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Poverty

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IRRELEVANCE OF THE \$1 A DAY POVERTY LINE

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Introduction

Whether or not an individual is deemed to be poor depends not merely on that individual's economic and non-economic endowments but also, equally, if not more importantly, the place of that individual in the socio-economic-political processes of the country of which he or she is a citizen. An important implication of this is that any meaningful indicator that distinguishes the poor from non-poor has to be multidimensional. Nonetheless, most widely used indicators, including the \$1 a day poverty line, are unidimensional and are usually defined as a person's expenditure on consumption or, less often, income.

An indicator of poverty, whether multi- or unidimensional, could serve three distinct purposes. The first is a purely descriptive one of depicting the extent of poverty, the socio-economic profile of the poor, at one or more points of a time, some well defined unit, such as a nation state or subnational units within the nations or aggregates of nations (e.g., low income countries of South Asia or the world). Such a depiction provides a potential yardstick for monitoring the performance of national governments and international agencies, such as the World Bank, in achieving their professed objective of poverty reduction. More important, it could serve as a prelude to a positive analysis of likely determinants of different dimensions of poverty. However, in such an analysis, aggregations of poverty over very disparate spatial units or over a long time involving major systemic changes would likely mask the influence of different

determinants of poverty. The reason is that the relationship between determinants and poverty outcomes almost surely would be very different across the units being aggregated¹. This being the case, global indicators, such as \$1 a day counts of the poor, are unlikely starting points for any useful analysis of determinants of poverty.

The second purpose is normative: poverty indicators are inputs into the process of formulating policies for poverty eradication. Global indicators, and even national indicators in large, diverse countries, such as India, are not very useful for this purpose either. Determinants of poverty, and hence, policies for poverty alleviation, are unlikely to be the same across diverse regions.

Further, a policy is likely to be most effective in reaching its target and achieving its objective if its locus is where the target happens to be. Because most policies targeted at the poor are in the jurisdiction of subnational (or even lower) units, poverty indicators at higher levels are not helpful in policy formulation. This is not to say that national and international policies are irrelevant but only that their effects on aggregate indicators are best understood through the aggregation of their effects on indicators of poverty at lower levels.

The third purpose is mobilization of support among citizens, media and governments for the objective of poverty alleviation and for policies at all levels (subnational, national, and international) that presumably could alleviate poverty. Even those who would readily concede that global poverty counts are virtually useless for the first two purposes, would agree that they might be effective for the third purpose. Certainly, saying that in 2000 so many millions of people in the world went to bed hungry or lived on less than \$1 a day grabs attention. Thus, such global poverty counts have hortatory and rhetorical values.

The adoption of the so-called Millennium Development Goals at the Millennium Summit by the United Nations, one of which is to reduce global poverty (in terms of the estimated number of persons living at less than \$1 a day), indicates a certain purposefulness. It is arguable whether such attention and resolve have concrete value in raising resources for poverty alleviation or changing policies. For example, nearly six decades after the adoption in 1948 by the UN of the Charter on Basic Human Rights, abuses are still widespread. Exhortations based on appalling poverty in developing countries led in the seventies to the target of 0.7 percent of gross national product for industrial countries to contribute for development assistance. This target was recently reiterated in the so-called Monterrey Consensus adopted at the International Conference on Financing Development held at Monterrey, Mexico during 21-22 March 2002. Yet some of the richest countries of the world have not reached the target. Even if it were the case that there would have been faster development or greater poverty reduction with larger development assistance, a case for which the evidence is at best ambiguous, exhortations based on global poverty counts are unlikely to generate more resources from the rich now than they have in the past.²

Concept of Poverty and Choice of Poverty Line

The possible hortatory value of global poverty counts does not mean that the formidable conceptual and measurement problems underlying them can be ignored. There is a certain unavoidable arbitrariness in the choice of the criteria by which the incidence of poverty in any society at any point in time is to be judged. As Adam Smith recognized long ago, poverty is a

social construct. He argued that in defining necessities, one must include not just “the commodities which are indispensably necessary for the support of life” but also those which “the custom of the country renders indecent for creditable people, even of the lowest order to be without. A linen shirt, for example, is, strictly speaking, not a necessary of life. The Greeks and Romans lived, I suppose, very comfortably, though they had no linen. But in the present times, though the greater part of Europe, a creditable day-labourer would be ashamed to appear in public without a linen shirt, the want of which would be supposed to denote that disgraceful degree of poverty, which, it is presumed, no body can well fall into without extreme bad conduct.” (Smith, 1937: 821-22).

