-0.028	0.170	0.219 *
SPOUSEWK	0.011	0.078 *	-0.032	-0.044	0.097 *	0.037
DUELEM	0.068	0.018	-0.029	-0.010	0.081	0.115 *
DELEM	-0.044	-0.056	-0.005	-0.039	-0.075	-0.020
DUHS	-0.029	-0.016	-0.002	0.011	-0.052	-0.049
DUCOL	-0.105 *	-0.066	-0.001	-0.004	0.032	-0.047
DCOL	-0.073	-0.136	0.039	-0.054	-0.020	0.041
CHRATIO	0.150 *	-0.466 *	-0.069	-0.049	0.136	0.076
EMPRA	0.018	-0.332 *	-0.084	-0.215 *	0.145	0.126 *
OWNNO	-0.076 *	-0.117 *	-0.009	-0.124 *	-0.014	0.228 *
OWNWT	-0.085	0.084	0.072	-0.059	-0.004	0.233 *
WAGEG	-0.025	-0.012	-0.042	-0.144 *	0.079	-0.030
WAGEP	0.050	-0.040	-0.063	-0.097 *	-0.068	0.089 *
Pre-crisis living standard						
LNPCEX	-0.261 *	-0.520 *	-0.161 *	-0.145 *	-0.220 *	-0.168 *
Economic sector						
AGRI	0.030	0.031	0.039	0.160 *	0.154 *	0.046
CONS	0.047	0.164 *	0.105	0.170 *	0.043	0.059
MINING	0.151	0.337 *	-0.385	-0.379 *	0.530 *	0.080
EGW	0.028	0.065	-0.710 *	-0.283	-0.173	-0.032
TRADE	-0.014	-0.035	-0.100	0.058	-0.104	0.004
TRANS	-0.047	0.043	0.068	0.109 *	0.044	0.147 *
BANK	-0.037	0.012	-0.114	-0.092	-0.120	-0.092
Location						
URBAN	0.084 *	0.044	-0.033	0.080 *	-0.033	-0.034
REG1	-0.378 *	-0.769 *	-0.085	0.041	-0.121	-0.019
REG2	-0.602 *	-0.430 *	0.006	-0.293 *	-0.555 *	0.154 *
REG3	0.123 *	-0.170 *	0.145	0.068	-0.274 *	0.145 *
REG4	0.115 *	-0.208 *	0.045	-0.093 *	-0.191 *	0.141 *
REG5	-0.201 *	-0.289 *	0.361 *	0.081	-0.170 *	0.293 *
REG6	0.004	-0.359 *	0.288 *	0.128 *	-0.210 *	0.162 *
REG7	-0.335 *	-0.484 *	0.298 *	-0.336 *	-0.351 *	-0.189 *
REG8	0.049	-0.428 *	0.407 *	-0.160 *	-0.602 *	0.090
REG9	-0.366 *	-0.444 *	0.333 *	-0.165 *	-0.224 *	0.056
REG10	-0.033	-0.463 *	0.078	-0.285 *	0.068	0.089
REG11	0.183 *	-0.086	0.089	-0.173 *	0.799 *	0.088
REG12	-0.138 *	-0.200 *	0.119	0.110	0.764 *	0.067
CAR	-1.036 *	-0.686 *	-0.411 *	-0.121	-0.370 *	0.252 *
ARMM	-0.301 *	-0.684 *	-0.681 *	-0.349 *	-0.189 *	0.280 *
CARAGA	-0.119 *	-0.295 *	0.625 *	-0.219 *	-0.148	0.130 *
Log Likelihood	-15040.403	-4714.831	-3851.55	-9294.757	-4438.533	-12930.226

*Coefficient significantly different from zero at 5% level of significance.
Note: Dependent variables are crisis responses based on the 1998 APIS, while values of regressors are based on the 1997 FIES.
See Annex Table 4 for variable definitions.

CONCLUDING REMARKS

If the main objective of poverty measurement is to inform policy choices for reducing absolute poverty across space and over time, then the current official practice to poverty comparison falls short of adequately informing those choices. This paper has shown that what is known, based on official poverty data, about spatial poverty profiles (regional, provincial, or rural vs. urban), as well as poverty changes in recent years, is not quite robust. This result is rather disturbing since it is these profiles that often inform policy discussions, including proposals for engendering "growth with equity," fostering "adjustment with human face," and "empowering the poor." The main problem is that the official practice is somewhat inconsistent – in the sense that poverty norms applied for various subgroups/areas are not fixed in terms of a given living standard.

