RAISING THE STARNDARD: THE WAR ON GLOBAL POVERTY[1]

Surjit S. Bhalla
Chairman, Oxus Research and Investments, New Delhi, India

Introduction

It would be an understatement to say that poverty reduction is one of the most important goals of our time. Much has been written on this topic, and the fight against world poverty is now almost forty years old. In 1973, Robert McNamara, President of the World Bank, made a speech about the need to fight global poverty, a speech that launched concentrated work, effort and aid towards poverty reduction by the developed and developing world.

The World Bank estimate for world poverty for 2004 was 970 million.[2] That is, close to a billion people have consumption expenditures of less than 1.08 dollars a day in 1993 PPP prices.[3] This number is not that much different from the one that prevailed a decade earlier—1.13 billion in 1990. In 1981, global poverty was estimated as 1.5 billion. What has changed over the last two decades is the composition of the poor—in 1981, both India and China contributed two-thirds (1 billion) to the total. Poverty then was essentially an India-China story. More than two decades of growth later, the importance of India-China is substantially reduced, but for some methods, the share in world poverty for these two Asian economies is around 30 percent.

Both Bhalla (2002), *Imagine there's no country: Poverty, inequality and growth in an era of globalization,* hereafter referred to as *Imagine,* and Sala-i-Martin (2006) have contended that world poverty is significantly below the World Bank estimates. Depending on assumptions, our estimates for global poverty for 2005 range from about 200 to 500 million, an order of magnitude lower than the official estimates. Which set of estimates are "correct" has enormous implications for aid and development policy, and for evaluations of how the globalization growth process in the last twenty years has affected the lives of the poorest.

These "new" estimates have been partly based on the old method of estimating poverty, and the one followed universally till the early nineties (see Ahluwalia, Carter, Chenery 1979—here onwards referred to as 'ACC'—for the first such estimate). The ACC method relies upon national account means of per capita consumption, and household survey distributions of consumption (or income).[4] Critics have rejected such estimates of poverty, for two reasons: first, that survey based estimates of per capita consumption, and not national accounts based estimates, are a more reliable estimate for the "true" mean; and second, that if the distribution of the survey distribution is trusted, then so must the mean be trusted. This paper is *not* about poverty estimates as revealed by household survey data "matched" with national accounts data.[5] Rather, this paper is about the authenticity and reliability of survey based measures of poverty. If the survey estimates are accurate or "correct", what can we say about poverty, inequality, and growth in the developing economies for the period 1980 to present? If they are not correct, then can

alternative more accurate estimates of poverty be presented, and estimates based on all the available data, surveys and national accounts?

This chapter is also properly viewed as an extension of the poverty estimates reported in (Bhalla 2003c, 2004a). Bhalla 2003c documented how World Bank data and poverty measurement methods (i.e. using survey, not national account means) themselves indicated that the Millennium Development Goals of reducing poverty to 15 percent of the developing country population by 2015 had already been reached—and reached at about the same time as the goals were being formulated in 2000. Bhalla 2004a documented how some of the important parameters of World Bank poverty calculations (e.g. growth in per capita consumption between 1987 and 1998) could *not be reproduced* by the country specific data on survey means made available by the World Bank on its website.

Given this inaccuracy, there is a need to develop alternative estimates of world poverty according to survey means not suffering from World Bank "adjustments". Several agencies now publish estimates of both survey means and distributions, two essential ingredients in the calculation of poverty. WIDER, in particular, provides detailed estimates of distributions.[6] This paper uses data from all available sources to construct three estimates of poverty—the World Bank method with only World Bank data, the World Bank method with all available data and third, an alternative method also using all available data.[7]

This new method incorporates *all* the characteristics of survey data except one, the noisy and declining character of survey capture: the ratio of household survey means to national account means (S/NA). This method forces the ratio of the survey mean to national accounts mean to be *constant* and reflect the value obtained in an arbitrary year, chosen to be 1987 for all the countries. The reason this year was chosen was because generally, for most countries, the survey capture ratio started to decline somewhat sharply after the mid-eighties. A declining survey to national accounts ratio means that the growth rate in survey consumption is most likely understated, and understated by the percent decline in the survey to national accounts ratio. If the S/NA is understated, then absolute poverty is overstated.

This new method allows the survey/national accounts ratio to be different across countries, but to stay constant within a country, and constant at its 1987 value or if a survey was not conducted in that year to be constant at the value of the latest survey prior to 1987. The *distribution* of consumption, used by us, the World Bank, Sala-i-Martin, etc. are all similar, if not identical, and do so because they originate from the same source, household surveys; and unlike for survey means, researchers have generally refrained from "adjusting" data on distributions.

The three methods yield differing estimates of poverty, but strikingly, the strong result that emerges is that regardless of the method chosen, developing country poverty in 2005 was already close to the MDG goal of 15 percent for 2015; that world poverty today is essentially about poverty in Africa; and that the World Bank estimates of poverty in India

seem to be gross over-estimates, and estimates not corroborated by other researchers or institutions (e.g. the official government of India estimate for poverty in India, *for the same poverty line* as that used by the World Bank, is about *7 percentage points lower* in 1993/1994).

Given this overwhelming evidence in favor of significant poverty reduction in the formerly poorest part of the world, Asia, and especially given the magnitude of poverty reduction in the two large countries, India and China, this paper argues that time has come to raise the decades old poverty line from $1 a day (1985 PPP prices) to a poverty line significantly higher, around $2.16 per capita per day in 2005 prices.

The plan of the paper is as follows. Section 2 provides an overview of the data used in generating poverty estimates. This section also documents that the World Bank poverty line of PPP$1.08 in 1993 prices is exactly equal to the government of India poverty line developed in 1973/74. This equivalence is an important input in documenting the exaggeration present in World Bank poverty estimates. The same poverty line should yield the same level of poverty, but as just noted for India, the World Bank, inexplicably, has a poverty level that is 7 percentage points higher! Section 3 analyzes other reasons for different poverty estimates; in particular, the overestimation in poverty caused by the rather slow rate of consumption growth revealed by means based on household surveys, a decline not corroborated by trends in an alternative estimate of consumption, namely the national accounts. The systematic nature of the decline in S/NA should prohibit a blind

acceptance of survey means; hence, the need to develop an estimate of growth in survey means.

Section 4 emphasizes the role played by the clustering or congestion of people close to the poverty line; different degrees of this congestion affect interpretation of poverty trends, and interpretation of how good (or bad) economic growth, or initial inequality, has been in reducing poverty. The magnitude of the poverty decline is shown to be independent of initial inequality.

Section 5 presents estimates of poverty for different time-periods and different regions of the world. This section shows that using official i.e. government data and a constant S/NA ratio, and all other parameters the same as the World Bank, world poverty in 2005 is reduced from the World Bank estimate of 970 million to less than 500 million.

Section 6 examines the data on national poverty lines in the world, and concludes that the world poverty line of $1.08 a day is too low. With development, poverty is reduced, and the world's perception of poverty has moved away from absolute poverty to a notion of relative poverty. Most of the developing world, except sub-Saharan Africa, is in that transition mode; hence, time for the aid community to adjust and raise the standard for being poor—and raise it to PPP$1.70 per capita per day in 1993 prices, or 2.16 per capita per day in 2005 prices. Section 7 concludes.

Data, methods and results—an overview

The study of poverty, and its determinants, requires that definitions of three important variables be explicit, and clear. The three variables are poverty, the distribution of consumption (inequality), and growth in per capita consumption. There are several definitions of *Poverty*, but the one used here is the head-count ratio i.e. the fraction of the population whose per-capita expenditures (or income) are less than, or equal to, a pre-defined level of expenditures given by a "poverty line". *Inequality* can be measured by several indices (share of expenditures of the bottom 20 percent, the ratio of mean expenditures of the bottom 20 relative to the top 20 percent, the Gini index, etc). All these are aggregate indices—the point of departure of our analysis is that what matters for the analysis of poverty is not aggregate inequality but inequality *at (or close to) the poverty line*.