To be nonpoor, a person must be able to afford at least the necessities. Following Smith, one should presumably include a “decency” component in them. Obviously these are subjective and would vary over time and space.³ Moreover, important non-income aspects of poverty such as deprivations in health, educational attainments, enjoyment of citizenship rights, though difficult to measure, cannot be meaningfully combined with income or consumption measures to define a comprehensive poverty indicator of relevance.⁴ For example, knowledge of the current health status of an individual is not in itself adequate to project that individual’s future survival prospects: these depend both on the future evolution of the environment of sanitation, hygiene, health care and disease vectors of the society and the individual’s own access to the society’s system of health care. Proxies for survival prospects such as life expectancy at birth (or more generally age-sex specific mortality rates) are averages and not individual specific. Besides, they describe only the current mortality experience of the population as a whole, rather than its likely

future evolution.⁵ Moreover, life expectancies and literacy rates usually move too slowly to be helpful for monitoring progress in poverty reduction except in the very long run.

The most easily understood approach for deriving the widely used consumption expenditure based poverty line is to start from a socially defined “poverty consumption” bundle of goods and services for a representative (in size and age-gender composition) household. Allowing for the possibility that some components of the bundle would partly or mostly be provided free (or at subsidized prices) by the state, the value of the components of the bundle that are not provided by the state at appropriate prices, yields the consumption poverty line.⁶ There is unavoidable arbitrariness in determining which goods and services (and in what amounts) are to be included in a poverty bundle. Nevertheless, given a poverty bundle for a representative household, appropriate adjustments for differences of any other household in its size and age-gender composition could be made to arrive at a household-specific poverty line. A household would be deemed to be poor if it does not have the resources, measured in terms of either income or total consumption expenditure, to buy the private component of *its poverty bundle at the price it faces*. A household that can afford to but does not buy its poverty bundle obviously is not deemed as poor.

Poverty Measurement

Clearly, if data on the resources that each household commands and the prices it faces are regularly collected, say through an annual household survey, it is a straightforward matter to estimate the number of the poor each year, as long as the constituents and the nonprivate

component of the poverty bundle remain the same over time and space, and surveys in different regions and time periods continue to collect household specific data on resources and prices.

Leaving aside the issue of imputing prices for consumption from home production, only the prices actually paid by an individual (or household) in purchase transactions are relevant for arriving at a poverty line specific to that individual (or household). No household survey collects transaction specific prices. At best one can obtain an average unit cost, if the expenditure and quantity bought of each item of consumption are available from a survey. Annual surveys with requisite data are most unlikely to be available for calculating poverty lines through valuation of a *given* poverty bundle at prices that are specific to each household, region, and period of time. This being the case, a common practice is to use some price index to adjust some poverty line (not necessarily one derived from valuing a poverty bundle) at base year (or base region) prices to arrive at a poverty line for a different year (or region). This is in effect how official poverty lines are updated in India. There is no reason to presume that the commodity weights and the price quotations used in constructing these price indices reflect the commodity weights in the consumption bundle of a representative poor household and the price quotations correspond to the prices faced by it. Deaton and Tarozzi (2005: 34-35) recomputed Indian poverty estimates using price indices based on commodity weights and unit values from household surveys, instead of price indices used in updating poverty lines in official data. They found that “between 1987-88 and 1993-94, there was no great difference in the rate of decline of urban and rural poverty,” in contrast to the diverging trends in official poverty estimates. Thus, the use of price index matters. But whatever index is used, the basic, standard textbook index number problem remains and cannot be wished away.