The paper has proposed an alternative, albeit practical, approach to measuring poverty for spatial/subgroup comparison, as well as for performance monitoring in the war against absolute poverty. The approach differs from the official practice in the following respects: (i) it makes use of current consumption expenditure rather than current income as broad indicator of household/individual welfare; (ii) it imposes spatial consistency in the construction of absolute poverty lines; and (iii) it does not depend on a food consumption survey – for the construction of food menus – independent of the household expenditure survey used for identifying household welfare levels. Apart from new poverty profiles, the paper has generated provincial cost-of-living indices that could prove useful for spatial comparison of average living standards.

Salient results from the updated poverty comparison are the following:

- Contrary to common claim in policy discussions (presumably aided by officially available poverty data), income growth between 1994 and 1997 was a pro-poor growth.
- Rural poverty responded strongly to the overall income growth – also contrary to common claim that income growth in rural areas did not benefit the rural poor.
- Poverty in the Philippines is still a largely rural phenomenon despite rapid urbanization in recent years. The rural poor account for about 80 percent of the poor. Other poverty measures tell the same order of magnitude.
- While the poverty status of a province is inversely related with mean living standard, the variation in poverty across provinces, even for those with more or less the same living standards, is quite substantial, suggesting the importance of factors other than mean living standards in poverty reduction.
- Poverty in the country is still largely agriculture-driven. While agriculture-dependent households represent now only 40 percent of total population, the sector accounts for over two-thirds of the poor, simply because poverty incidence (as well as depth and severity) is higher in agriculture than in any other sector of the economy.

- Household welfare varies systematically with certain demographics, including the household head's educational attainment and experience, sex, civil status, and economic sector of employment, at least in the short term. But the educational attainment of the household head is the single most important contributor to the observed variation in household welfare.

How did living standards and poverty evolve in the wake of the Asian economic crisis? There were household income and expenditure surveys covering the period (i.e., 1997 FIES and 1998 APIS), but, as explained above, neither the income nor the expenditure data in these surveys are comparable. Fortunately, the two surveys have a substantial sample overlap, i.e., households interviewed for both surveys can be formed into panel or longitudinal data. This paper has exploited this feature of the two data sets to inform the influence of pre-crisis living standards and certain household characteristics on the impact of, and household responses to, the crisis, as subjectively reported by survey respondents (in the 1998 APIS).

One key finding is that households reporting to have experienced the adverse effects of the crisis (increased prices, reduced earnings), as well as the El Niño phenomenon (at least for some regions), have come disproportionately from the poorer households. Loss of domestic jobs has affected more of the middle deciles of the expenditure distribution, while loss of overseas jobs has affected more of the upper expenditure deciles.

Households have responded differently to the crisis and the El Niño phenomenon, depending on their household attributes, most importantly pre-crisis living standards, and location. The probability of households changing their eating patterns, taking children out of school, migrating to other places, and increasing working hours is inversely related with pre-crisis living standard. It thus appears that a macroeconomic shock, such as the Asian crisis, tends to systematically hit hardest the poorest groups in society. On the other hand, the probability of receiving assistance/relief from the public sector, as well as other households, is higher for the poor than for the non-poor. It is, of course, possible, that the total amount of income transfers received by the poor is lower than that received by the non-poor. Unfortunately, the data do not contain information on the type and amount of income transfer received from either the public or the private sector.

For a public policy aimed at providing safety nets to the poorest groups during a macroeconomic crisis to succeed, it must be informed by a clear understanding of the sources of household vulnerability to shocks, the channels through which a crisis affects the economic well-being of various population groups, and their responses to the shock. The above results contribute to building that information, although they need to be verified and further examined for robustness.

An additional note on the government's poverty monitoring and indicator system is in order. At present, the system falls short of enabling decision-makers to assess program performance as well as sharpen the focus of efforts toward the attainment of poverty alleviation objective. As discussed above, the official approach to poverty

measurement cannot be suitable for either national poverty monitoring or assessing comparative performance across regions, provinces, or areas of the country, even more so if the policy objective is to reduce absolute poverty. The approach proposed in this paper is a modest step to improve the system.

