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How we measure poverty underestimates its extent and depth

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The country's official definition of poverty is based on a threshold income that fails to adequately account for nonfood needs and is unrelated to actual behavior and real choices facing households. The resulting underestimation of the extent of poverty and rate of poverty reduction gives a false sense of comfort to policy-makers. Other sources of data particularly those on nutrition, education, and housing corroborate the existing gap between reality and official measures. After a critical look at existing methods, this paper proposes alternative thresholds of absolute poverty, with special attention to housing, that may provide a more accurate picture of the incidence and extent of the remaining poverty in the country.

JEL Codes: I32, I24, R31
Keywords: poverty measurement, poverty threshold, absolute poverty, housing, education, nutrition and malnutrition

1. Introduction

The Philippines has made notably slower progress in alleviating poverty than its fellow ASEAN founding members. Using the country's official poverty line, poverty incidence among families declined from 45.3 percent in 1991 to 33.7 percent in 2000, and from19.7 percent in 2012, to 18.4 percent in 2015. Still, the number of poor families increased from 3.56 million in 1991 to 3.81 million in 2006 and then to 4.2 million 2012, before falling to 3.75 million in 2015. Some 22 million of the population remain poor. Based on the World Bank's poverty line of US$1.25 (in 2005 purchasing power parity, or PPP), the country's poverty rate was 18.9 percent in 2012 even as Malaysia and Thailand had achieved zero poverty by 2010. Indonesia's poverty rate in 2012 was also lower at 16.2 percent. Even Vietnam, a new member of the ASEAN and a newly industrializing economy with a lower per capita income, has a lower poverty incidence of 16.9 percent. Of course,

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Singapore and Brunei overcame their poverty problem years earlier when their economies achieved first-world incomes. Slower and volatile economic growth in the Philippines partly explains its slow progress in eliminating poverty, but initial inequality, high population growth, low agricultural productivity, and weak governance in anti-poverty programs have also hindered the eradication of poverty.

There is persuasive if indirect evidence to show, however, that both the extent and the depth of poverty are worse than suggested by official reports. The ubiquitous presence of slums in public and private properties and along riverbanks and roadsides is a case in point. Old and young scavengers, petty vendors and beggars ply Manila streets including those in tourist areas. In Metro Manila where the reported poverty incidence in 2012 was the lowest nationally at only six percent, more than one-third percent of families lived in slums [Ballesteros 2010: 7, Table 4]. More than 20 percent of children 5-10 years old in the national capital region were underweight, and 18.8 percent of the same age group were stunted [FNRI 2015, Tables 27 and 28]. Nationally, 32 percent of children 0-10 years old in 2013 were underweight and 30 percent stunted [FNRI 2015]. These and other similarly discordant facts suggest that the official poverty rate may seriously underestimate the extent of poverty.

An important part of the disconnect stems from the fact that official poverty rates produced by the Philippine Statistics Authority (PSA) proceed from a food threshold but do not explicitly or adequately account for the cost of non-food basic needs. Instead the current method augments the food threshold by an arbitrary fraction to account for non-food needs. A further aspect of the problem is the likelihood that the poor are being under-sampled. The poorest segment of the population, especially those living in the worst slum shelters, is probably underrepresented in official counts.

In this paper, we propose to adjust the poverty line to one that covers all basic needs by applying alternative measures of absolute poverty suggested in the literature. We suggest directly counting families who live in very poor housing units as poor. Housing quality is an all-embracing indicator of well-being. Living in abject conditions of shelter damages the family's overall well-being, destroys the dignity and self-image of its members, and poses a barrier to rich and secure family relationships, restricting the family's social participation. It causes ill health and obstructs children's education at home and in school. Data on child malnutrition, inequality in access to education, and housing quality provide a jarring but more realistic picture of the extent and depth of poverty in the country.

The paper begins with a brief review of extant methodologies, followed by a discussion of the methodology used by the Philippine Statistics Authority. Sections 4–6 describe in succession the extent of poverty in child nutrition, education, and housing. Specific attention is called to the dire poverty in housing; housing poverty is suggested as an alternative measure of the poverty rate. Section 7 compares poverty rates from the different sources to the alternative rates suggested in the paper. The paper concludes with a strong recommendation for

slum eradication and undertaking a massive social housing program as a major part of the government's anti-poverty program.

2. Methodologies of estimating the poverty rate

A fair amount of subjective judgment, even arbitrariness, is involved in setting a poverty line by which to count the poor, and the methodology for setting it varies across countries and international organizations. Nations set their poverty lines depending on what they consider to be an acceptable standard of living. As might be expected, the standard rises as per capita income rises. To be poor in the United States or in Germany is different from being poor in Bangladesh or in the Philippines. Poor countries tend to set poverty lines that meet mainly basic needs such as food, shelter, clothing, and health care. Rich economies set their poverty lines beyond just meeting basic needs which their population have long met, and instead base these on what they consider an acceptable standard of living for all their people. Ravallion and Lokshin [2009] find that the elasticity of poverty lines with respect to per capita income was more than 0.6.

At least four methodologies for setting poverty lines are in use: the absolute poverty line; the relative poverty line; the subjective poverty line; and the multidimensional poverty line. The absolute poverty methodology, which set the poverty line on the basis of the cost of basic needs, has been used largely by less developed economies. Meanwhile, rich economies, particularly those in Europe, use the relative poverty line, which is simply a fraction of their respective median incomes per capita. The subjective poverty rate is a direct count of people who consider themselves poor. Finally the multidimensional poverty line accounts additionally for particular aspects of well-being (or Sen's notion of "capabilities") such as health and education. The World Bank (WB) has set an international poverty line based on the national poverty lines of poor countries and adjusted it using international purchasing power parity (PPP) to facilitate cross-country comparisons. The WB poverty line was set at $1.25 in PPP of 2005. All these methodologies, each with its own imperfections, are attempts at counting the poor in each economy and worldwide. There is a rich literature, too voluminous to enumerate here, that discusses and reviews each of these methodologies.[1] However, they are all based on a standard of living that a society desires for its people and which is not attained by some. Concern for the poor has inspired studies, with the first traced to Townsend in England in 1909. Charles Dickens likely awakened public consciousness of the dire poverty in England in the early days of the industrial revolution.

The poverty line is typically set in accordance with what a society considers an acceptable standard of living for its people. Poor countries which are as yet

[1] A fairly recent survey by the Expert Group on Poverty Statistics [Rio Group 2008] is useful.

unable to provide all their people with basic needs set their poverty line at an income level that meets basic needs. As a country develops and creates a growing urban sector and larger and richer markets for goods and services, basic needs expand to transport, utilities, health care and education. Tastes shift towards more varied and higher quality goods and services, and the poverty line tends to follow the rising standard of living. Affluent economies on the other hand set their poverty lines based on the majority's standard of living, for they no longer have to contend with dire poverty. The European Union simply sets its poverty lines at half the median per capita income of each member nation. Thus the concept of poverty changes from simply meeting basic needs towards a more egalitarian sense of what is an acceptable standard of living. Less developed economies generally apply the absolute poverty line, since their concern lies with poverty where many of their people are unable to meet basic needs. Various studies show that the absolute poverty line rises as income rises above a certain level of income or expenditure per capita. There is, however, a flat portion of the poverty line-income per capita relations among the poorest economies [Ravallion 2015]. Some countries take a subjective measure by directly asking families or individuals to rate themselves as poor or non-poor. The subjective measure has sometimes been undertaken to supplement an existing measure or to validate its reliability, such as when pressure arose in the United States to review the Orshansky threshold in the 1990s in light of Gallup polls showing that people set a higher poverty line than the official figure [Fisher 1992]. In the Philippines, polling organizations such as Social Weather Stations and Pulse Asia Research regularly conduct surveys to obtain the subjective poverty rate by asking family heads to rate themselves as poor or not poor. Subjective poverty incidence has always substantially exceeded the official rate. In most years, the self-rated poverty rate averaged about 50 percent. In 2015, the subjective rate was still 50 percent, versus 16.5 percent among families in the official statistics.