Differences in definitions of *Growth* and differences in sources of data for growth (and levels) cause very large differences in estimates of levels and trends in poverty. There are, before modifications, *two* sources for consumption means—that obtained from national accounts (NA) data and that obtained from household surveys (S). There are natural differences between the two sources because of differences in definition, coverage (e.g. institutions are part of NA but not of surveys[8]), measurement (survey consumption is measured directly while NA consumption is often a residual) and prices. These differences fail to account for more than a small fraction of the two means, say about 5 percent or so. The differences in *growth* of survey or NA consumption are even smaller (since the differences in levels are likely to persist).

However, there are other problems with World Bank world poverty estimates, in addition to differences between NA adjusted (for definitions and comparability) and survey means. These problems arise because the World Bank adjusts *survey* means for some countries, particularly for the two large poverty countries, India and China. The same source for distribution and the mean (for example, National Sample Survey (NSS) data for India) should ordinarily yield the same estimate for absolute poverty. For 1993/94, the World Bank estimate of all India poverty is 42 percent;[9] the government of India estimate for the *same* year, using the *same* NSS data, is a considerably lower 36 percent; on a population of 900 million, that is an *extra 54* million people deemed Indian poor by the World Bank. The divergence increases for the survey year 1999/00. Again, for the same poverty line, the World Bank estimates 36% poor, in comparison, the government of India estimate is 26 percent—that's an extra 100 million poor in India, and the world.

It can be argued that the difference arises because the World Bank uses the international poverty line of PPP$1.08 a day, 1993 PPP prices, while the government of India uses its own national poverty line with a 1973 base year. *But for the 1993/94 NSS survey year, and hence for all years, the $1.08 and the Indian poverty line are identical*. This identity holds for all other years since the two organizations update the poverty lines by inflation, and will hold until either the Indian government, or the World Bank, changes its definition of the absolute poverty line. Bhalla (2002b) argues that a large country, namely India (and a country with the most research on absolute poverty) might have been the

basis for the world poverty line; the identity in Indian and World Bank poverty lines may not be a coincidence. This is demonstrated next.

Equivalence between Indian national poverty line and $1.08 per capita per day

The Indian poverty line is defined in terms of 30 day consumption and in 1993/94 was equal to Rs. 206 in the rural areas and Rs. 286 in the urban areas, or an all India average of Rs. 227 per capita for 30 days. This yields a per day average of Rs. 7.57. The World Bank consumption PPP exchange rate for 1993 is given as 7.02 yielding the national Indian poverty line, in PPP 93 terms, of 7.57/7.02 or $1.08[10]. *A number exactly the same as the international poverty line.*

Different methods of estimating survey means

The non-reproduction of the poverty estimates for India by the World Bank is one source of difference between our and World Bank poverty figures. A larger difference is caused by the trend in the survey to national accounts ratio. Survey based means (and the implied growth) do not account for the possibility that the survey to national accounts ratio might diverge significantly for different years *for the same country*. The emphasis on the same country is important because differences in methods of data gathering, etc. can and does cause significant differences in S/NA across countries. But for the same country, the S/NA ratio is expected to move in a narrow range across time, as it was for most of the countries of the world until the mid-1980s.

A declining S/NA trend means that the mean survey consumption level declines (relative to a constant S/NA) by 1 percent for each 1 percent decline in the S/NA ratio. The head count ratio of poverty, *ceteris paribus*, increases by approximately 0.5 percentage point with each 1 percent decline in the S/NA ratio. To correct for this tendency, our method is to "impute" a survey mean. Recall that the traditional method of estimating survey means was to make them equal to national account means. Our procedure is to adjust the survey mean to a survey mean adjusted for unusual declines (or increases) in the S/NA ratio. This adjusted mean is likely to be closer to the underlying reality than the measured survey mean.

Divergence between survey mean and national accounts mean – example from India
The trend in S/NA is on the basis of surveyed households. Divergence between this and the "true" mean can arise due to two factors; under-reporting of consumption, and non-survey of a large consumption set of households. What might such magnitudes be? In *Imagine*, the issue of greater under-reporting by the rich was examined in detail for one large poor country, India, using its household (NSS) survey for 1993-94 and national accounts data for the same year. The method was to "blow up" the survey based estimates to the NA means for 18 major consumption items. This means that if a person consumed X percent of the survey mean, she would consume the same X% of the NA mean. If she does not consume potatoes in the surveys, no potatoes are allocated to her in the (adjusted) estimate. If a person does not consume TVs, or cars, none of the "missing" TVs is allocated to this person. This method estimates an adjusted consumption estimate for each household and therefore allows for percentile distributions of the adjusted

consumption estimate to be derived. The mean of the survey estimate for each item is "forced" to equal the mean NA estimate for the same item; hence, by construction, the survey mean is made equal to the national accounts mean.

The results were revealing—the bottom 40 percent of the population understated their expenditures by 29 percent while the average household understated its expenditure by 34 percent. The top 20 percent (the rich) understated their expenditures by 41 percent. Two conclusions are relevant—first, even the poor understate their true consumption, an occurrence documented by the fact that even for food items, expenditures are increasingly being understated in the surveys. Second, there is a large 12 percentage point gap between the understatement of the rich and the poor. However, since the adjustments are made with reference to *average* expenditures, the "error" between the rich and the poor has only a small magnitude – only 5 percent. In other words, if India is a typical poor country, the "error" made by using NA per capita expenditures rather than survey expenditures is only around 5 percent at a *point in time*,[11] and almost zero percent for changes over time. To reiterate: the matching of survey consumption with national accounts consumption, often involving a large adjustment in the former, fails to reveal any large differences in the magnitude of underestimation between the rich and the poor, at least for 5 survey years for India (1983, 1987/88, 1993/94, 1999/2000 and 2004/5).

The survey mean does not incorporate the possibility that some rich people are *missed* by the surveys (due to high walls, security guards etc.). By how much would the survey mean be lower than the NA mean in this instance? One plausible, though not likely,

estimate is that the survey fails to sample anyone in the top 2 percent of the population.. Since most of the top 2 percent reside in the four major cities of India, this assumption means that *no* top 2 percent household was sampled in the four major cities of Delhi, Mumbai, Calcutta and Chennai. The expenditure of this top 2 percent in developing countries is not likely to be more than 10 percent of total consumption. If the extreme assumption is made that *all* of these 20 million top individuals (2 percent of the population) were missed by the household surveys in India, it would mean that the S/NA ratio for developing countries should still be close to 90 percent. In 2004/5, the survey to NA ratio in India was less than 50 percent.

The consumption share of the top 1 and 2 percent of the population in India in 1999/00 (NSS survey) was 7.5 and 3.5 percent, respectively. This yields 11 percent as the total share of the top 2 percent and fits in with the conjecture above. But the argument can be made (and is made!) that the surveyed households are not the "true" top 2 percent, or at least a large number are not. Banerjee and Piketty (2005) use Indian tax return data to estimate the shares of the top 1 percent of the population for various years 1952-2000. They find the *income* share of the top 1 percent was 8.5 percent in 1993/94 and 9 percent in 1999/2000, for a mean level of Rs. 230,000 for the top 1 percent in the latter year. But these shares seem to be underestimates. One indication of this possibility is that the consumption share is in the same ballpark. The second indication is provided by estimate of GDP and private income (personal disposable income plus income taxes). For the same year, the two levels are Rs. 19,520 billion and Rs. 14,800 billion, respectively. The population in 1999/2000 was 1 billion which yields the share of the top 1 percent at 11.8

percent of GDP and 15.5 percent of private income. Simple calculations suggest that such large shares for the top 1 percent are inconsistent with shares of income observed for the fourth and fifth quintile in India (about 22 and 50 percent, respectively).

Taking *all* the factors responsible for differences in survey and NA means, including non-coverage of the super rich and larger understatement by the surveyed rich, a very conservative assumption is that household surveys (in a poor country like India) can be expected to miss out on no more than 10-15 percent of total expenditures in any given year. In contrast, the measured survey to consumption ratio in India was 49 percent in 2004/5, down from 55 percent in 1999/2000 and 62 percent in 1993/1994. These are large gaps, gaps that cannot be explained by assumptions of missing out the rich living in gated communities etc. Further, the under-estimation is across all commodities, including and especially food. The rich, even with their wealthy incomes, cannot consume all of this unmeasured food, or even most of it, or even more than a small fraction.