Annex A

Construction of Poverty Lines and Cost-of-Living Indices for Spatial Comparison of Absolute Poverty

This Annex outlines a simple, nonparametric approach to constructing poverty lines. The approach respects the principle of consistency for spatial comparison of *absolute* poverty, i.e., poverty lines constructed for various areas or population subgroups are fixed in terms of a given living standard. The intent is not to derive an alternative estimate of the level of national poverty, but rather to come up with a practical approach to constructing poverty lines that can be used for consistently ranking poverty status across provinces, regions, or socio-economic groups, as well as for monitoring performance in absolute poverty reduction over the medium term (say, 5-10 years). The underlying assumption is that the main objective of poverty measurement is to inform policy choices for reducing absolute poverty across space and over time.[15]

The approach involves (i) setting a bundle of food in each province which is the average consumption of a reference group fixed *nationally* in terms of their expenditure, (ii) adjusting this bundle to satisfy the minimum nutritional requirement of 2,000 calories per person per day, (iii) valuing the adjusted bundle at consumer prices prevailing in each province, and (iv) estimating the non-food spending of the reference households in the neighborhood of the point where *total* spending equals the food threshold. The approach does not require that the same bundle of goods be used in each province; rather it requires that the bundle is typical of those within a pre-determined interval of total consumption expenditure nationally. Put differently, the approach fixes the standard of living used for provincial comparison but not the composition of goods used in each province. Differences in composition may arise as a result of spatial differences in relative prices faced by households.

Food Thresholds

As in the official approach, the estimation of poverty lines proposed in this study starts with specification of food bundle for each province which would generate the nutritional norm for good health.[16] The differences in food bundle reflect substitution effects arising from differences in relative prices, not differences in real incomes.[17] The bundle for each province is set as the average consumption of a reference group fixed

[15] The approach closely resembles that suggested by Ravallion (1984, Annex 1; 1998).
[16] See Section 2 of the Main Report for a discussion of the official approach.
[17] This implies that the food bundles all lie on the same indifference curve. If one knows the demand model, one can easily set the bundle for each price regime (representing a province, say). However, in practice, the demand model is not always known. The approach employed here does not require knowledge of such model.

nationally in terms of their expenditure (adjusted for family size). In this study, the reference group pertains to the bottom 30 percent of the population fixed nationally; the average consumption bundle is obtained for that reference group in each province. Each bundle is then transformed into calories and adjusted to satisfy the food energy requirement of 2,000 calories per person per day.

The main source of data for fixing the reference group is the *1997 Family Income and Expenditure Survey* (FIES) of the National Statistics Office (NSO). This survey captures a wide range of market-purchased and implicit expenditures such as use value of durable goods (including owner-occupied dwelling units), consumption of home-produced goods and services, gifts and assistance or relief goods and services received by the household from various sources. The urban and rural areas of each province were the principal domains for the survey. This makes these data valid even for welfare comparisons among provinces, between urban and rural areas, and among socioeconomic groups.

The FIES data file does not, however, contain information on either average unit values or quantities of goods consumed by the household, which are required to transform the food bundle into calories. In this annex, average provincial prices of commonly purchased commodities, together with calorie conversion ratios obtained from the Food and Nutrition Research Institute (FNRI), were used to "recover" the calorie content of the bundle. The price data, covering 73 provinces and 11 main cities (including Metro Manila), were obtained from the Prices Division of NSO.[18]

However, not all food items in the FIES have corresponding price data. Also, for some provinces, the price information on some commodities is missing or appears to have been erroneously recorded. In the first case, these items were dropped in the bundle. In the second case, the prices of those commodities were imputed from the average prices of nearby provinces, i.e., provincial price arbitrage was assumed to hold. After these adjustments, the matched data still have 54 food items. For the reference group, these items account for an average of about 93 percent of the total food expenditures.

To calculate the food expenditures for each province that will just yield the calorie requirement, the cost of the bundle with price information is multiplied by the ratio of the recommended to the computed calories. This assumes that the average cost per calorie of the items without price information is equal to that of the matched items. Furthermore, it is supposed that, within the relevant income range, the composition of the food basket (in terms of expenditure shares) is fixed. The resulting provincial food thresholds are shown in column 1 of Annex Table 1.

[18] These are the same prices used in the computation of the current CPI series.