An absolute poverty line was the official measure adopted in the United States by President Lyndon Johnson in the mid-1960s in his "war against poverty". In 1988, the World Bank (WB) set an international per capita poverty line at $0.85 PPP a day. This figure was the average of the absolute poverty lines of the 15 poorest economies of the world. It has since been adjusted to account for inflation. In 2005, the Bank based its poverty line on 74 cross-country observations of poverty lines and per capita incomes. National poverty lines were converted to international PPP by using the countries' own consumption PPP. A positive relationship was found between poverty lines and per capita income or expenditures for countries with income per capita or expenditures above a certain level. Below that level, poverty lines remained relatively constant at different per capita income/expenditure levels. The World Bank chose the average per capita income or expenditures of these economies to be its poverty line of $1.25 in 2005 PPP. The reason given for the constancy of the poverty lines of the poorest economies is that these possibly indicate the cost of basic needs [Ravallion, Chen,

and Sangraula 2008]. In the *Key Indicators for Asia and the Pacific 2014,* the Asian Development Bank (ADB) applied the World Bank methodology to the Asia Pacific region. It also found a flat portion in the relationship between poverty line and per capita income/expenditure among the poorest economies of the region. Their average per capita income/expenditure was taken to be the region's poverty line, estimated at $1.51 PPP. Ravallion and Lokshin [2006] found the elasticity of poverty line and per capita income to be more than 0.6 while ADB estimated it at 0.33. The elasticities could be used in setting weak relative poverty lines that would adjust to rising standards of living.

The World Bank and the ADB did not discuss the methodology used by the sample economies in deriving their respective national poverty lines. These may be high enough to meet basic needs for some countries, but for others possibly not. The methodology used can differ in how they treat non-food needs. The Philippine methodology is a case in point, where there was no direct accounting for nonfood needs. Reddy, Visaria, and Asali [2008], Klassen [2009, 2014], and Reddy and Pogge [2010] suggest that a standard methodology be adopted and that the poverty line be valued in the local currency. This strategy is argued to provide a more reliable comparison of poverty rates. The poverty line may be adjusted upwards for countries at different income ranges, say, low, lower-middle and upper-middle income economies. It should provide a more reliable comparison of poverty rates. In their study of the "economic lives of the poor" defined by the World Bank's $1.00 PPP threshold in 13 countries, Banerjee and Duflo [2007] find significant variations in how the poor in these countries spend their income and access public services. In all countries covered the poor spent more than 50 percent on food, with those in Mexico spending the least at 50 percent and those in Bihar (India) the most at 80 percent. The majority spent more on alcohol and tobacco than on health. There was wide variation in the poor's access to tap water, latrines, and electricity especially in rural areas. Differences were also evident in enrolment rates at various education levels. Differences in taste, culture, and supply of public services result in different attainment of the defined standard of basic needs. The data raises questions about the reliability of the WB poverty line or of the underlying national poverty lines on which it is based.

The ADB 2014 *Key indicators* shows how the national poverty lines in the region valued at their respective PPPs differ from the WB $1.25 PPP. In the region, the poverty line in own currency and converted to own consumption PPP exceeded the WB $1.25 PPP. The national poverty lines (all in PPP) of 25 economies ranged from $1.24 (Afghanistan) to $5.05 (Armenia). The poverty lines of the Philippines, Thailand, and Indonesia were respectively $1.84, $1.75, and $1.48. The substantial differences between national and WB poverty lines may be explained by the likely variation in methodology used in deriving the national poverty lines. Neither the World Bank nor the ADB however discusses the quality of the national poverty lines they use to derive their respective international poverty lines.

The process of setting the national poverty line in the US provides an example of setting an absolute measure (see Fisher [1992] and Willis [2000]). The US poverty line originated from the work of Mollie Orshansky in the early 1960s, who used various "food plans" from the US department of agriculture[2] to obtain a measure of the cost of a food basket for a family four. She set the share of food at 1/3 of the poverty line and attributed 2/3 to non-food expenditures, based on the average share of non-food consumption to total after-tax expenditure across all families. The poverty line was then made equal to the food poverty line divided by 1/3, or multiplied by 3. The poverty line was also defined for various demographic groupings and for rural and urban settings, although the latter distinction was abandoned in 1985. Despite criticisms, the US government has continued using the Orshansky poverty line in order to have a consistent time series on poverty, adjusting it mostly for inflation. Income tax and various social benefits the poor receive as well as to the rising standard of living have been taken as supplements to rather than replacements of the official measure.

Member-countries of the European Union (EU) set their poverty lines at 40-60 percent of the median per capita income of each country. The formula is of utmost simplicity but also exhibits its weaknesses. Its adoption reflects the EU's main concern for income distribution and not of dire poverty which no longer exists in their societies. Given a constant income distribution, the poverty rate remains the same even when income increases. But if inequality worsens, an increase in national income would increase the poverty rate. Obviously the poverty line increases as per capita or median income increases. The OECD [2014: 56, Table 1.A.1.1] provides a table that shows the wide range of the members' poverty lines and poverty rates.[3] On this basis, the poor in Germany or Sweden will clearly have a much higher standard of living than the poor in Portugal.

Both absolute and the relative poverty lines are expressed in monetary terms. This implicitly assumes that welfare or well-being derives from the goods and services that income can buy and access.[4] Being normative, these poverty lines are ultimately decided by policy.

More recent work on multidimensional poverty and subjective poverty directly addresses the state of wellbeing. The multi-dimensional poverty approach follows Sen's [1985] view that a person's wellbeing is the result of her functionings (what she can be and do). Functionings in turn depend on one's human capabilities and the opportunities that are available in one's environment. Human capabilities

[2] The US department of agriculture was using such food plans to determine food allotments to families in need. From four possible budgets, Orshansky selected the two cheapest, "economy" and "low cost". For details, see Fisher [2000].

[3] See, for example, OECD (2017), Poverty rate (indicator).doi: 10.1787/0fe1315d-en (Accessed on 30 January 2017).

[4] This precludes the situation, for example, where despite an acceptable money income, basic health care may be unavailable owing to the absence of a health facility accessible by normal transport.

include health and cognitive and non-cognitive abilities that have been developed through parental and environmental nurture and formal education. But also important are the opportunities in one's environment that allow a person to exercise her human capabilities. Health and education are the critical and observable human capabilities but non-cognitive abilities such as discipline, honesty, loyalty and social and communication abilities are not easily observed, although there is now recognition of their importance in occupational success. Opportunities in the labor market, access to social services, security and participation in social and political activities determine what one's abilities can appropriate.

The multidimensional measure of poverty (henceforth multidimensional poverty index or MPI) essentially attempts to measure deprivation in capabilities. The measure must contend with identifying the capabilities to measure and setting standards of deprivation by which to count the poor. Alkire and Foster [2011] recently applied the methodology to the US National Health Interview Survey and to the Rand survey of Indonesian living standards. For the US, they took four capabilities: income, health, education and health insurance. These are measured as poverty income, self-assessed fair or poor health, lack of high school education and no health insurance. For Indonesia they took expenditures below R150,000, biomass below 8.5, and education of less than six years. To be noted are the limited count of capabilities included, their cut-off levels, and the weights assigned to each capability. The US MPI of 16 percent based on four capabilities is higher than the official 12 percent. The MPI approach has the advantage of measuring the state of wellbeing of the poor and may draw attention to particular aspects, say education or employment. But much better data would be needed to obtain world figures. The MPI is a valuable supplement to the Human Development Index, which seeks to measure national averages of capabilities.