 A rough break-up of this 15 percent understatement is that two-thirds of this difference is likely due to definitional and other reasons, and one third (or 5 percentage points) may be due to extra understatement by the rich, extra with reference to the understatement of the average consumer. This implies that around 85 to 90 percent is a reasonable estimate of the survey to national accounts ratio i.e. to make a conversion from national account estimate to the "correct" survey estimate, one should discount or reduce the NA estimate by around 10 to 15 percent. Survey to NA ratios of 70, 60 or 50 percent cannot therefore be accurate, given all that we know of the limits to human consumption, especially of

such limits to food consumption. A lower bound of S/NA ratio is likely to be about 80 percent; anything below this number is likely to mean that expenditures of the poor are actually being under-reported i.e. household surveys are likely to be overstating poverty for such countries.

Declining S/NA ratio observed for most countries

The breakdown in S/NA in the late eighties can be illustrated with data for the ratio for a few countries. In India, the S/NA was 78.2 percent in 1977/78, 71.2 percent in 1987/88, 55.5 % in 1999/00 and 48.7 percent in 2004/5. For China, the ratio declined from 91 percent in 1981 to 82.2 percent in 2001. For Korea, the ratio was 84.8 percent in 1971 and 60.3 percent in 1992. Out of 74 non-industrialized countries with more than one expenditure (or income) household survey in the post-1980 period, more than two thirds (50) witnessed a decline between the first and last survey post 1980; only 24 witnessed an increase.[12]

Figure 3.1a plots the pattern of the S/NA ratio for India and China. It is plotted on a dual scale and suggests both that declines have been steep for the two countries (India is larger) and that the *timing* of the decline has been very similar. On average, the S/NA ratio for developing countries declined by about 10 percentage points in the decade 1991-2001 (Figure 3.1b). Given that for the average developing country the S/NA ratio was 82 percent in 1991, a 10 percentage point decline in subsequent years translates into a decline of 12 percent in estimated survey consumption, i.e. on average, 12 percent of the

gain in mean consumption of the average (or poor person) is "missing" or *unaccounted*

for in survey expenditures.

Figure 3.1a: Survey to National Accounts Ratio in India and China (in %), 1980-2005
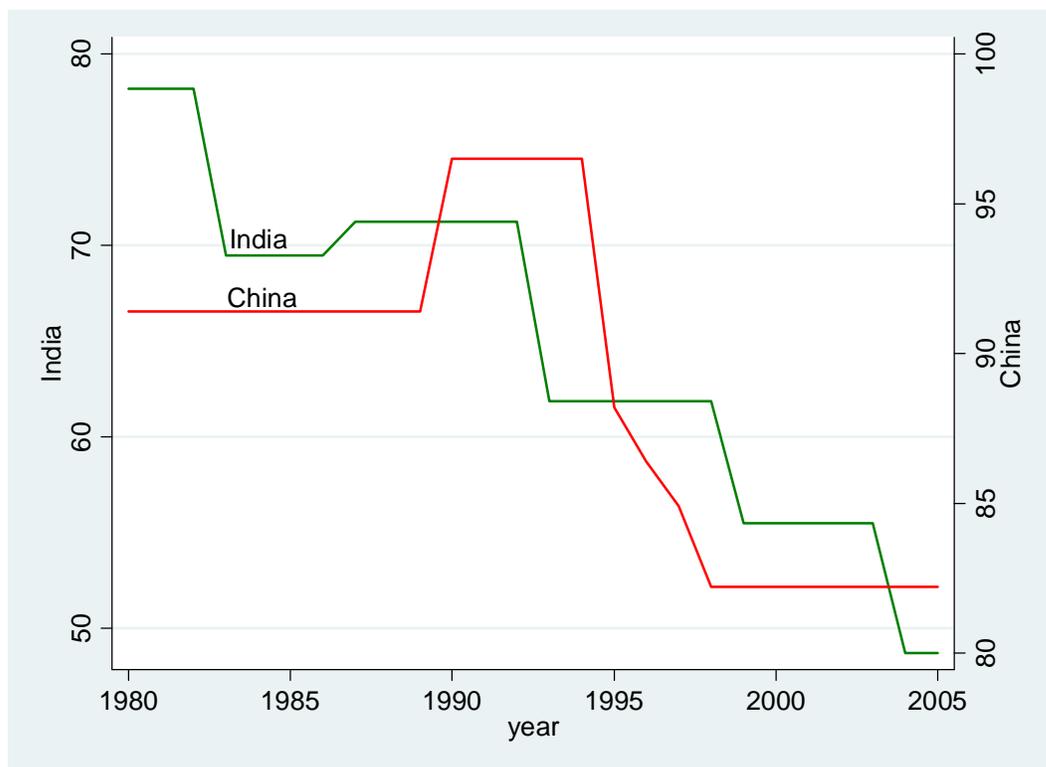
Figure 3.1b: Survey to National Accounts Ratio (in %)—Two Estimates
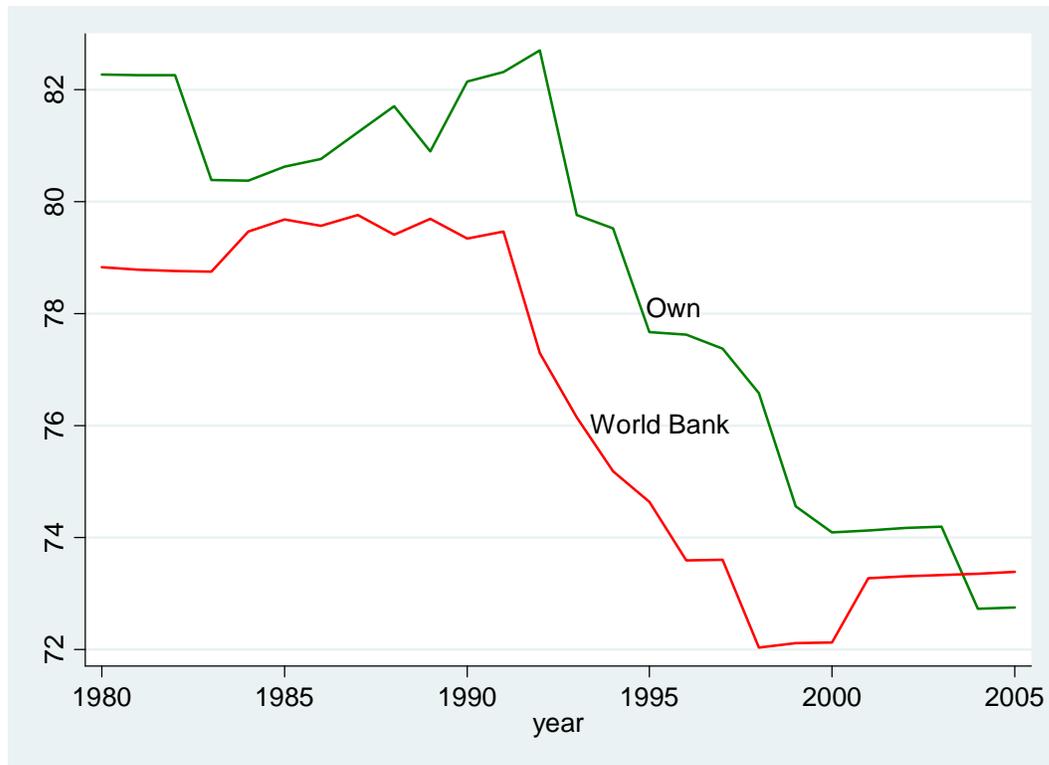
Figure 3.2 documents the evolution of mean expenditures for non-OECD countries (the survey to national accounts ratios reported above are derived from these means) as calculated by Deaton (2004, p. Fig. 3)[13], by the World Bank (Chen-Ravallion) and by us. The numbers are reported in logs so percentage changes can be read easily from the charts. Data are presented for developing economies i.e. economies excluding the western developed economies, and countries belonging to Eastern Europe and the former Soviet Union.