A poverty bundle common to all regions within a geographically and culturally diverse country such as India, let alone for all countries of the world is hard to visualize even conceptually. If such a bundle could be defined, then the national poverty line at any point in time would be the value of that bundle at the relevant prices in *local currency* in that nation at that point in time. There would be no need for the use of any currency exchange rate in such a calculation. Is the use of an arbitrary global poverty line of \$1 a day and deriving local currency poverty lines by converting \$1 at purchasing power parity (PPP) exchange rates a sensible response to the obvious non-existence of such an internationally accepted bundle? For answering this question, it is useful to recapitulate how the \$1 a day poverty line originated before attempting to respond to this question.

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Origin of the \$1 a Day Poverty Line

The very interesting paper of Ravallion et al. (1991) is the origin of the \$1 a day poverty line.

Their objective was to quantify absolute poverty in the developing world. They begin their paper with five relevant questions:

What poverty line should be used? Should one use the same poverty line across all countries? How should one adjust for differences across countries in the purchasing power of their currencies at official exchange rates? How should one interpolate from the available grouped data on the distribution of income or consumption? How should one extrapolate to countries for which distributional data are unavailable, or are highly imperfect? (p. 345)

They claim to have proposed, “a methodology for addressing these questions, and give aggregate results for 86 developing countries in the mid-1990s. Our aim is to make a necessarily rough but

methodologically consistent assessment of the magnitude and severity of absolute poverty, based on recent available data” (p. 345).

What exactly is their methodology? They begin with two possible interpretations of an absolute poverty line, the first is the cost of “a bundle of goods which is UUrecognized as constituting an absolute minimum by international standards” (p. 345, emphasis added). As argued in the previous section, such an internationally recognized bundle obviously does not exist.

Their second concept of the real poverty line comprises “of an ‘absolute’ component, which is consistent across all countries, and a ‘relative’ component, which is specific to each country” (ibid). Prima facie, this approach appears sensible and even seems to accommodate Adam Smith’s concern. Although they neither define the notion of consistency analytically nor the sense in which the country specific component is relative, their intended meanings are to be inferred from their empirical implementation, which consists of estimating the following regression:

$$\text{Log } z_i = \alpha + \beta\mu_i - \gamma\mu_i^2 + \text{residual} \quad (1)$$

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“where z_i is poverty line in country i and μ_i is the mean monthly private consumption per capita [both] at constant PPP.” The residual is assumed to pick up other “factors influencing the local poverty lines, and measurement error in the letter “(ibid, p. 348). The theoretical foundation, if any, that would rationalize (1) is unclear.

The authors start from poverty lines in local currency for 33 countries, both developing and developed, and convert them to a common currency (US dollar) using “estimates presented by

Summers and Heston (1988) of the adjustments to official exchange rates needed to give purchasing power parity (PPP)" (ibid, p. 347), to arrive at z_i and μ_i . They recognize that ideally one would like to construct PPP based on prices most relevant for the absolute poor, but this recognition is not acted upon in any way. The regression provided a good fit with an R^2 of 0.90.

Although it would seem natural to interpret e^α as the absolute component of the poverty line, it is not sensible since α is the expected value of $\text{Log } z_i$ for a country with $\mu_i = 0$, i.e., mean consumption per capita of \$0 in PPP! A more appropriate value for the absolute component is the expected value of $\text{Log } z_i$ for the poorest country, i.e., one with the lowest μ_i . It turned out that among 86 countries that the authors considered, Somalia had the lowest μ_i at \$22. When \$22 is substituted for μ_i in the estimated regression, it led to an estimate of poverty line of \$23 per month for consumption per capita. This happened to be very close to the then Indian poverty line (converted to dollars at PPP) of \$23.14. Since among the 33 countries used in estimating (1), many low-income countries had more generous poverty lines, they decided that "a more generous and more representative absolute poverty line for low-income countries is \$31, which (to the nearest dollar) is shared by six of the countries in our sample, namely Indonesia, Bangladesh, Nepal, Kenya, Tanzania and Morocco and two other countries are close to this figure (Philippines and Pakistan). We shall use both these poverty lines, interpreting the lower line as defining 'extreme absolute poverty'" (ibid, pp. 348-49). Thus \$31 a month or \$1 a day at 1985 PPP exchange rates came to be the real absolute poverty line across all developing countries. The authors justify this on the grounds that the estimates of the parameters of (1) showed that poverty lines tend to be less responsive to increases in the mean at low levels of

consumption. They note that their absolute poverty line does not allow for differences between countries in relevant non-income (or consumption) factors.