Alkire and Santos [2010] estimated an MPI for 104 low-income economies using health, education and standard of living wellbeing indicators. Wellbeing in health is measured by child mortality and child nutrition, education by completed primary and children's enrollment rate, and standard of living by access to electricity, clean drinking water, sanitary toilet, cooking fuel, quality of flooring and possession of at least one asset such as TV, telephone, bicycle and motorbike. The listing provides precise information on what wellbeing indicators are being weighted to get the MPI. There is wide variation in the MPI of the 104 countries, ranging from less than five percent in Slovenia to close to 90 percent in Niger. For 13 countries, the MPI was lower than the poverty rate based on the WB $1.25 PPP line. The Philippine MPI of about 15 percent was lower than that under the WB metric, which was about 22 percent. These findings beg for further analysis to explain the variations in MPI and their difference from the money-metric poverty rates. As the authors suggest, the MPI can be decomposed to identify and explain which dimensions have serious poverty rates.

More recently, Balisacan [2015] estimated MPI for the Philippines. His study uses indicators of wellbeing or capability from available sources, namely, the National Demographic and Health Survey, the FIES, and the APIS family income and expenditures surveys. Following Alkire and Santos [2010], three indicators of wellbeing are included: health, education, and standard of living. These indicators are not uniformly measured in the NDHS and the two other surveys. Health for instance is directly indicated as child mortality in the NDHS but indirectly by access to clean water and sanitation. Education, in contrast is uniformly measured in terms of completed primary grades and enrollment of young children. Standard of living is indicated by access to electricity and quality of shelter. Balisacan was interested in tracing the movement of the MPI over time and in relation to economic growth. Using the FIES data, the MPI declined monotonically from 0.267 in 1988 to 0.123 in 2012. The estimated MPIs from all sources are much lower than the official poverty rates. This may be explained by the fact that it is not only family income that determines poverty but also the social services that the government provides. There is much less poverty in education than in health considering how much more public support has gone for public education than for health. Rural electrification was a priority program of the government. In the cross-section study of Alkire and Santos [2010], the Philippines' MPI was much lower than the poverty rate at the WB $1.25 PPP poverty line. The MPI however is sensitive to the dimensions of well-being that are included and to whether the selected dimensions are adequately measured. Electrical connectivity, for example, only partially captures wellbeing in housing.

Finally, poverty has also been measured subjectively by directly asking people about their sense of well-being or satisfaction in life. Questions differ depending on the objective of the survey. In the Philippines, Social Weather Stations and Pulse Asia Research conduct regular surveys on poverty typically based on a small sample of 1,200. The sample size and questions asked limit the variables that can be related to poverty, especially since the survey typically does not capture the respondent actual family income. Rather the survey asks whether the respondent classifies her family as poor or non-poor, and what income is required for the family to consider itself not poor. Elsewhere Kingdom and Knight [2007] undertook an extensive inquiry of the degree of satisfaction among South African families and the various factors, including income, that contribute to it. Five satisfaction-ratings were used: very dissatisfied, dissatisfied, dissatisfied-and-satisfied, satisfied, and very satisfied. Respondents were asked to rate various sources of satisfaction or dissatisfaction which they classify into (a) control variables for demographics; (b) income and assets; (c) basic needs variables such as education, quality of housing and utilities; (d) social functioning variables such as race, urban location, and homeland; and (e) security variables such as being a victim and having debt. The authors find that income and basic needs variables contribute significantly to the degree of satisfaction. The work is a novel

contribution to understanding the sources of wellbeing. The study was based on a special survey with sample of 8,000. The multiplicity and large number of sources of happiness are an econometric challenge. The more regular family income and expenditure surveys may possibly be extended to include subjective questions.

3. Official methodology for estimating the poverty line

The methodology adopted by the PSA for deriving the poverty line. begins with an estimate of the minimum cost of a basket of foods that meets the recommended nutritional requirement for the average-sized family of five. This is the food threshold referred to as the subsistence poverty line (SPL). The SPL is then assumed to comprise 70 percent[5] of the total poverty line, allowing 30 percent for all nonfood needs.

This is a "hybrid" approach in that nonfood needs are not directly enumerated and measured but are inferred from a relationship with food spending. Letting F^0 denote the SPL, the total poverty line is then essentially set as $Y^0 = (1/r)F^0$, where $r = 0.7$ is the assumed ratio of food expenditure to "total basic expenditures", or FE and TBE respectively in PSA's terminology. Equivalently, one may write $Y^0 = F^0(1 + z)$, where $z = (1 - r)/r$, the assumed ratio of nonfood to food expenditures.[6] In the case where $r = 0.7$, one obtains $z = 0.3/0.7 = 0.428$, so that the total threshold is 1.428 times the food threshold. The expression $(1 + z)$ or equivalently $1/r$ is the food multiplier, or "Orshansky multiplier".

The 70-30 split between food and nonfood spending was adopted in 2011, with $r = 0.7$ being obtained as "the average FE/TBE ratio nationally determined from the 2000, 2003, 2006, and 2009 Family Income and Expenditure Survey (FIES)" [Virola 2011]. This departs from an earlier methodology in which r was calculated annually from a reference group of families in the FIES sample with incomes somewhat above and below the food threshold. The recommendation for a non-varying statutory ratio was apparently adopted to permit consistent comparisons across regions and over time, particularly across administrations.

The current approach differs from those suggested in the literature of "hybrid measures" and from the practice in other countries. Ravallion (2015) suggests that if a food threshold is to be used as basis for deriving an absolute poverty line, then the cost of non-food basic needs should be estimated from the latter's share in the income or expenditures of families that do meet the food threshold. Denote the Engel function by $F(Y)$, i.e., total spending on food being a function of total spending, so that $Y = F(Y) + N$, where F is food spending and N is nonfood spending.[7] Assume that $F(Y)$ can be found or estimated in the data set. If F^0 is

[5] More exactly, 0.69825.

[6] In general, given the identity $Y = F + N$, where Y, F, and N refer respectively to total spending, food expenditure, and nonfood expenditure, $Y = F(1 + N/F) = F(1 + (1 - r)/r) = (1/r)F$, where $r = F/Y$.

[7] Engel functions will generally have $F'(Y) > 0$ and $F''(Y) < 0$.

set as the food threshold, Ravallion's suggestion amounts to finding Y^0 by setting $F(Y^0) = F^0$, therefore implicitly obtaining $N^0 = Y^0 - F(Y^0)$. Then $Y^0 = F^0(Y^0) + N^0$ is the total poverty threshold, with $r = F(Y^0)/Y^0 = F^0/Y^0$.

The current official methodology deviates notably from the above by applying a constructed food ratio that is not based on any behavioral Engel function $F(Y)$ found in the data. The food share is instead derived as the (average) ratio of food expenditure to a censored or edited version of total spending, called "total basic expenditures" [8]. The normative character of the concept is evident, among others, in the deletion of spending on household durables, entertainment, alcohol, and tobacco, presumably since such items are a priori incompatible with a preconceived notion of "poverty" or do not count as admissible "merit goods". At any rate, the effect of this recourse is to *raise*[9] the computed r, reduce the Ortshansky multiplier $(1 + z)$ and therefore also reduce the poverty threshold $F^0(1 + z)$.