Figure 3.2: Mean Consumption in the Developing World, 1990-2005
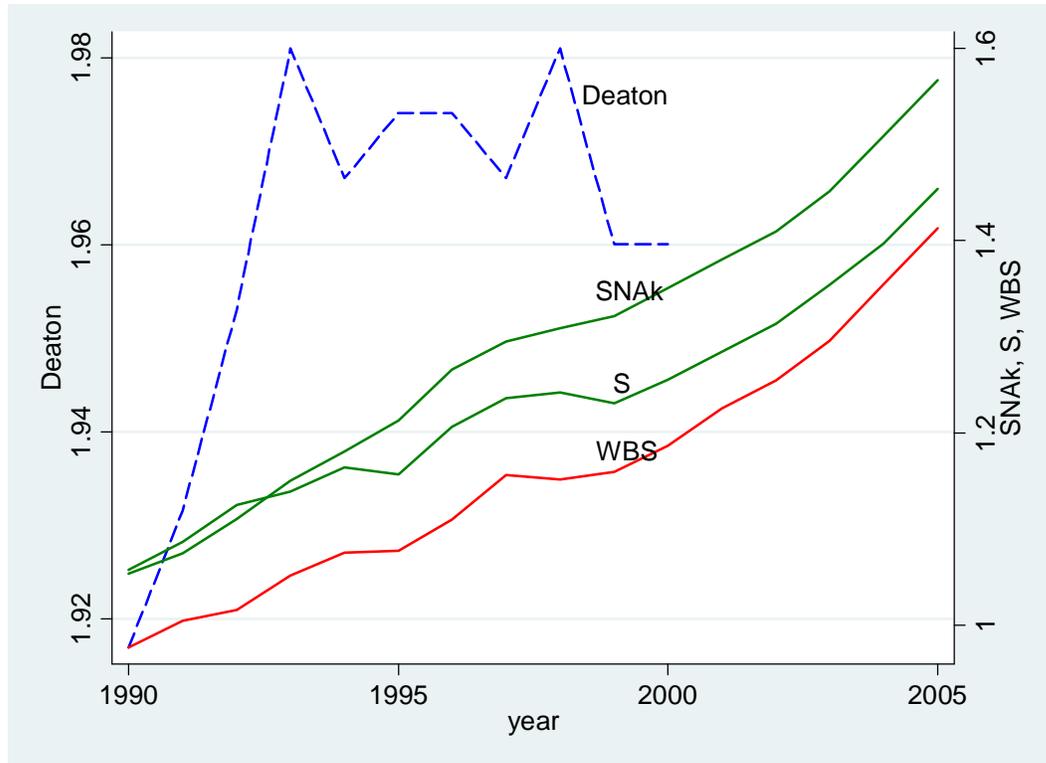
Note: WBS refers to World Bank method and data; S refers to data from all available surveys, and SNAk represents the method where the survey to national account ratio is kept constant at the observed 1987 level for each country.

Deaton (2004) reports survey based growth for non OECD countries to be 2.8 percent a year for the ten year period 1990-2000 (his Table 3); from his Figure 3, we obtain the annualized growth rate to be approximately 0.4 percent a year (survey means, consumption where possible). Deaton's estimates suggest that the peak in the level of per capita consumption in developing countries was reached in 1993; his 3 year growth, 1990-1993, is a high 4.4 percent; his data shows the same peak being reached twice – 1993 and 1998; and in his data, over the 3 year period, 1998-2000, the average

consumption level in 2000 (a recovery year) was more than 20 percent *lower* than in 1998 (an East Asian crisis year). Thus, all the decadal growth (and more) in Deaton's calculations seems to have occurred in just three years, 1990-93. Both the World Bank and our estimates reveal a slow and gradual increase with some acceleration post 1999.

What these data suggest is that some method needs to be found to adjust the survey means for different countries since levels of S/NA at 40, 50 and 60 percent etc. are not helpful in assessing the nature and magnitude of poverty decline in developing countries. Concern is rightly centered on the relative roles of inequality change and consumption growth in affecting poverty; unfortunately, large changes in the S/NA ratio introduce a considerable amount of measurement error in poverty calculations. This measurement is larger than all estimates of inequality change or consumption growth.

A suggested method of deriving consumption growth estimates unaffected by *changes* in the S/NA ratio is as follows. If growth in survey means is equalized to growth in NA means, then the data can be left uncorrupted by declines (or increases) in the S/NA ratio. This is the estimate of survey means reported in this paper. By keeping the S/NA ratio constant to its observed 1987 value, one obtains a growth rate in consumption that is a mixture of survey and national accounts data i.e. the original *level* of consumption from the surveys is adjusted by the *growth* rate in consumption obtained from NA data. The growth rate in per capita consumption is thus made equal to the NA per capita consumption growth rate.

None of the objections to the use of NA consumption data (it is not representative, it is a derived estimate etc.) apply to the use of *growth* rate in NA consumption. The year 1987 was chosen as the "constant S/NA" year, partly because the trend decline in S/NA ratios seems to have accelerated, in many countries around the world, around the late eighties. Selection of a different year than 1987 would not change any of the results on growth in means, but would change the results on the level of poverty in any given year. The choice of 1987 is appropriate because it is near the end of the constancy of S/NA and the beginning of the breakdown as indicated by Figures 3.1 and 3.2.

The Irrelevance of Initial inequality for poverty reduction

Before proceeding to the estimation of poverty findings in the next section, a few comments on what we should expect with respect to poverty decline over the last two decades or so. There has been a lot of discussion about how inequality has hampered the decline in poverty. Indeed, one of the most consistent "findings" in the recent development literature is that poverty reduction is greater, *ceteris paribus*, in more initially equal economies. The reasoning is assumed to be straightforward: lower inequality means a higher share of consumption at a point in time for any given group, say the bottom 20 percent; this implies that a higher share of the same growth will accrue to the poor in the more equal country; this "higher" growth means a higher magnitude of poverty reduction; hence, the simple conclusion that a more equal distribution of consumption is desirable for poverty reduction. Several documents have offered this logic to advocate a more equal distribution of consumption as a *desirable* starting point in

discussions of poverty reduction e.g. WDR 1990, WDR 2000/01, Ravallion (2001),

Klasen (2001), Datt-Ravallion (2002). Some excerpts from the first and last study

illustrate this belief:

A 10 percent increase in the incomes of the poor in Bangladesh and India would

reduce the incidence of poverty by about 7 percentage points. *Where the*

distribution of income is more unequal, as in Venezuela and Brazil, the

corresponding figure would be only 3 percentage points" (WDR 1990, p.47;

emphasis added).

Household survey data for developing countries suggest that initial distribution

does matter to how much the poor share in rising average incomes; higher initial

inequality tends to reduce the impact of growth on absolute poverty. By the same

token, higher inequality diminishes the adverse impact on the poor of overall

contraction (Datt and Ravallion, 2002).

It turns out that this reasoning is false, and this was demonstrated as early as 1964 by US

economist Locke Anderson. He showed that initial inequality was *irrelevant* for poverty

reduction. Using data on US poverty, he made the (graphical) point that the rather small

decline observed in US poverty in the early 1960s, despite rapid growth in per capita

incomes and not much change in the distribution of incomes, was not at all surprising and

had a lot to do with "congestion" of the poor near the poverty line.[14]

For any of these groups, an increase in median income of about 2.5 per cent would reduce the incidence of poverty by 1 percentage point, judging from the slope of the central portion of Figure IV….This analysis suggests that *movements along the poverty curve* corresponding to the existing income distribution will imply a declining rate of reduction of poverty (Anderson, 1964; emphasis added).

In *Imagine*, Bhalla (2002) summarizes this movement along the poverty curve as the shape of the distribution elasticity or SDE –*a quasi-elasticity that yields the total arithmetic change in the head count ratio of poverty that can be expected with a 1 percent change in mean expenditures of individuals clustered around the poverty line*. Though Anderson does not offer any empirical values for this congestion, our estimated value for SDE for the US in the early sixties is around 0.15 i.e. a 10 percent change in average incomes of the poor in the US would affect the head count ratio by only 1.5 percentage points.