Nonfood Component

The official approach to estimating the nonfood component of the poverty line utilizes the consumption patterns of households within the ten percentile of the food threshold in the income distribution. The average food share for these households is derived and used to divide the food threshold to arrive at the poverty line. This procedure carries over the consistency problem inherent in the estimation of the food threshold. Since the food thresholds reflect the consumption patterns (and hence overall living standards) prevailing in each region, as well as in rural/urban areas within each region, the average food share is expected to be lower in progressive areas or regions of the country than in backward areas or regions. It is well known that food share correlates well, albeit not perfectly, with standard of living. That is, for two households with different food shares, the one with the higher food share tends to have lower standard of living, regardless of their demographic differences (Deaton and Muellbauer, 1980). Thus, by construction, the nonfood component of the poverty lines in economically progressive regions also implies higher level of living standard than that for the economically backward regions. is not at all apparent that the nonfood component so derived relates sensibly to the notion of "basic non-food needs."

Admittedly, it is unlikely that there exists a procedure to setting the non-food component of the poverty line that does not invite disagreement. Indeed, of all the data required in measuring poverty, the setting of the non-food line is probably the most contentious. However, in the present context, the issue is whether the procedure to construct poverty lines used for spatial or subgroup comparison is consistent with the policy objective. The rest of this annex implements a procedure – first proposed by Ravallion (1998) – that respects the demand of consistency for spatial comparison.

The procedure appeals to the notion that "basic needs" come in hierarchy, beginning with survival food needs, basic non-food needs, and then basic food needs for economic and social activity. This assumes that once survival food needs are satisfied, as total income rises, basic non-food needs have to be first satisfied before basic food needs. Furthermore, once survival food and non-food needs are met, both food and non-food become normal goods. Thus, when a person's total income is just enough to reach the food threshold, anything that this person spends on non-food items can be considered a minimum allowance for "basic non-food needs," since she/he is sacrificing basic food intakes to purchase such non-food items. It follows that adding this minimum allowance to the food threshold is a reasonable procedure to setting the poverty line.

In practice, the consumption pattern of those sample households whose expenditures are at or near the food line is used in order to estimate this minimum allowance. The estimation takes the weighted average of the households whose per capita expenditures fall within a ten percent band around the food line. The weights are selected so as to decline linearly, the farther the per capita expenditure is from the food line. The resulting poverty lines for each province and region of the country are summarized in Annex Table 1.

The above procedure of estimating poverty lines gives what Ravallion (1998) refers to as lower-bound line. One may also set – though not pursued in this paper – an upper bound by also appealing to the same notion of needs hierarchy and noting that the assumptions imply that the poverty line cannot exceed the total spending of those whose actual food spending achieves basic food needs. A person with this level of spending must have reached the normative activity level underlying the food energy requirement (i.e., the food threshold), as well as achieved basic non-food needs considered necessary prerequisite to that activity level in a given society. However, at this level of spending, and since total food spending usually does not rise at the same rate as total spending, it is likely that: (i) spending on food exceeds survival needs, and (ii) the amount spent on non-food goods exceed the amount required to achieve basic non-food needs. For this reason, poverty line generated from the total spending of households whose per capita food expenditure achieves the food threshold is deemed a "high" estimate of the poverty line.

This manner of establishing the poverty line is in essence similar to the official approach, except that the food threshold for each province is set as the average consumption of a reference group fixed *nationally* in terms of their expenditure, not by the FNRI-determined food consumption bundle constructed for each province or region. Note that in the approach suggested here, both the food and non-food components of the poverty line make use of information generated from the same household survey, i.e., FIES. In contrast, in the official approach, the "food menu" is prepared by FNRI using information from its food consumption survey, while the non-food component of the poverty line is generated from the FIES. Consistency is thus not ensured in the official approach.

Real Expenditures and Cost-of-Living Indices

Poverty measurement requires combining poverty lines with information on consumption expenditures. If individual data on money incomes are given, the straightforward way to do this is to simply compare these money incomes with poverty lines constructed for each region, province, or area. Thus, a household located in province j is deemed to be poor if its per capita money income m is less than the poverty line z for province j.

Another way to accomplish the same thing is to deflate each money income m by the "true cost of living index" P, defined for fixed reference prices and reference household characteristics. P is just the ratio of each person's poverty line to the reference poverty line, the latter defining a household with given demographics at a given location and time. The normalized value m/P gives what is often termed "real expenditure" or "real income" (also referred to elsewhere in this Report as "living standard"). Thus, a person is deemed poor if that person's real expenditure is less than the base (reference) poverty line. The cost-of-living indices (with Metro Manila as the base), as well as per capita nominal expenditures and per capita living standard averaged for provinces and regions, are presented in Annex Table 2.