It bears emphasizing that the food threshold is a standard only of food consumption. A total poverty line should therefore approximate the income at which *both* the food threshold and non-food basic needs are met. The standard for the US set by Orshansky in the early 1960s assumed that for families to be nonpoor, food should pre-empt no more than 1/3 of total expenditure (i.e., $r = 0.33$ so that $Y^0 = (1/0.33)F^0 = 3F^0$), a ratio based then on the consumption pattern of the median U.S. family. This implies that the total poverty threshold was approximately three times the food threshold. In comparison the Philippine poverty line is only 1.43 times the food threshold (i.e., $Y^0 = (1/0.7)F^0 = 1.43F^0$), a multiplier less than half that for the US.

In light of Engel's Law and income differences between the Philippines and the U.S. in the 1960s, it might be argued that using U.S. median behavior is inappropriate. On the other hand, among actual Filipino households, a food-income ratio of 0.7 (i.e., $F(Y)/Y$) is hardly to be found, even in the poorest five percent of the income distribution [Maki and Ohira 2014]. The 2015 FIES[10] records an average food-share among the poorest three deciles of 0.597, a conservative figure, which if applied would imply a total poverty threshold[11] that is 1.675 times the monthly food threshold of P6,329 per family, or about P10,600. This figure is 17 percent higher than the official poverty threshold of P9,064 per month for a family of five[12].

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[8] Total basic expenditures are defined as "the aggregate of expenditures on: food; clothing and footwear; fuel; light and water; housing maintenance and other minor repairs; rental on occupied dwelling units; medical care; education; transportation and communications; non-durable furnishing; household operations and personal care and effects" [PSA 2017].

[9] That is, rather than $r = F/(F + N)$ one has $r' = F/(F + N - n)$, where n represents the amount spent on the censored items.

[10] See Table 5 in https://psa.gov.ph/sites/default/files/attachments/ird/pressrelease/tab4%265.pdf.

[11] That is, $6{,}329 \div 0.597 = 6329 \times 1.675 = 10{,}601$.

[12] See https://psa.gov.ph/sites/default/files/2015_povstat_FINAL.pdf.

The foregoing suffices to demonstrate how stipulating a higher food share (e.g., 0.7 versus 0.6 or 0.518) squeezes the nonfood budget and sets a lower absolute poverty threshold than warranted by real conditions.[13] The underestimation of the country's poverty line and the consequent underestimation of poverty in the country are a result of allotting too small a proportion of poverty line to non-food basic needs.

Past reviews of this methodology have focused mostly on the definition of the food threshold, all with the tendency to reduce its value. The recommendation to use provincial prices instead of regional prices gives a finer costing of the food threshold but also results in lowering the value of the food threshold. In the same direction, a report prepared for the ADB [Pedro et al. 2001] recommended using a food threshold based on the revealed preference of the lowest thirty percent of families in lieu of all families.

A criticism of the shift to a constant food-share is that the relative importance and price of many nonfood needs will likely differ significantly across geographic areas and between urban and rural residences. Transportation, utilities, and rent, for example, may take up a larger share of the budget in cities than in small towns and rural areas. On the other hand, manufactured goods and health care may be cheaper in urban than in rural areas. Nonetheless, the 70-30 ratio is applied uniformly to all locations and to families irrespective of their demographic and other characteristics.[14]

The use of an invariant nonfood share runs counter to the finer disaggregation of the food basket itself. From 1987 to 2002, food thresholds were disaggregated by region. The current method however estimates SPLs or food thresholds at the province level using local prices. The Food and Nutrition Research Institute specifies menus varying across provinces that meet the nutritional requirements for a family of five, depending on customary consumption and food supply. The PSA then costs these menus based on local prices. Table 1 is an example of a daily menu for a region. The daily menu consists of menus for breakfast, lunch, dinner and a snack. The table also gives the equivalent basket of foods in grams per day for the family and for each member. We note first the meager food basket in terms of the total weight of principal foods such as meat and fish and rice; nor is there allowance for wastage or for poor choices. The roughness of using a day's menu to represent and account for a whole year's consumption basket has also been noted [David and Maligalig 2002]

[13] Even the older methodology, which derives the food share r from families with incomes equal to the food threshold F^0, falls short. If one accepts that nonfood spending is nonzero, then setting $Y = F^0$ will imply that actual food spending will be less than the threshold, i.e., $F^0 = Y^0 = F + N$, with $N > 0$, implies $F < F^0$.

[14] Demographic characteristics were an important issue for poverty threshold-setting in the US and in social exclusion considerations i the European Union.

TABLE 1. Daily menu and food basket

Sample menu	Food basket in grams		
		Per family	Per capita
Breakfast	1. Rice	2,442.0	407.0
Dried Fish	2. Bread	108.0	18.0
Boiled rice	3. Pork	108.0	18.0
Coffee with sugar	4. Dried Fish	126.0	21.0
Lunch	5. Noodles	46.2	7.8
Noodle soup	6. Condiments	104.4	17.4
Laing	7. Sugar	37.2	6.2
Boiled rice	8. Fruits	405.0	67.2
Banana	9. Cooking oil/gata	93.0	15.5
Supper			
Pork *sinigang* with *kangkong*, *kamote* tops, or *gabi* leaves	10. *Kangkong/malungay/kamote* tops	120.0	50.0
Boiled rice			
Snack: bread			

Source of basic data: Philippines Statistics Authority's Family Income and Expenditure Survey, 2009

Comparing levels of expenditure in 2009 as between poor families in Metro Manila, the two richest regions of Central Luzon and Calabarzon, and the two poorest regions of Bicol and Eastern Samar (Table 2) it is evident how little the poor actually spend on each basic need, including food. The per capita daily consumption of food of the poorest was only P19.00 in Metro Manila, P20.90 in Central Luzon, P19.60 in Bicol, P18.60 in Eastern Visayas and P19.40 in ARMM. Expenditures on utilities were respectively P3.50, P2.50, P2.30 P1.90 and P1.80.

Also minimal were the expenditures on transportation and education. Expenditures on each need obviously increase with income, but the amounts are still low and do not reach per capita amounts of P50.00 for food and P10.00 for utilities, transportation and education up to the fifth decile.

TABLE 2. Per capita food expenditure and ratio to food threshold, 2009

Decile NCR		Region				
		Central Luzon	Bicol	Eastern Visayas	ARMM	
1st decile	Food expenditure (₱)	6,933	7,618	7,406	6,772	7,085
	Ratio (%)	51.6	59.2	62.7	59.5	60.4
2nd decile	Food expenditure (₱)	9,678	9,497	9,647	9,322	9.052
	Ratio (%)	72.1	73.8	81.7	81.9	77.2
3rd decile	Food expenditure (₱)	10,641	11,262	11,161	10,718	10,565
	Ratio (%)	79.3	87.5	94.5	94.2	90.1
4th decile	Food expenditure (₱)	13,189	12,778	12,894	12,601	12,430
	Ratio (%)	98.2	99.3	109.2	110.7	106
5th decile	Food expenditure (₱)	15,011	14,936	14,540	14,364	13,164
	Ratio (%)	111.8	116	123.1	126.2	112.3

Source of basic data: Philippines Statistics Authority's Family Income and Expenditure Survey, 2009

Aside from the total poverty threshold, the PSA uses the food threshold itself as an independent measure of poverty called the "subsistence poverty rate". Families with incomes equal to or less than the subsistence poverty line (SPL) are considered subsistence-poor. It is of course not true that earning an income equal to SPL will in practice allow a family to be food-subsistent. Obtaining food itself (even if one must beg for it) entails some expense. In urban areas for instance, transportation is essential to reach one's place of work, to attend school, and to avail oneself of services. Cooking fuel and other utilities are also unavoidable expenses. Even the very poorest five percent of the population spend at least 30-35 percent of their income for nonfood purposes (see, e.g., Maki and Ohira [2014]). If income or expenditure Y is allocated between spending on food F and on nonfood categories N, i.e., $Y = F + N$, and one accepts that $N > 0$ always, then attaining a subsistence F^0 requires $Y > F^0$, i.e., a higher income will be needed to spend as much on food as the SPL requires. Conversely, having an income $Y = F^0$ with $N > 0$ implies that food subsistence will not be met.