Anderson's important work was ignored by development practitioners (perhaps because it was on a developed economy, USA). Thus, discussion of the impact of the congestion at the poverty line on future poverty reductions remained absent until 1990 when the World Bank report on Malaysia was published (see Bhalla and Kharas, 1991; the 1990 *World Development Report* also highlighted its importance (neither study was aware of Anderson's work). These two reports, however, did not offer any theoretical or empirical estimates of SDE.

What the SDE-growth relationship suggests (e.g. the US example) is that there can be robust growth in incomes of the poor and yet very little poverty reduction. The following admittedly unrealistic but heuristic example is illustrative. Assume the poverty line is 100 and that most of the poor (the center of gravity) are clustered around a mean income of 50, and that the standard deviation of the incomes of the poor is 20. An increase in mean consumption of 10 percent will have a near-zero impact on the head count ratio. Now assume that the mean shifts to 95 and the standard deviation is only 10. Now a 10 percent increase in mean consumption will lead to a very large decline in the head count ratio. If the poor are now congested at a level close to the poverty line, say 99, the elasticity will be close to infinity. So with the same growth in mean consumption of the poor, one obtains varying elasticities.

Yet another example, this time perhaps more realistic, explains the workings of the SDE on poverty. Growth in expenditures of the poor is the sum of growth from two sources: the mean growth in expenditures of the entire population (this is the popular "headline" growth variable) and the growth in the *share* of expenditures of the poor (change in inequality but only for those close to the poverty line). Thus, if mean expenditures increase by (log) 10 percent, and inequality, measured as the share in total expenditures of the population close to the *poverty line* worsens by (log) 10 percent, then there will be no change in net consumption of the poor, and therefore little change in the head-count ratio of poverty.

What these examples substantiate is that initial inequality is *irrelevant* for future poverty reduction. This is because the *change in poverty* is a function of the *change in consumption at the poverty line*. If inequality does not change, then growth cannot have a differential impact. When inequality stays constant, the same amount of growth *will result in the same increase in the consumption of the bottom 20 or bottom 40 percent or the top 1 percent*. So if a person was poor in 1987 in unequal Brazil or equal India and consuming $1 a day, and if both societies experienced a 10 percent change in average consumption, and in both societies inequality did not change, then in both societies the poor person would be consuming $1.10 in 1998, and in both societies the person would be non-poor in 1998; i.e. initial inequality is irrelevant for poverty reduction, as far as a direct (independent of the effect on growth) impact is concerned.

What happened to poverty and growth, 1950-2005?

The theoretical and empirical background provided in the previous sections (the importance of declines in S/NA, the irrelevance of initial inequality etc.) can yield an informed perspective on the ongoing fierce debate on what *actually* happened to poverty over the last three decades. There is the authoritative voice of the World Bank, the official referee on poverty, that the decline has been painfully, and surprisingly, slow. There is the voice of the dissent, voice of those who argue that the World Bank figures are erroneous because it has mis-measured the growth in consumption and therefore underestimated the decline in poverty. Determining who is right in this debate can be treacherous to one's view of economists, and statisticians. Given this minefield of a

background, a useful path for analysis is to first isolate the facts. Facts are presented in this section for growth and poverty decline for three different measures of consumption growth (the differences in inequality, or distribution, is of minor importance)—World Bank data (Survey World Bank or SWB), all available data (Survey data or S), and survey to national accounts ratio kept constant at 1987 levels, or SNAk.

There should theoretically be little difference in the poverty estimates yielded by the two straightforward unadjusted means and common distribution estimates provided by SWB and S—as shown in Table 3.1, the difference was as much as 6 percentage points in 1990 though in recent years this has come down to only a few percentage points. In 1990 believing the World Bank versus the alternate all data series would have led to an overstatement of absolute poverty in the world of 350 million; in 2004, the overstatement is a 100 million. Our S/NA constant series shows poverty to be sharply lower than these two series – 1171 million in 1990 (WB estimate 1409) and 464 million in 2004 (WB estimate 760 million).

Table 3.1: World Poverty, in percent of population, 1950-2005

		$1.08 Poverty Line			$2.16 Poverty Line		
		World Bank data and method	All data and World Bank method	Constant S/NA method	World Bank data and method	All data and World Bank method	Constant S/NA method
Year	Population in millions	SWB	S	SNAk	SWB	S	SNAk

1950	1742	69.7	63.3	66.2	89.1	86.8	87.8
1960	2120	65.9	59.3	62.5	86.6	84.3	85.2
1970	2691	57.4	49.7	53.4	82.5	79.6	80.8
1981	3419	48.2	43	44.1	76.1	73.1	73.4
1985	3716	38.5	35.6	35	70.9	68.8	68.4
1990	4113	33.6	28.6	29.7	67.7	64	64
1993	4342	28.9	26.1	23.1	63.8	60.9	58.7
1995	4492	28.2	24.2	20.6	62.4	59.5	56.1
2000	4862	25	21.6	16	57.5	54.1	47.3
2004	5151	18.6	17.9	9.9	50.4	48.6	40.1
2005	5225	15.2	14.7	8.4	47.9	45.9	37.2

Poverty decline since 1981—Very Large

Figures 3.3 and 3.4 document the enormous decline that has taken place in world poverty since 1981. The World Bank itself acknowledges that world poverty has declined from 40 to 21 percent, 1981 to 2001; our reproduction yields estimates of 48 percent and 24 percent in the two years. The more accurate SNAk measure of per capita consumption has poverty declining from 44 to 15 percent, $1.08 poverty line, and from 73 to 46 percent, $2.16 poverty line. The percentage point decline, regardless of source or poverty line, is a reduction of some 20 to 30 percentage points. The fast pace of developing economy growth since 2001 (including sub-Saharan Africa), has meant a further decline in poverty to 8.4 percent and 37.2 percent ($1.08 and $2.16 poverty lines, respectively) in 2005. These statistics suggest that the time has come to raise the world poverty line from its $1.08 level—a subject explored in the next section.

Figure 3.3a: Percentage of Population Poor, Developing World, 1980-2005 ($1.08 Poverty Line)
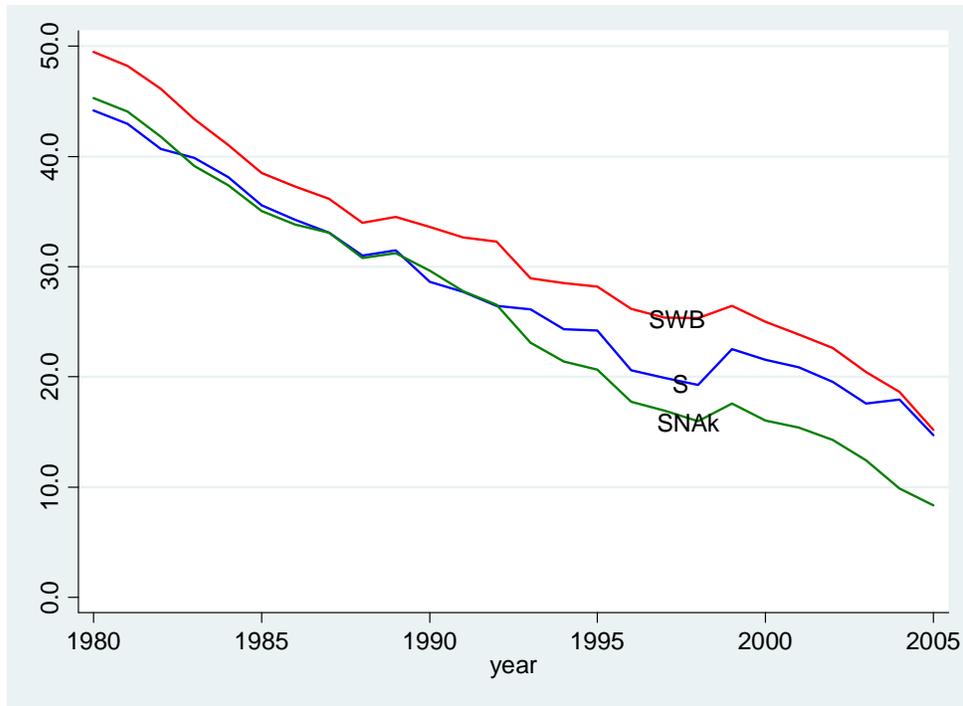
Mean growth from national accounts, poverty from surveys