It is clear that the role that PPP exchange rates played in the determination of the \$1 a day poverty line is the very limited one of enabling the estimation of (1) by converting poverty lines and monthly per capita consumption in local currency into their US dollar values. Given that the authors themselves recognize that the prices and the consumption baskets used in arriving at the PPP rates of Summers and Heston (1985) are not appropriate for the purpose at hand⁷, one would have expected them to check whether the use of any other available set of exchange rates lead to estimates of (1) that were different and gave a better or poorer fit to the data. They do not report on any such experimentation. A priori, one cannot, therefore, rule out the possibility that the use of other exchange rates could have yielded as good or better a fit to the data and also the estimated parameters of (1) showed greater sensitivity of the poverty line to per capita consumption of low income countries.

The PPP exchange rate is used only once in poverty measurement in each country, it is used in converting \$1 a day poverty line to local currency terms in the base year. For estimating poverty in other years, the so-computed poverty line is moved forward or backward in time, using local price index. Thus, for arriving at the poverty line at a point in time (the base year), prices associated with the implied consumption basket of PPP is used, but for updating the base year poverty line to other points in time, a local price index associated with a different consumption basket is used. In any case, the whole exercise is driven by the objective of deriving a real

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absolute poverty line in terms of consumption or income across all developing countries, an objective that is inherently flawed for the various reasons discussed earlier.

As better and more data become available, the base year for PPP exchange rates is changed. In a later work (Chen and Ravallion, 2001), they changed the base year of PPP rates from 1985. The 1993 rates were based on new price and consumption basket data collected by the World Bank through its International Comparison Project, which covered 100 countries. The 1985 rates from Summers and Heston (1988) covered only 60 countries. Regression (1) was re-run for 32 of the 33 countries used in the earlier regression, now with local currency poverty lines and consumption converted at 1993 PPP rates. For the country with the lowest per capita consumption, the estimated poverty line was \$31.96 per month and the median of the poverty lines for the bottom ten countries among the 32 in terms of per capita consumption was \$32.74, again exhibiting the insensitivity of poverty lines to differences in per capita consumption of poor countries. Again, going from the base year of 1993 to other years, local currency price indexes were used. It should be noted that the time series of poverty counts based on 1985 base year for PPP are not comparable to the ones based on 1993 base year. Thus, the estimates poverty counts for a given year for the same country based on PPPs for different base years could be different, the difference arising from the fact that the concept of absolute poverty implicit in the \$1 a day poverty line for the different base years is different. This is a very disturbing since it implies a varying notion of absolute poverty, that has nothing to do with changes in the conceptualization of poverty but only to the factors that led to the change in PPP exchange rates.

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Growth and Poverty

There is a large and growing theoretical and empirical literature on the growth-poverty link. In empirical studies, real GDP growth estimates are based on national accounts statistics (NAS) while poverty estimates are derived from household expenditure surveys (HES). It is well known that consumption expenditures estimated from NAS differ from those estimated from HES in developed (e.g., United States) and developing (e.g., India) countries and there are small conceptual and statistical reasons for the discrepancy. Nonetheless, the fact that the discrepancy seems to be growing over time, for example in India, is disquieting. However, attempts to deal with it by using (often) higher per capita mean consumption expenditure estimates from the NAS and its household distribution from HES have no analytical foundation and have to be rejected.

Conclusion

There is an urgent need for a serious research program for reconciliation between NAS and RES data. There should be more experimentation in survey practice. In particular, research is needed for a better understanding of how measurement of consumption is affected by the design of surveys, including the length of reference periods, length and detail of questionnaires, length of interviews, repeat visits to the same household, and whether to have more than one respondent from each household.