As Table 2 also shows, the poor, including those who are not "subsistence poor" do not actually meet the food threshold. The poorest 10 percent of families met only 57.6 percent of the food threshold in Metro Manila[15], 59.2 percent in Central Luzon, 62.7 percent in Bicol, 59.5 percent in Eastern Visayas and 60.4 percent in ARMM. It is only from the fourth decile of the income distribution that families are able to reach the food threshold in the same year that the incidence of the "subsistence poor" among families was reported at 7.9 percent. If we follow Ravallion's [2012] suggestion and determine the poverty rate based on the income that meets the food threshold (SPL), that would simply be the income of the fourth decile, which in turn implies that the poverty incidence was closer to forty percent in 2009, or almost double the official rate of 20.5 percent.

4. Food consumption and malnutrition.

The underestimation of poverty in income is reflected in the meagerness of actual expenditures on various basic needs Table 3 provides details by decile for some regions based on data from 2009. Expenditures on each item obviously increase with family income. Families in the first decile spent less than P20 per capita on food, almost half of it on rice; those in the second decile spent about P25, and those in third decile about P30. Based on 2009 food prices, the equivalent per capita consumption in kilos in NCR in the first decile was 106 grams of rice, 13 grams of meat and 20 grams of fish; these totaled about 140 grams or 14 percent of a kilo of principal foods for a day. The consumption volume in grams is much lower than the corresponding recommended weights in the Food and

[15] Metro Manila officially has a virtually zero subsistence poverty rate, yet it still had a significant rate of child malnutrition, e.g., 15.7 percent in 2003.

Nutrition Research Institute menu for subsistence or food threshold. A somewhat unexpected observation is that the poor in NCR actually consumed less food than those in other regions. This is possibly because living in the metropolis requires higher expenditures on rent, utilities and transportation so that families must cut down on their food expenditures to meet these other needs – a further argument against using an invariant food-nonfood ratio across geographic areas. NCR families in the lowest decile consumed even less food than those in poorer regions and their malnutrition rate was 15.7 percent, yet their subsistence poverty rate was officially only 0.5 percent.

TABLE 3. Household daily per capia expenditures

Region	Food Expenditure	Rice Expenditure	Meat, Fish, and Marine Products	Fuel, Light and Water Expenditure	Transport and Comm. Expendtiture	Clothing, Footwear and other wear	Educational Fees Expenditure
First Decile							
NCR	19.0	10.6	4.7	3.5	1.1	0.9	0.3
Central Luzon	20.9	21.6	4.7	2.5	1.1	0.6	0.3
V - Bicol Region	20.3	23.1	3.8	1.9	0.9	0.5	0.4
VIII - Eastern Visayas	18.6	21.5	4.1	1.9	0.8	0.4	0.4
ARMM	19.4	24.3	2.8	1.8	1.2	0.7	0.3
Second Declie							
NCR	23.5	5.3	5.4	4.1	2.1	0.7	0.4
Central Luzon	26.0	8.2	6.1	3.2	2.0	0.9	0.6
V - Bicol Region	26.4	9.3	6.1	2.6	1.4	0.5	0.6
VIII - Eastern Visayas	25.5	10.1	6.5	2.7	1.5	0..8	0.6
ARMM	24.8	9.2	4.6	2.4	2.0	0.9	0.6
Third Declie							
NCR	29.2	5.7	7.2	5.1	2.5	1.1	0.5
Central Luzon	30.9	8.8	7.8	4.1	2.6	1.1	0.8
V - Bicol Region	30.6	0.8	11.9	3.0	2.2	1.0	0.9
VIII - Eastern Visayas	29.4	11.3	7.6	3.2	2.0	0.9	1.1
ARMM	28.9	9.0	6.0	2.8	2.8	1.1	1.0
Fourth Declie							
NCR	36.1	6.3	9.0	6.2	3.5	1.4	0.6
Central Luzon	35.0	9.0	9.4	5.1	3.7	1.3	0.9
V - Bicol Region	35.3	9.5	8.6	4.0	2.7	1.3	1.6
VIII - Eastern Visayas	34.5	11.8	9.2	4.2	2.7	1.2	1.4
ARMM	34.0	10.2	7.4	3.8	3.6	1.1	1.1
Fifth Declie							
NCR	41.1	6.7	10.1	6.8	4.7	1.5	1.0
Central Luzon	40.9	9.1	11.1	6.2	4.7	1.5	1.0
V - Bicol Region	39.8	10.7	10.0	4.8	3.9	1.5	17
VIII - Eastern Visayas	39.4	11.8	12.3	5.0	3.8	1.4	1.9
ARMM	36.1	9.8	7.8	4.1	4.2	1.6	1.7

TABLE 3. continued

Region	Food Expenditure	Rice Expenditure	Meat, Fish, and Marine Products	Fuel, Light and Water Expenditure	Transport and Comm. Expendtiture	Clothing, Footwear and other wear	Educational Fees Expenditure
Tenth Declie							
NCR	121.0	10.0	26.9	34.3		9.2	20.0
Central Luzon	96.8	10.9	25.3	24.2		8.8	18.6
V - Bicol Region	98.5	11.4	27.1	21.7		6.6	17.5
VIII - Eastern Visayas	88.2	12.4	26.9	19.5		8.4	14.1
ARMM	89.4	15.1	25.7	18.2		13.1	10.1

Source: PSA's FIES 2009

TABLE 4. Nutrition rate of underweight, underheight and overheight children, 1989-2013

	Underweight				Underheight		Overheight	
Year	0-5 years old	6-10 years old	11-19 years old male	11-19 years old female	0-5 years old	6-10 years old	0-5 years old	6-10 years old
1990	27.4	34.2	-	-	44.7	44.8	1.0	-
1992	26.6	32.5	-	-	40.6	42.8	1.1	-
1993	23.8	30.5	29.2	30.7	38.9	40.2	1.5	-
1996	23.6	28.3	-	-	39.9	39.1	1.6	-
1998	25.5	30.2	33.1	33.1	38.9	40.8	1.4	-
2001	23.0	32.9	-	-	35.9	41.1	2.0	-
2003	20.7	32.1	20.5	10.1	33.9	36.4	2.4	5.8
2005	20.2	30.9	-	-	35.1	34.0	2.5	6.8
2008	20.7	32.4	-	-	32.3	33.9	3.3	6.6
2011	20.2	32.0	-	-	33.6	33.6	4.3	7.5
2013	19.3	29.1	-	-	30.3	29.9	5.0	9.1