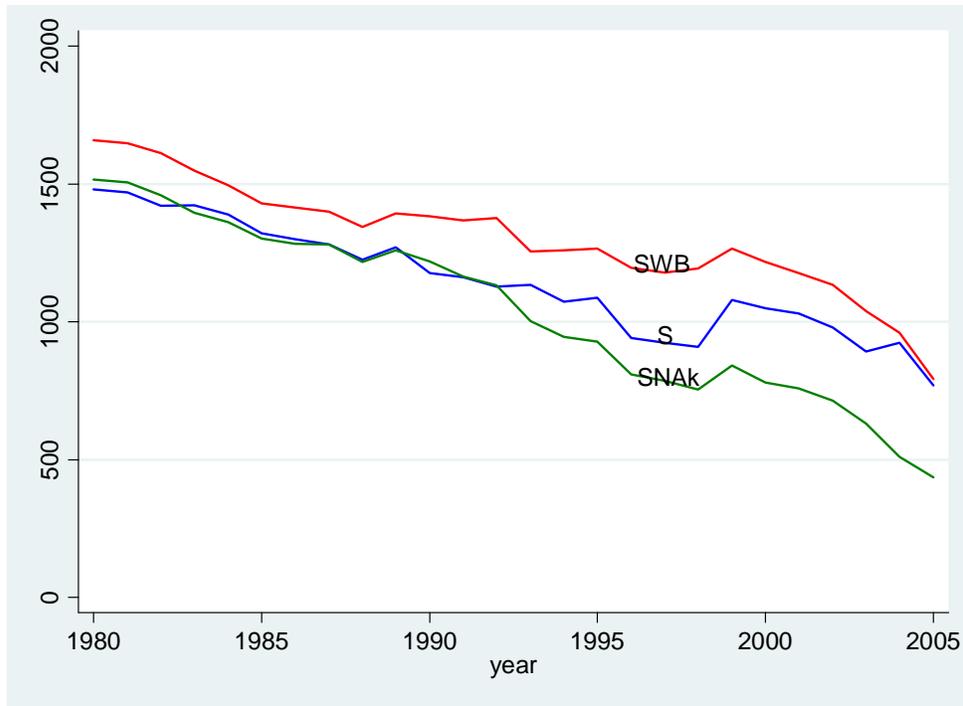**Figure 3.3b: Number of Poor in Millions, Developing World, 1980-2005 ($1.08 Poverty Line)**

Figure 3.4a: Percentage of Population Poor, Developing World, 1980-2005 ($2.16 Poverty Line)
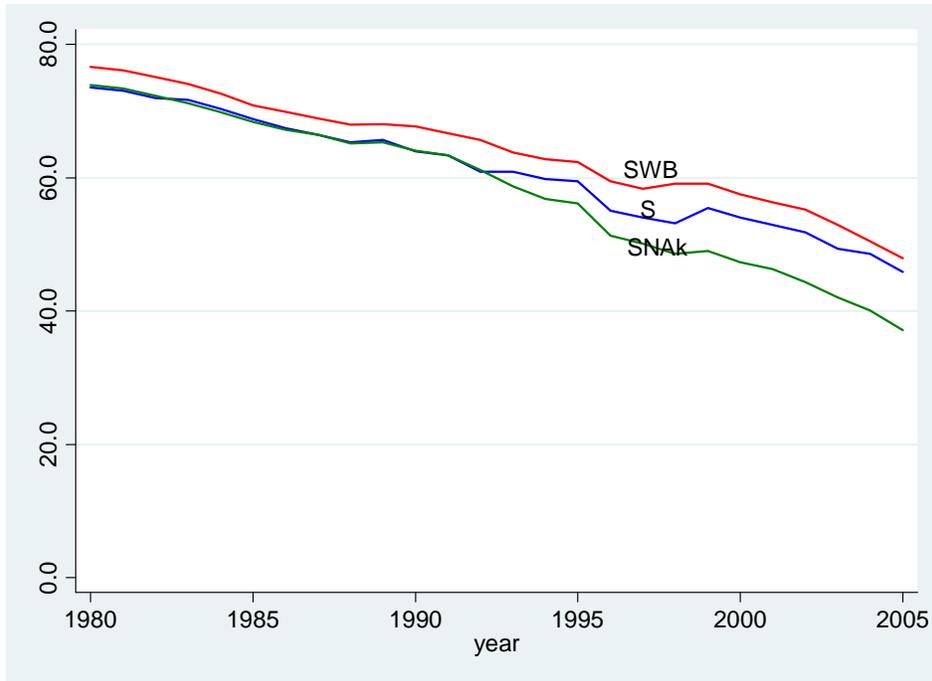
Figure 3.4b: Number of Poor in Millions, Developing World, 1980-2005 ($1.08 Poverty Line)
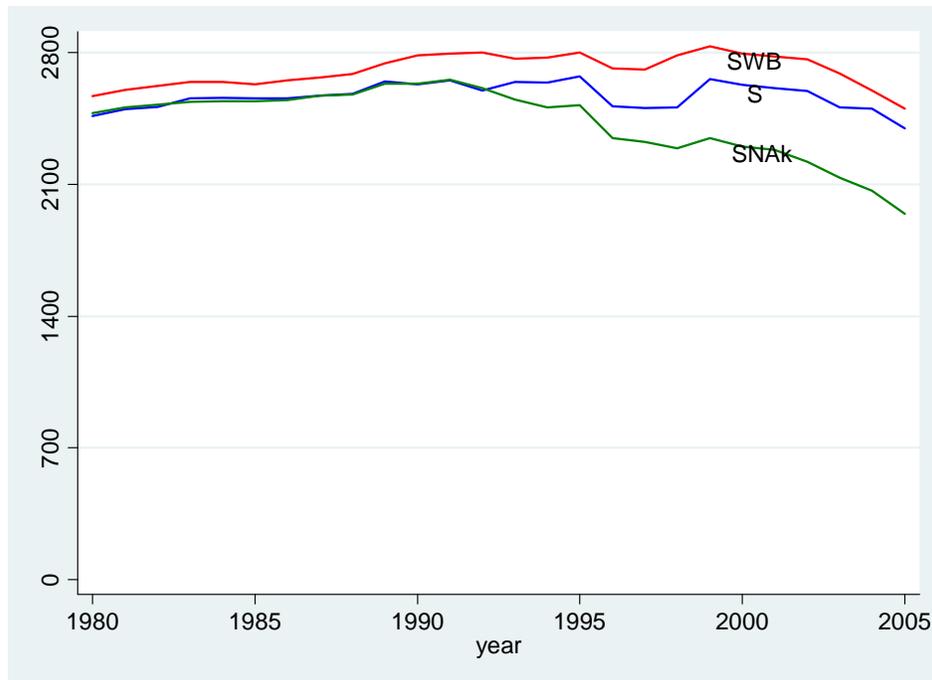
Note: S refers to collection of poverty non-World Bank website data (e.g. WIDER); SWB refers to World Bank data obtained from its website; SNAk is the survey to national accounts ratio kept constant at its 1987 value for each country.

Until the early 1990s, the conventional method for estimating poverty was to obtain the distribution from household surveys and impose the mean of per capita consumption obtained from national accounts data. In the 1990s, starting with the World Bank World Development Report 1990 (WDR 1990), the method changed to obtaining poverty from survey means and survey distributions. But in discussions about the impact of growth on poverty, the conventional procedure still remains to use *survey* based poverty measures of poverty and *national account* (NA) based measures of growth (e.g. WDR (1990), Dollar and Kraay (2001), Datt and Ravallion (2002), Besley and Burgess (2003)).