For use in future comparative work on household welfare, Annex Table 3 incorporates price increases over time to the regional cost-of-living indices. This was done by applying the official CPI to the regional cost-of-living index. The resulting indices for 1985-1998 indicate substantial regional variation in any given year, as well as marked regional differences in rates of price increases during the period.

Annex Table 1
Estimates of Food Thresholds and Poverty Lines:
Absolute Cost-of-Basic-Needs Approach
(1997, Pesos per Capita)

Province	Food threshold	Poverty line
Metro Manila	7,669	***10,577***
Ilocos		***7,561***
Ilocos Norte	4,912	7,084
Ilocos Sur	5,829	7,906
La Union	5,702	7,669
Pangasinan	5,645	7,542
Cagayan Valley		***8,318***
Batanes	7,512	10,492
Cagayan	6,573	8,717
Isabela	6,337	8,546
Nueva Viscaya	5,360	7,091
Quirino	4,871	6,649
Central Luzon		***9,442***
Bataan	6,819	9,117
Bulacan	7,204	9,935
Nueva Ecija	7,968	10,805
Pampanga	7,109	9,073
Tarlac	5,950	7,834
Zambales	6,116	7,789
Olongapo City	7,280	10,184
Southern Luzon		***9,239***
Batangas	6,982	9,928
Cavite	7,426	10,510
Laguna	7,057	9,443
Marinduque	6,404	8,544
Mindoro Occidental	5,426	7,020
Mindoro Oriental	5,994	8,123
Palawan	5,516	7,311
Quezon	6,077	8,372
Rizal	7,717	10,804
Romblon	6,155	8,047
Aurora	6,382	8,657
Bicol Region		***8,256***
Albay	6,717	9,043
Camarines Norte	5,422	7,495
Camarines Sur	5,818	7,654
Catanduanes	5,676	7,426
Masbate	6,113	8,117
Sorsogon	7,046	9,274
Western Visayas		***7,403***
Aklan	6,000	7,988
Antique	5,093	6,803
Capiz	5,407	7,350
Iloilo	5,325	7,436

Annex Table 1 (Continued)

Province	Food threshold	Poverty line
Negros Occidental	5,316	7,131
Bacolod City	5,884	7,607
Iloilo City	6,559	9,018
Central Visayas		***7,392***
Bohol	4,921	6,433
Cebu	5,887	7,803
Negros Orient.	4,949	6,158
Siquijor	5,188	6,930
Cebu City	6,711	9,387
Eastern Visayas		***7,570***
Eastern Samar	6,036	8,240
Leyte	5,896	7,746
Northern Samar	4,920	6,584
Western Samar	5,758	7,538
Southern Leyte	5,679	7,595
Western Mindanao		***7,264***
Basilan	6,072	8,558
Zamboanga del Norte	5,138	7,093
Zamboanga del Sur	4,998	6,738
Zamboanga City	5,542	8,061
Central Mindanao		**6,294**
Bukidnon	4,314	5,699
Camiguin	5,358	7,300
Misamis Occidental	4,946	6,593
Misamis Oriental	4,961	6,659
Southern Mindanao		***7,079***
Davao del Norte	4,934	6,605
Davao del Sur	5,065	6,515
Davao Oriental	4,627	6,406
South Cotobato	5,190	7,301
Davao City	5,942	8,002
General Santos City	5,712	7,548
Eastern Mindanao		***7,042***
Lanao del Norte	5,264	6,906
North Cotobato	5,108	7,077
Sultan Kudarat	5,119	7,024
Cotabato City	5,366	6,979
Marawi City	6,374	8,371
CAR		***7,646***
Abra	5,053	6,474
Benguet	6,057	8,708
Ifugao	4,667	6,447
Mt. Province	4,827	6,558
Baguio City	7,680	10,759
ARMM		***8,990***
Lanao del Sur	5,452	7,618
Maguindanao	4,900	6,357

Annex Table 1 (Continued)

Province	Food threshold	Poverty line
Sulu	9,274	12,700
Tawi-Tawi	7,379	10,423
CARAGA		***8,990***
Agusan del Norte	5,304	7,048
Agusan del Sur	4,593	6,077
Surigao del Norte	5,610	7,348
Surigao del Sur	5,154	6,931

Source: Author's estimates.