Source: Food and Nutritition Research Institute

Anthropometric surveys especially of infants and children undertaken by FNRI show the inadequacy of food intake that has resulted in poor nutritional status of children, as indicated by underweight (UW) and under-height (UH) status. UH or stunting is a cumulative result of past undernutrition. Poor nutritional status has declined for all age groups since 1989-1990 but remains high (Table 4). In the last survey of 2013, close to 20 percent of the youngest group of children were underweight. The stunting (UH) rate tends to be higher than the underweight (UW) rate among children 0-5 years old: 30.3 percent vs. 20 percent. The UW rate of the next age group, 6-10 years old, was higher than for the younger group at 29.1 percent, but stunting remained the same. As children grow, their food requirements rise and if not filled results in stunting. For this reason, stunting is lowest among infants of 0-1 year old, but both UW and UH rates increase

monotonically every year up to year 3 then remain about the same in years 4 and 5 (Table 5). As expected, household income is a factor in UW and UH rates (Table 6). The UW and UH of children aged 0-5 in the lowest quintile were 31.5 percent in urban areas and 29.3 percent in rural areas. UW rates monotonically decrease as family income increases across quintiles in both urban and rural areas. UH rates were higher than the UW rates for each income quintile and monotonically fell as income increased. Stunting reaches a level when the growing period ends so that it tends to be higher than UW among younger ages. Both UW and UH were lower in rural than in urban areas across all income quintiles. It is possible some foods, especially fish, vegetables and fruits, were cheaper in rural than in urban areas, since more perishable goods such as fish entail higher transport and marketing costs. There is small variation in the price of rice and meat across regions. (Livestock is not perishable for it is transported live).

TABLE 5. Nutrition rate through first five years of life

Year	Underweight	Underheight	Wasting
0-5	12.2	13.1	13.4
6-11	15.2	16.2	11.4
1 year	20.1	31.5	10.6
2 years	21.8	35.7	6.4
3 years	22.3	35.4	5.8
4-5 years	21.0	32.7	5.5

Source: Food and Nutritition Research Institute

TABLE 6. Nutrition rate by hosuehold income of children aged 0-10 rural, urban, 2013

Quintile income	Underweight				Underheight			
	Urban		Rural		Urban		Rural	
	0-<5	5-10	0-<5	5-10	0-<5	5-10	0-<5	5-10
1	31.5	40.0	29.3	29.3	43.1	44.2	44.5	48.9
2	22.9	34.7	23.8	33.9	33.9	32.8	37.1	36.3
3	20.4	30.7	17.3	26.0	29.0	27.2	27.9	26.0
4	12.9	19.4	12.7	19.8	20.8	16.6	19.5	17.2
5	8.4	9.7	9.1	11.0	13.1	9.3	14.0	10.0

Source: Food and Nutritition Research Institute

5. Poverty in housing

Compared to deprivation in other basic needs, poverty in housing appears to be most serious but paradoxically neglected. Slums are widespread in Metro Manila and exist even in secondary and smaller cities and towns. Most slums are located in public lands and abandoned private properties that are close to the poor's sources of livelihood such as dumpsites for scavenging and roadsides for itinerant vending. In Metro Manila, slums proliferate along riverbanks, coastal areas, the railroad properties and roadsides and parks, all of public domain. They are also found in high-valued public and private lands that at one time were unutilized or unguarded.

There is no substantial national or local government housing program to eradicate the slums despite a large bureaucracy for housing. The National Housing Authority (NHA) coordinates six agencies including financing arms such as the Home Mortgage and Finance Corporation and the Home Guarantee Corporation. The NHA has assumed modest objectives and targets and allotted very limited budget. Local governments that collect property taxes mostly rely on the national government to address the housing need of their poor constituents.

The United Nations-Habitat [2010] cites five conditions that characterize slum housing: lack of improved water; lack of improved sanitation and toilet facilities; insufficient living area; nondurable housing; and insecure tenure. Statistics on these dimensions of the country's poor housing are provided by the Census of Population and Housing and the Annual Poverty Indicator Surveys (APIS). The Census collects fairly disaggregated data on the distribution of housing units starting with housing units of less than five square meters to those of more than 200 square meters (Table 7). The NSA-APIS provides statistics on families' use of modern utilities such electricity, sanitary water and toilets. We consider poor housing to be those shelters that are 19 sqm. or less. Shanties of makeshift materials built along roads, rivers, dumpsites, and high-value squatter areas are likely to comprise shelters less than 10 sqm. Those with 10-19 square meters are those in small rented rooms with a shared bath, toilet, and kitchen, and makeshift apartments built sideways and upward on existing structures to accommodate new families who need shelter. Shanty apartments can form solid room-blocks of three- or four-storeys. Examples in Metro Manila are those located along major streets of the city such as Quirino, Osmeña, and Araneta Avenues and in the well-known slum areas of Leveriza, Baseco, and Tondo. Quezon City's slum population is even larger than Manila's. Access to community water and electrical systems appears to be minimal or if available are shared by many. Families in all these three types of poor housing are crowded in varying degrees, allowing little or no privacy among the family members and even among the neighbors. While not all slum dwellers will be classified as poor by official definition, their common condition is that their incomes are too low to allow them to pay a higher rent or to obtain a mortgage for a home [Ballesteros 2012].

TABLE 7. Housing units by floor area in square meters, 2010

Area		Total	<5	5-9	10-19	20-29	30-49	50-69	70-89
Philippines	a	19715.7	1225.5	2537.6	3757.9	3376.6	3450.4	2157.7	1075.6
	b	4.7	4.3	4.4	4.6	4.6	4.7	4.7	4.6
	c		6.2	12.9	19.1	17.1	17.5	10.9	5.5
NCR	a	2634.4	157.0	215.5	390.9	482.8	535.5	318.9	1322.0
	b	4.5	4.2	4.2	4.3	4.4	4.6	4.6	4.7
	c		6.0	8.2	14.8	18.7	20.3	12.1	50.2
Central Luzon	a	2196.4	103.2	192.0	322.6	360.7	421.9	302.7	166.5
	b	4.6	4.2	4.3	4.4	.5	4.6	4.7	4.8
	c		4.7	8.9	14.7	16.4	19.2	13.8	7.6
Bicol	a	1102.2	86.1	77.1	235.1	217.1	86.6	90.5	43.6
	b	4.9	4.4	4.6	4.8	5.0	5.8	5.3	8.2
	c		7.8	16.1	21.3	19.7	16.9	8.2	4.0
Eastern Visayas	a	856.7	59.1	131.3	197.7	151.2	129.6	79.4	40.8
	b	4.8	4.4	4.3	4.6	4.6	5.0	5.1	5.3
	c		6.9	15.3	23.1	17.6	15.1	9.3	4.8
ARMM	a	500.2	44.1	73.9	104.3	88.9	61.1	42.3	24.6
	b	6.5	5.9	6.0	6.2	6.4	6.6	6.9	7.3
	c		8.8	14.8	20.9	17.8	12.2	8.5	4.9

Note:
a) Total number in (1000)
b) Number of occupants
c) Percent of total housing units
Source: Philippine Census of Population and Housing, 2010

TABLE 8. Housing units by size (in square meters), 2000-2010

Region	% Total	<5	5-9	10-19	20-29	30-49	50-69	70-89
Philippines	32.4	44.3	7.6	20.8	20.8	39.7	77.9	62.2
NCR	31.6	61.2	9.1	31.4	31.4	43.2	50.4	1112.8
Central Luzon	37.1	42.9	0.4	13.8	13.8	49.3	90.1	74.9
Bicol	24.8	42.3	-19.5	21.0	21.0	26.2	62.8	44.4
Eastern Visayas	21.1	22.3	9.8	18.5	18.5	27.6	67.2	52.2
ARMM	36.6	50.1	23.9	21.9	21.9	18.4	95.8	105.0

Based on the 2010 Census, as many as 7.4 million or 38.2 percent of all families live in what is described as poor housing: 6.2 percent in shelters of less than 5 square meters, 12.9 percent in shelters of 5-9 square meters and 19.1 percent in shelters of 10-19 square meters. (Table 7) In Metro Manila where slums are ubiquitous, 372,500 families or 14.1 percent of families live in shanties of less than 10 square-meter sizes and 390,900 in shanty apartments 10-19 square-meters sizes. These 763,400 shanties comprise the Metro Manila slums. The situation is slightly better in Central Luzon than in Metro Manila, but much worse in the three

poorest regions of Bicol, Eastern Visayas and ARMM. Housing units of less than 19 sqm. comprised 28.3 percent of the total in Central Luzon but 45.2 percent, 45.6 percent and 44.5 percent in the respective poorest regions. Regions outside Metro Manila have a higher proportion of 20-29 sqm. housing, which are small but decent independent houses of *nipa* and other native materials.