This questionable procedure of inferring survey based poverty trends from NA estimates of consumption growth was dubbed the "Peter-Paul" problem in *Imagine,* i.e. using survey based poverty and growth from national accounts was akin to using Peter's income to determine Paul's poverty. There is only one consistent method of deriving or estimating the impact of growth on poverty—average growth should be calculated from the same source as the growth in individual incomes.

When the growth rate of survey means is close to the growth rate of national account means, the S/NA ratio stays constant. This is what was observed in most of the world prior to 1980s. The fact that the S/NA ratio is less than unity is not disturbing, and nor is that it has declined. But the magnitude of the level significantly below unity and the pace of this decline poses serious problems for analysis of trends in poverty.

Assuming that the NA *growth* rate is correct, declining S/NA ratio means that poverty is overstated—the more the decline, the greater the overstatement. To reiterate, the SNAk measure uses the same growth rate for each country as the national accounts, at least since 1987. In the case of India, the decline of S/NA from 71 to 49 percent (1987 to 2004/5) is a decline of 35 percent, or an overstatement of poverty of about 20 percentage points!

Regardless of the method of poverty calculation, the estimated figures for 2005 are revealing. They show the following levels of $1.08 poverty for the three different means

and methods of poverty estimation, SWB, S and SNAk measures—15.2 percent, 14.7 percent and 8.4 percent, respectively. This means that about the time the World Bank and associated international organizations like the UN were getting serious about the Millennium Development Goal of 15 percent in 2015, the world had already reached that level a decade earlier. Which highlights one of the major results of this paper—it is time to raise the poverty line.

Existing Poverty Lines: Too Low

According to our estimates of world poverty, "only" 20 percent of the world population was poor in 2001 (survey means) and only 15 percent poor in the same year if the declining survey to national accounts ratio is frozen for each country at its 1987 value. Even the "high" World Bank estimate of poverty in 2001 is "only" 23.6 percent poor in 2001, and 19 percent in 2004. The previous sections have documented that a large part of the difference in our reproduction of World Bank data and World Bank data arises from the unusually high World Bank poverty numbers for India—almost 2 percentage points of global poverty. Little difference was obtained between ours and WB estimates for sub-Saharan Africa.

These low poverty estimates are based on a very low level of living, hence, the term absolute poverty. What these low levels of numbers signify is that the world poverty problem is different today—it is more of a relative poverty problem than a problem of absolute poverty. Of course, almost half of sub Saharan Africa is absolutely poor, but this

continent contains only about 300 million absolute poor; and most of the rest of the developing world is not absolutely poor.

Latin America and the MENA region (Middle East and North Africa) have for more than a decade now recorded absolute dollar a day poverty levels in the single digits. For both these regions, the domestic, local poverty lines are above $2 a day. The former Soviet Union and Eastern Europe economies do not have much $1 a day poverty, which leads one to the conclusion that international agencies should start developing a *relative* measure of poverty.

Table 3.2a: Poverty Head Count Ratio, in %, 1981-2005 ($1.08 Poverty Line)

	Year				
Region	1981	1990	1993	2001	2005
World Bank data and varying S/NA					
Sub Saharan Africa	43	45	46	40	37
South Asia	60	45	40	36	24
East Asia	58	34	25	18	6
Central Asia	4	4	13	9	6
Latin America	13	15	14	11	10
Middle East + North Africa	6	4	2	4	3
World	48	34	29	24	15

All available data and varying S/NA

Region	1981	1990	1993	2001	2005
Sub Saharan Africa	38	45	41	39	36
South Asia	45	27	37	26	22
East Asia	56	32	21	16	4
Central Asia	5	5	9	8	5
Latin America	14	20	19	17	15
Middle East + North Africa	6	4	1	4	3
World	43	29	26	21	15

All available data and Constant S/NA ratio

Region	1981	1990	1993	2001	2005
Sub Saharan Africa	38	45	42	41	37
South Asia	49	26	25	12	5
East Asia	56	35	22	12	1
Central Asia	5	5	8	7	5
Latin America	14	20	19	16	15
Middle East + North Africa	6	4	2	2	2
World	44	30	23	15	8

Source: World Bank, WIDER, author's calculations

Table 3.2b. Number of Poor, in millions, 1981-2005 ($1.08 Poverty Line)

		Year			
Region	*1981*	*1990*	*1993*	*2001*	*2005*
World Bank data and varying S/NA					
Sub Saharan Africa	170	227	255	271	275
South Asia	551	499	473	490	348
East Asia	841	567	447	336	112

Central Asia	2	2	7	5	3
Latin America	47	64	64	59	58
Middle East + North Africa	15	14	6	14	11
World	1626	1373	1252	1176	807

All available data and varying S/NA

Sub Saharan Africa	150	226	227	262	267
South Asia	419	302	438	361	324
East Asia	816	544	365	299	82
Central Asia	2	3	5	4	3
Latin America	52	87	87	87	86
Middle East + North Africa	14	13	5	16	12
World	1453	1174	1126	1029	774

All available data and Constant S/NA ratio

Sub Saharan Africa	150	225	232	274	275
South Asia	454	293	289	165	79
East Asia	816	595	383	234	10
Central Asia	2	3	4	4	3
Latin America	52	87	89	86	84
Middle East + North Africa	14	13	5	7	6
World	1489	1216	1002	770	456

Source: World Bank, WIDER, author's calculations

Table 3.3a: Poverty Head Count Ratio, in %, 1981-2005 ($2.16 Poverty Line)

	Year				
Region	1981	1990	1993	2001	2005
World Bank data and varying S/NA					
Sub Saharan Africa	72	74	74	69	65
South Asia	92	88	85	82	73
East Asia	87	70	62	48	35
Central Asia	20	21	36	23	16
Latin America	31	34	33	30	28
Middle East + North Africa	28	19	18	22	18
World	76	68	64	56	48
All available data and varying S/NA					
Sub Saharan Africa	67	72	69	66	62
South Asia	86	77	84	74	70
East Asia	84	67	56	43	31
Central Asia	16	18	27	27	17
Latin America	34	42	41	37	36
Middle East + North Africa	26	19	16	23	18
World	73	64	61	53	46
All available data and Constant S/NA ratio					
Sub Saharan Africa	67	72	70	70	66
South Asia	88	76	74	59	47
East Asia	84	68	57	38	26

Central Asia	16	18	25	20	14
Latin America	34	42	41	36	35
Middle East + North Africa	26	19	17	18	14
World	73	64	59	46	37

Source: World Bank, WIDER, author's calculations

Table 3.3b. Number of Poor, in millions, 1981-2005 ($2.16 Poverty Line)

	Year				
Region	1981	1990	1993	2001	2005
World Bank data and varying S/NA					
Sub Saharan Africa	281	376	408	463	477
South Asia	849	980	1005	1122	1078
East Asia	1259	1179	1096	912	689
Central Asia	9	10	19	13	10
Latin America	113	151	156	156	156
Middle East + North Africa	66	60	59	85	73
World	2576	2755	2743	2752	2482
All available data and varying S/NA					
Sub Saharan Africa	261	366	381	443	455
South Asia	798	861	990	1023	1037
East Asia	1222	1128	988	828	604
Central Asia	7	9	14	15	10
Latin America	125	185	190	196	198
Middle East + North Africa	62	59	52	88	76

World	2475	2609	2615	2593	2379

All available data and Constant S/NA ratio

Sub Saharan Africa	261	365	387	467	483
South Asia	808	850	878	814	698
East Asia	1222	1141	1003	722	504
Central Asia	7	9	13	11	8
Latin America	125	186	191	192	194
Middle East + North Africa	62	60	56	68	56
World	2485	2611	2528	2275	1943

Source: World Bank, WIDER, author's calculations

Despite rapid per capita growth, the world poverty line has not shifted since the original $1 a day poverty line based on 1985 PPP prices. Indeed, the 1993 PPP poverty line of $1.08 a day, deemed to be the "equivalent" of $1 a day, 1985 prices, entailed a reduction in the poverty line of almost 22 percent (see *Imagine* for details). US inflation was close to 30 percent between 1985 and 1993; since US is the numeraire in PPP calculations, it follows that international price inflation was close to 30 percent. Hence, $1 a day in 1985 prices is approximately equal to $1.3 a day in 1993 PPP prices.