Most important of all, Deaton's (2001) plea for finding better ways to set the poverty line is right on the mark. As should be evident from my comments, I prefer to start from a well-defined

poverty bundle. Clearly, it has to be defined in terms of characteristics for healthy life and functioning, depending on an individual's age, gender, work activity, and other relevant attributes. But this is impractical. As an alternative, one may try to define a few poverty bundles in terms of goods and services. The need for more than one arises from the fact of variation in climates and dietary habits if nothing else. Given the poverty bundle appropriate to a subset of the population and well-designed surveys, it would be simple to define poverty lines that are specific to that subset and time period, based on prices faced by the poor. But this alternative may not be that much more practical than defining a single global poverty bundle. There is no easy way of determining how many bundles would be needed to capture the variations in relevant dimensions. In any case, once there is more than one bundle and an associated poverty line based on it that is appropriate for each region or subset of the population, index number problems reappear if one attempts to construct a global poverty line that is representative of all the regional poverty lines.

Comparability and global representativeness are therefore impossible to achieve. It is clear that the \$1 a day at a constant PPP exchange rate poverty line does not satisfy either. For this reason and the reason that global poverty counts have neither normative significance nor are of value in a positive analysis of determinants of poverty, I would prefer to abandon the search for the impossible and stick to national poverty lines, even though they also have conceptual weaknesses, albeit less serious. But if the rhetoric and politics of resource mobilization for poverty alleviation demand global poverty counts, the use of \$1 a day global poverty line, converting it using PPP exchange rate of some base year for deriving poverty lines in local currency terms for each country, and updating them for other years using local price indexes has

some value. However, any claim that such counts are based on poverty lines that are comparable in a conceptually meaningful sense across nations and subnational units, just because the same \$1 a day at PPP exchange rates of some base year is being used in computing local currency poverty lines, cannot be sustained and ought to be dismissed out of hand.

* This paper draws extensively from Srinivasan (2001) and references cited therein. I thank Martin Ravallion for his brief comment on an earlier version. His graciously commenting on it should not be taken to mean his endorsing anything I said in it or say in this version.

¹ There are serious problems with poverty estimates and analysis that take the household as the relevant unit. First, they assume, in effect, a unitary model of household decision making. This precludes a meaningful analysis of poverty of women and children, particularly female children, that arises from their relative weakness in bargaining over intra-household allocations of resources. Second, household surveys define a household as consisting of those who eat from the same kitchen. This definition is constraining when it comes to the analysis of poverty over time since for savings and investment (in human and physical capital) decisions, the relevant unit as a family (nuclear or extended).

² There is considerable evidence suggesting that political economy constraints at national and international levels, rather than inadequacy of domestic and external resources, are at the root of poor development performance and persistence of poverty.

³ In Srinivasan 2000, I argue that the claim of objectivity often made for a particular poverty line (that is, value of consumption expenditure or income per person) by linking it to the required habitual or long-term intake of food (or, more precisely, its energy content) for an individual to be adequately nourished is untenable. Briefly stated, there are intra-individual variations in energy requirements so that, even for a given individual, an unvarying poverty line based on energy requirements is inappropriate. Besides, even if an energy based poverty line could be defined at prices prevailing at a point in time, its updating using price indices severs its connection to energy requirements over time. See also Srinivasan (2007).

⁴ Indicators such as the UNDP's Human Development Index are also subject to the same criticism: they combine indicators that are not commensurable into an index. Attempts to provide a conceptual foundation for this index have not been convincing. This is true also of UNDP's "capability based poverty measure" and the "human poverty index" that draw on Amartya Sen's concepts of "capabilities and functioning." Apart from lack of a sound conceptual foundation, these indices avoidably lose some of the valuable information contained in individual indicators.

⁵ It is a little known fact that life expectancy estimates for a number of countries are based on scanty data and on the use of model life tables rather than country specific ones. The reason is that data from reliable population censuses for more than one year are unavailable for such countries.

⁶ This valuation of the private component is in effect what an expert group did for India's Planning Commission in 1962, in defining poverty lines for rural and urban households in India.

⁷ This fact is explicitly stated in the latest report on the preliminary results of 2005 International Comparison Program "PPP provide a measure of the overall price level of an economy, but they may not reflect the expenditure patterns of the poor. Nor do they capture differences in price levels within a country. Additional data and analysis will be necessary before international poverty rate can be estimated, therefore direct application of these PPPs to the estimation of poverty [lines] levels and rates may yield misleading results" (World Bank, 2007, p11).

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