Annex Table 2
Mean Expenditure, Cost-of-Living Index and Living Standard, by Province
(1997, Pesos per capita)

Province	Average expenditure	Cost-of-Living Index (Metro Manila = 100)	Ave. Living Standard
Metro Manila	42,367	100.0	42,367
Ilocos			
Ilocos Norte	18,435	67.0	27,514
Ilocos Sur	18,321	74.7	24,526
La Union	15,847	72.5	21,858
Pangasinan	15,180	71.3	21,291
Cagayan Valley			
Batanes	23,003	99.2	23,189
Cagayan	13,411	82.4	16,276
Isabela	13,978	80.8	17,299
Nueva Viscaya	17,027	67.0	25,414
Quirino	13,970	62.9	22,210
Central Luzon			
Bataan	26,122	86.2	30,304
Bulacan	21,874	93.9	23,295
Nueva Ecija	16,579	102.2	16,222
Pampanga	21,123	85.8	24,619
Tarlac	17,069	74.1	23,035
Zambales	17,998	73.6	24,454
Olongapo City	25,723	96.3	26,711
Southern Luzon			
Batangas	22,063	93.9	23,496
Cavite	25,887	99.4	26,043
Laguna	25,554	89.3	28,616
Marinduque	14,610	80.8	18,081
Mindoro Occidental	14,180	66.4	21,356
Mindoro Oriental	13,783	76.8	17,947
Palawan	13,674	69.1	19,789
Quezon	16,662	79.1	21,065
Rizal	26,759	102.1	26,209
Romblon	10,122	76.1	13,301
Aurora	16,675	81.8	20,385
Bicol			
Albay	14,432	85.5	16,880
Camarines Norte	12,912	70.9	18,212
Camarines Sur	12,776	72.4	17,646
Catanduanes	13,387	70.2	19,070
Masbate	9,665	76.7	12,601
Sorsogon	12,615	87.7	14,384
Western Visayas			
Aklan	15,616	75.5	20,684
Antique	14,922	64.3	23,206
Capiz	15,793	69.5	22,723

Annex Table 2 (Continued)

Province	Average Expenditure	Cost-of-Living Index (Metro Manila = 100)	Ave. Living Standard
Iloilo	14,554	70.3	20,702
Negros Occidental	13,356	67.4	19,816
Bacolod City	26,353	71.9	36.652
Iloilo City	26,321	85.3	30,857
Central Visayas			
Bohol	10,204	60.8	16,784
Cebu	13,683	73.8	18,540
Negros Oriental	12,519	58.2	21,510
Siquijor	9,411	65.5	14,368
Cebu City	22,606	88.8	25,457
Eastern Visayas			
Eastern Samar	9,294	77.9	11,931
Leyte	12,224	73.2	16,700
Northern Samar	8,752	62.3	14,048
Western Samar	10,117	71.3	14,190
Southern Leyte	10,830	71.8	15,083
Western Mindanao			
Basilan	12,713	80.9	15,714
Zamboanga del Norte	12,351	67.1	18,408
Zamboanga del Sur	12,081	63.7	18,965
Zamboanga City	16,810	76.2	22,060
Northern Mindanao			
Bukidnon	12,330	53.9	22,876
Camiguin	12,178	69.0	17,650
Misamis Occidental	11,576	62.3	18,582
Misamis Oriental	18,501	63.0	29,367
Southern Mindanao			
Davao del Norte	12,467	62.4	19,978
Davao del Sur	11,263	61.6	18,285
Davao Oriental	10,143	60.6	16,738
South Cotobato	12,086	69.0	17,516
Davao City	24,048	75.7	31,767
General Santos City	18,936	71.4	26,521
Central Mindanao			
Lanao del Norte	14,592	65.3	22,346
North Cotobato	11,460	66.9	17,130
Sultan Kudarat	12,817	66.4	19,302
Cotabato City	17,119	66.0	25,938
Marawi City	11,622	79.1	14,692
CAR			
Abra	14,361	61.2	23,465
Benguet	15,979	82.3	19,416
Ifugao	12,487	61.0	20,470
Kalinga Apayao	13,120	58.7	22,351
Mt. Province	11,120	62.0	17,935
Baguio City	32,880	101.7	32,330

Annex Table 2 (Continued)

Province	Average Expenditure	Cost-of-Living Index (Metro Manila = 100)	Ave. Living Standard
ARMM			
Lanao del Sur	8,813	72.0	12,241
Maguindanao	9,421	60.1	15,676
Sulu	9,313	120.1	7,755
Tawi-Tawi	12,924	98.5	13,121
CARAGA			
Agusan del Norte	13,367	66.6	20,070
Agusan del Sur	11,251	57.5	19,567
Surigao del Norte	11,165	69.5	16,065
Surigao del Sur	12,560	65.5	19,176

Source: Author's estimates.