The absence of an effective housing program has encouraged the growth of slums and the slum dwelling population throughout the country and especially in Metro Manila (Table 8). From 2000 to 2010, total housing units increased by 32.4 percent nationwide but at varying rates across regions and across sizes. Migration to the more prosperous Metro Manila and Central Luzon has increased their population and housing rates above the national average. The poorer regions of Bicol and Eastern Visayas expectedly showed much lower growth rates, but there is no obvious explanation for the relatively high growth rate in ARMM. Note that the smallest housing of less than 10 sqm. grew faster than the the 10-19 sqm. category. In what might be cause for alarm, Metro Manila shanties of less than 10 sqm. increased by 61.2 percent. Shanty apartment units of 10-19 square meters grew at a lower rate of 9.1 percent. The largest housing units also grew rapidly, while mid-sized housing lagged. Apparently, the metropolis attracted both poor and non-poor migrants from the countryside, with the latter joining already-crowded slums and affluent migrants moving into the booming high-rise condominiums and newly developed villages. The largest houses had the highest growth rate.

As stated earlier, the PSA's Annual Poverty Indicator Survey (APIS) possibly under-samples the slums, for it gives a much smaller proportion of small housing units than the Census. According to APIS, families in the first income decile had housing units of 22.5 square-meters in Metro Manila while the Census shows 38 percent of families occupied housing units of less than 20 square meters. The same under-sampling of slum areas is true for the FIES. Statistical authorities explicitly acknowledge the inadequate coverage of the poor without permanent dwellings and those living in slums and squatter areas owing to "some operational difficulties" and because these entail "considerable monetary and non-monetary cost" [PSA 2007].

TABLE 9. Percenage distribution of families by electricity and source of water used, 2010

Area	Electricity	Own dwelling	Yard and public tap	Others			
				Well	Spring	Rivers/strea/pond/ lake/dam and rain water	Tanker/ truck/ peddler
Philippines	87.4	44.2	12.3	33.2	6.0	1.0	3.3
Lowest 30%	68.7	15.9	17.4	47.6	12.9	2.4	3.9
Highest 70%	95.4	56.3	10.1	27.0	3.0	0.5	3
NCR	99.3	83.9	9.4	2.1	-	-	4.7
Lowest 30%	87.0	50.2	23.8	3.6	-	-	22.4
Highest 70%	99.8	85.2	8.8	2.0	-	-	4
Central Luzon	96.9	50.5	9.2	37.8	1.0	-	1.2
Lowest 30%	90.8	26.3	7.9	59.4	2.5	-	3.2
Highest 70%	98.1	55.3	9.4	33.6	0.8	-	0.8
Bicol	81.2	29.8	16.5	40.1	8.8	1.2	3.6
Lowest 30%	66.6	10.3	19.6	51.0	12.4	2.0	4.6
Highest 70%	92.3	44.5	14.0	32.0	6.1	0.5	2.8
Eastern Visayas	84.4	34.9	25.6	32.7	2.7	-	2.4
Lowest 30%	73.1	20.1	33.1	37.9	4.2	-	3
Highest 70%	93.9	47.4	19.3	28.3	1.6	-	1.9
ARMM	57.7	5..8	7.6	65.2	12.6	5.3	3.6
Lowest 30%	46.9	3.6	9.3	66.3	10.3	6.2	4.4
Highest 70%	73.5	8.9	5.1	63.6	15.9	4.2	2.4

Source: Annual Poverty Indicators Survey 2010

TABLE 10. Families by type of toilet, 2010

Region	Type of toilet			
	Flush toilet owned	Flush toilet shared	Other consist of open pit and pail	No toilet
Philippines	78.1	10.3	7.0	4.6
Lowest 30%	57.8	14.2	16.3	11.6
Highest 70%	86.7	8.6	3.1	1.6
NCR	87.6	11.7	0.4	0.3
Lowest 30%	70.8	21.5	4.5	3.3
Highest 70%	88.2	11.3	0.3	0.2
Central Luzon	87.5	10.2	1.9	0.4
Lowest 30%	70.3	22.8	5.1	1.9
Highest 70%	90.9	7.7	1.2	0.2
Bicol	72.2	8.1	8.1	11.6
Lowest 30%	55.8	10.1	11.8	22.4
Highest 70%	84.7	6.6	5.4	3.5
Eastern Visayas	73.5	10.9	4.1	11.5
Lowest 30%	6.6	14.0	6.2	19.1
Highest 70%	84.3	8.2	23.0	5.2
ARMM	24.6	35.1	35.5	4.8
Lowest 30%	20.0	32.6	40.9	6.6
Highest 70%	31.2	38.9	27.7	2.2

Source: Annual Poverty Indicators Survey 2010

Mindful of the under-sampling of the poor and the underestimation of the extent of housing deprivation, the APIS still permits some analysis of the quality of housing among the poor. First we find that housing size monotonically increases with income in all regions (Tables 9 and 10). Fifty one per cent of families have their own piped community water systems, 67.8 percent have their own toilets, and 89.5 percent have their garbage collected. Over 24 percent of families share their piped water supply and 17.9 percent share their modern toilets. These may be families that rent small single rooms and share utilities with other families. In Metro Manila, about 10 percent of families make do with water from wells, public tap and peddlers. Eight per cent of families use open pit and other unsanitary toilet facilities. About 23 percent of families still use kerosene, charcoal or wood for cooking. The poverty in facilities and utilities used is expected to be correlated to housing size, family income and nature of employment. The poorest 19.1 percent of families who live in less than 10 square meter homes are likely to be deprived of most of these modern amenities.

Poverty in housing is currently a blind spot in the assessment of the poor. First, as already noted, a significant part of the population in slums is not even covered by regular surveys of household incomes. Second, worsening housing deprivation may itself cause a downward bias in the estimation of the poverty threshold. A family living in a shanty or in slum housing will pay minimal or no rent. If an increasing number of households fall under this category (already an observable trend), then the share of rentals in total spending becomes smaller, which in turn causes a downward bias in the total poverty threshold as computed. Perversely therefore increasing deprivation along this dimension could itself cause an easing of officially measured poverty. Such shortcomings of the official poverty measure beyond food expenses explain at least part of the assessment where only one-third of the national slum population (and only 21 percent of that in Metro Manila) is regarded as officially poor [Ballesteros 2010: 8-9].

Yet it remains clear that the adverse effects of housing poverty are pertain not just to the poor's physical welfare but to their individual dignity and their social identity. The degradation is exacerbated by the nature of employment of many slum families who earn a living as scavengers in waste-dumps or as itinerant vendors on public thoroughfares streets where they face the risk of accidents and health hazards. Slum children are vulnerable not only to diseases but also to threats to their moral and physical growth. Lack of a decent home forces them to spend time outdoors, with no physical security against the risk of violence, including sexual violence.