Annex Table 3
Regional Cost-of-Living Indices
(NCR 1997 = 100)

Region	1985 classification of provinces						1997 classification of provinces	
	1985	1988	1991	1994	1997	1998	1997	1998
NCR	29.2	36.5	56.1	76.7	100.0	110.4	100.0	110.4
1 Ilocos	25.8	28.8	43.0	55.2	71.8	78.7	71.5	79.0
2 Cagayan Valley	26.2	28.6	42.5	53.9	71.9	78.6	78.6	85.6
3 Central Luzon	28.8	33.8	50.8	63.4	89.3	97.8	89.3	97.8
4 Southern Luzon	32.9	36.2	55.5	69.0	87.3	95.7	87.3	95.7
5 Bicol	26.5	29.9	46.3	57.8	78.1	85.3	78.1	85.3
6 Western Visayas	23.5	26.4	41.5	51.1	70.0	75.8	70.0	75.8
7 Central Visayas	22.7	25.4	41.7	51.7	69.9	77.1	69.9	77.1
8 Eastern Visayas	24.7	27.3	40.6	51.8	71.6	77.8	71.6	77.8
9 Western Mindanao	28.1	30.8	48.8	60.4	79.5	87.8	68.7	75.2
10 Northern Mindanao	23.5	25.5	37.1	46.8	60.1	65.4	59.5	64.7
11 Southern Mindanao	26.9	29.2	40.3	50.1	66.8	71.7	66.9	71.8
12 Central Mindanao	24.5	27.3	41.7	52.1	66.0	71.3	66.6	71.5
CAR							72.3	78.3
ARMM							85.0	94.2
CARAGA							65.2	71.0

Source: Author's estimates.

Annex Table 4
Variable Definitions

Notation	Variable Description
Household attributes	
AGE	Age of household head
AGESQ	AGE squared
MALE	Dummy, household head is male
MARRIED	Dummy, household head is married
WIDOW	Dummy, household head is widow
SPOUSEWK	Dummy, household head's spouse works
COLLEGE	Dummy, household head is at least a college graduate
HIGHSCH	Dummy, household head is at least high school graduate
ELEM	Dummy, HH is at least elementary graduate
UCOLLEGE	Dummy, HH has attended but not completed college
UHIGHSCH	Dummy, HH has attended but not completed high school
UELEM	Dummy, HH has attended but not completed elementary
OWNNO	Dummy, HH is own account worker with no employees
OWNWT	Dummy, HH is own account worker with employees
WAGEG	Dummy, HH is wage/salary worker in government
WAGEP	Dummy, HH is wage/salary worker in private establishment
DEPCHILD	Ratio of dependent (below 15 years old) to total number of children
EMPLOYR	Ratio of employed to total HH members
Location	
REG1	Ilocos Region dummy
REG2	Cagayan Valley dummy
REG3	Central Luzon dummy
REG4	Southern Tagalog dummy
REG5	Bicol dummy
REG6	Western Visayas dummy
REG7	Central Visayas dummy
REG8	Eastern Visayas dummy
REG9	Western Mindanao dummy
REG10	Northern Mindanao dummy
REG11	Southern Mindanao dummy
REG12	Central Mindanao dummy
ARMM	ARMM dummy
CAR	CAR dummy
CARAGA	CARAGA dummy
URBAN	Dummy, HH lives in an urban area
Economic Sector	
AGRI	Agriculture, Fishery, and Forestry dummy
BANK	Banking and Finance dummy
CONST	Construction dummy
EGW	Electricity, Gas, and Water dummy
MINING	Mining and Quarrying dummy
TRADE	Trade dummy
TRANSP	Transportation and Communication dummy
Pre-crisis living standard	
LNPCEX	Log of cost-of-living-adjusted per capita expenditure, 1997

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