6. Access to education

In contrast to housing, the government has historically given a high priority to education and has allocated a fairly large share of the national budget to its provision. The Constitution provides for equal access to quality education at all

levels. The national government has built an extensive state supported educational system from elementary to higher education. Public elementary schools are present in more than 90 percent of barangays and public high schools have been opened in most towns and large villages. There are now 114 state universities and colleges (or SUCs) spread in all the regions and local governments have added about 100 higher education institutions. Public elementary and high school education is provided for free. Students who cannot be accommodated in existing public high schools are provided tuition subsidy for enrolment in private high schools. Education in the SUCs and local government schools are heavily subsidized as tuition fees are only a small fraction of total cost. The national government started the conditional cash transfer program in 2008 which gives cash subsidy to poor families with school age children on condition that they are regularly enrolled in school and that the mothers access health care services. Up to three school children are given P500 each per month and the mother also P500 per month. The maximum cash benefit of P2,000 is a substantial addition to the poor family income. The program has been quite successful in raising the enrollment rate at the primary grades and there are suggestions to expand the coverage to high school-age children.

TABLE 11. Net enrollment rate in npublic and private elementary schools SY 2002-2003 to SY 2010-2011

Region	2002-03	2005-06	2009-10	2010-11	2015-16
A. Elementary					
Philippines	90.3	84.4	87.9	89.9	91.1
NCR	97.4	92.6	89.6	90.2	88.1
Central Luzon	93.6	90.8	89.3	90.6	93.9
Bicol	91.0	85.4	91.6	93.7	91.1
Eastern Visayas	96.0	80.0	88.6	91.5	89.6
ARMM	92.7	87.3	74.3	71.9	69.4
B. High school					
Philippines	59.0	58.5	59.5	61.3	68.2
NCR	75.3	75.0	76.6	77.8	75.5
Central Luzon	67.7	68.9	68.1	70.2	75.5
Bicol	54.9	53.2	55.0	55.6	69.5
Eastern Visayas	49.0	50.1	52.7	55.4	65.2
ARMM	23.7	35.6	39.8	33.8	32.4

Source: Department of Education

Education is a service that the government has been able to provide extensively at highly subsidized rates. Yet a significant number of young and older children do not enroll in school. The net enrolment rate in public and private elementary schools was 98 percent in 2012-2013 after rising from 84.4 percent in 2005-2006. NCR and Central Luzon had substantially higher enrolment rates especially in high school than the poor regions. The completion rate in the elementary level was only 75 percent, meaning that about 25 percent of the children drop

out before completing the grades. (Table 11) Note that education is a sequential process where qualification for each grade depends on the completion of the preceding level. The large proportion (about 25 percent) of children who fail to complete the elementary grades are therefore effectively barred from pursuing high school, not to mention college education.[16] Dire poverty is one of the main reasons that discourage families from sending their children to school. A survey of reasons for dropping out of the elementary level shows "lack of interest" to be the most frequently cited reason [David and Albert 2012], which may imply poor motivation due to lack of facilities for studying, poor health and nutrition, hopelessness, or a sense of inferiority[17].

Access to education especially at the higher levels remains unequal. Enrolment of the youngest children (ages 3-5) starts at only 20.8 percent for in the first decile of income distribution and rises monotonically to 65.6 percent for the richest 10 percent of families. The difference between deciles is smaller in the enrolment rate of elementary-aged children, 6-11, i.e., 90.8 percent in the poorest decile and 98.8 percent for the richest. We see larger differences in high school enrolment of children 12-15 years old starting at close to 80 percent for the poorest and rising to almost 100 percent for the richest. At the tertiary level for those aged 16 to 24, the enrolment rate starts at 25.9 percent for the poorest families and rises monotonically to reach 53.0 percent for the richest.

This discussion demonstrates how even a highly subsidized service such as basic education can prove to be beyond reach for many of the poor owing to the lack of complementary inputs. Adequate nutrition and good health status, access to transport, housing conditions, and a minimally supportive home environment are needed for progress in education. Part of the irony of current poverty measurement is that the poor's failure to access such basic services can itself depress their observed "nonfood spending" and lead to an under-appreciation of their needs.

7. A comparison of alternative measures of poverty

We are now ready to compare four received measures of poverty rate with estimates based on raising the share of nonfood expenditures in the poverty line and on using poverty in housing as a direct measure. In Table 12 we compare various estimates of the country's poverty rate: the official rate, the rate at the World Bank's $1.25 PPP poverty line and at the ADB $1.51 PPP poverty line, self-rated poverty from SWS, and our own proposed adjustments, one of which uses poor housing as a direct measure of poverty.

[16] This is an important reason that pending proposals to eliminate tuition in SUCs are unlikely to benefit the poor. They will not even have reached the point of qualifying for college. Earlier intervention is called for.

[17] As an illustrative anecdote, two teachers in the author's hometown relate how many of their pupils come to school without a proper breakfast and tend to be inattentive in class work. One teacher has felt compelled to bring rice to feed the drowsy pupils.

TABLE 12. Alternative estimates of poverty incidence, 2012

Official food threshold (FT) pesos	Poverty line pesos	Poverty rate
Food threshold FT = 13,232	18,935	19.9
Alternatives:		
FT X 1.92	25,405	32.9
FT X 2.40	31,757	43.3
FT X 3.00	39,696	54.0
Poor housing (2010)		38.0
SWS Self-rated poverty (2010)		52.0
WB $1.25 PPP (2009)		18.4
ADB $1.5 PPP (2010)		26.9

Source: Estimation for FIES, 2012; Social Weather Station July 30, 2015; Report to Business World, ADB 2014
Note: The food threshold multipliers are obtained from the shares of food in the total expenditures, first of families of media income, national average, and the benchmark 35% share of food to classify poor from non-poor families, The poor in housing from Table from the census.

Our adjustments consider three multipliers of the food threshold, one that takes the share of the food at median income equal to about 52 percent with a multiplier of 1.92, the second, the national average share of food in total expenditures equal to 41 percent and a multiplier of 2.40, and the third is to simply take the US multiplier of 3.0.

The official poverty incidence among families in 2012 was 19.7 percent; the headcount rate according to the World Bank was 18.4 percent, while the ADB rate placed it at 26.9 percent. Self-rated poverty for the same year averaged 52 percent. Meanwhile poverty in housing in 2010 was 38.0 percent. These figures can be compared to our three estimates of 32.9 percent, 43.3 percent and 54.0 percent using various food multipliers. The fact that the housing poverty index is bracketed between the poverty rates using average and median food thresholds is remarkable and argues for the soundness of that measure.

8. Conclusion

As with most absolute measures, the official poverty line is anchored on the cost of a basket of food that meets the recommended nutritional requirement of families with an average size of five. The food basket itself is based on a very meager menu and may be considered the barest minimum of food needs that only very prudent and well-informed families might consume. The larger problem however lies with the budget for non-food basic needs, which is artificially assumed to be 30 percent of the threshold income based on a censored concept of allowable objects of spending. This seems unduly stringent given the country's current level of economic development, where people must incur costs of rent, utilities, transport related to work and schooling, health care, and education. We have proposed raising the total poverty line by increasing the assumed share of non-food basic needs in total expenditures. We also suggest it would be sensible to simply use poverty in housing either as a direct index of poverty itself or as a supplementary check to current measures, since it would address a current blind

spot in current statistics, both in terms of the number of households covered and in the nature of the deprivation they suffer.

There are sufficient grounds to argue that at least 30 to 35 percent of all families in the country continue to experience true human deprivation based on their lack of access to housing and an inadequate recognition of their nonfood needs. While levels and trends in official measures may provide comfort and self-satisfaction to some, the reality by no means warrants complacency.

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