It is necessary to reevaluate what it means to be poor; this, by implication, means that it is necessary to raise the international poverty line. What should the new international poverty line be? A common, and correct, presumption is that poverty lines should rise with economic development. Ahluwalia, Carter and Chenery (1979) present the first set of world poverty estimates, calculated for 1975. Since then, per capita consumption in the

developing world has more than doubled. The elasticity of the poverty line with respect to average consumption is obtained as 0.63 as illustrated by the following regression for 92 traditional developing countries in 1993:

$$\log(\text{poverty line}) = -0.15 + 0.63*\log(\text{per capita consumption})$$

Data for 92 Countries; R^2=0.65; t-Statistic (log consumption): 12.04

If the dollar a day in 1985 prices is deemed as the appropriate poverty line, then the new poverty line 20 years later in 2005 prices should be higher in real terms, and higher by the amount indicated by the above regression. Mean per capita consumption in the developing world in 2005 was 52 percent (or log 42 percent) higher than in 1993. Given a log elasticity of 0.63, the new (log) increase in the poverty line should be 0.63*42 or log 26 percent higher. Thus, the $1.30 per capita per day in 1993 prices needs to be raised by 30 percent (equivalent of log 26 percent). Given an initial poverty line of $1 in 1985 PPP or $1.30 in 1993 PPP, this yields $1.69 as the new poverty line in 1993 prices. Between 1993 and 2005, the US GDP price deflator has increased by 28 percent, which yields an equivalent line in 2005 PPP$ of 2.16 (1.69*1.28). The international community has been using $1.08 and $2.16 as the poverty lines in constant 1993 international prices. It is suggested that $2.16 be the new poverty line in PPP 2005 prices.

Latin America has been using a > $2 a day poverty line for some time; the average country-specific poverty line in Latin America there is a high PPP$5.6 a day; in sub-Saharan Africa,

the average country-specific line is about $1.6. The region with poverty lines needing revision is the region with the fastest growth, Asia. Figure 3.3—which is based on the regression presented above—poignantly illustrates the large existing gap between mean consumption levels and poverty lines in Asia, as well as the rest of the developing world. It is apparent that a majority of countries—and especially China, Indonesia and India—had, in 1993, poverty lines that were far below their *predicted* poverty lines.

Poverty also is relative. Who the Malaysians (or Argentinians) consider poor will be considered middle class in most parts of Asia. It does not make the poor Korean any happier to know that several hundred million people are poorer in the rest of the world. Each country has its own poverty line to reflect these different country averages of standard of living. We have seen above that own poverty lines, especially in Asia, are falling behind the poverty lines which *should* be present. Asian and world poverty has declined significantly, and the concept of absolute poverty has receded. Today, absolute poverty in most parts of the developing world is relative; hence the need for a new, and higher, poverty line.

Figure 3.5: National Poverty Lines and Per Capita Consumption, 1993
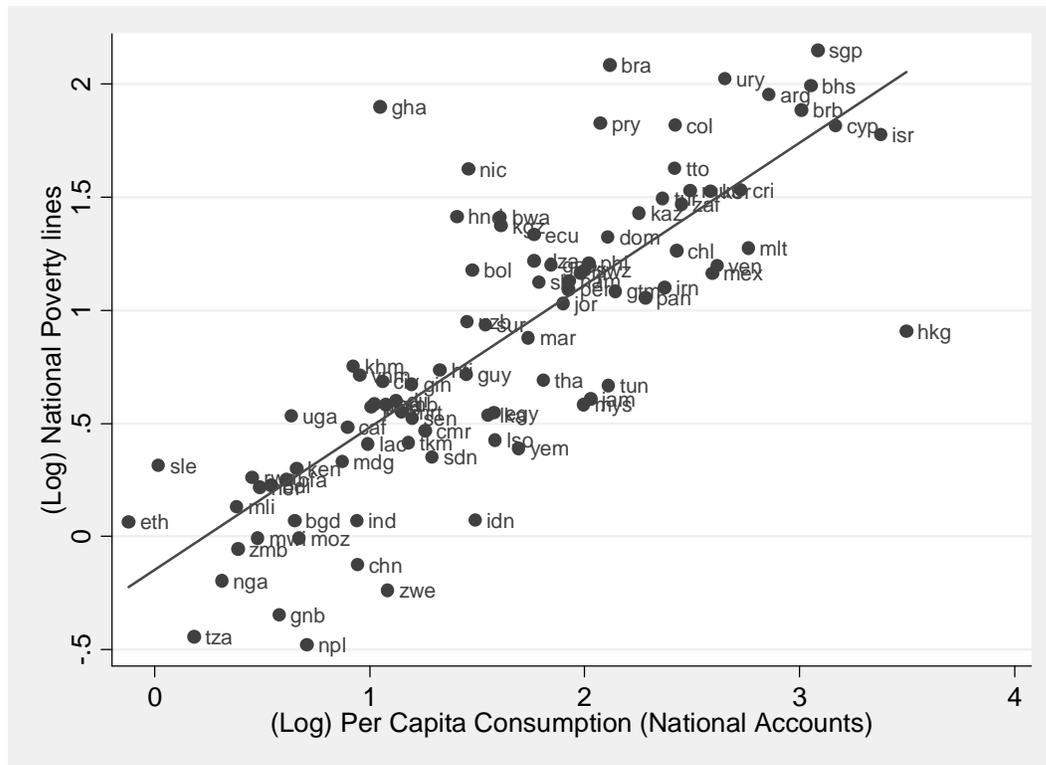
Conclusion

World poverty today (circa 2005) is primarily a sub-Saharan Africa problem. In that region, about half of the population exists on less than the very low absolute poverty line of a dollar a day. The number of absolute poor in Africa is around 275 million. The major challenge for the world community is to bring this level of poverty down to Asian, Latin American and Middle Eastern levels i.e. less than 10 percent poor.

The rapid rates of growth experienced in most of the developing world over the last 25 years, and especially over the last 10, has brought about large declines in absolute

poverty, for both the one and two dollar a day poverty lines. A striking feature of this development has been the improvement of inequality in the developing world, and this improvement has occurred for all the estimates of per capita consumption and distribution that exist. This is an intuitive result, and has occurred because the poorest and the most populous region in the world in 1980, Asia, has witnessed rapid progress. Such progress has been observed in the two giant economies, China and India; it has also occurred in Thailand, Vietnam, Bangladesh, Pakistan, Laos, and Indonesia. It is hard to find one nation in Asia that has fallen behind, though data are not available for the war torn economy of Afghanistan or the closed economy of Myanmar.

The rapid decline in poverty, and to levels unimaginable even a decade ago, means the time has come to revise upwards the absolute poverty line. This line has stayed constant for almost 25 years, and indeed was *lowered* when the World Bank changed this line from $1 a day, PPP 1985 prices to $1.08 a day, PPP 1993 prices. As happens in all countries, our notion of absolute poverty changes (increases) with the average level of development. These perceptions are changing, and a sign of success is that we are moving towards a notion of relative poverty. As a first approximation, it is suggested that we increase the international poverty line to $1.69 in 1993 PPP prices (or about $2.16 in 2005 PPP prices), a level some 45 percent higher, in real terms, than the old $1.08 poverty line. Coincidentally, the world poor according to this new poverty line would be close to 35 percent, a level that the world was dealing with for the much lower one dollar a day line in 1985.

On its way to recommending this new poverty line, this chapter also examined some old assumptions about the determinants of poverty. In particular, the question of whether and how initial inequality affects poverty decline was explicitly taken up. The answer is in the negative: there is no theoretical, or empirical, basis to think that initial inequality affects future poverty change. Since poverty depends on the congestion near the poverty line, the response of poverty decline is different for different for different poverty lines and different income levels. For example, in 1981, for the $1.08 poverty line, a 10 percent increase in per capita expenditures would be expected to result in a 5.5 percentage point decline in absolute poverty; in 2005, the same growth would result in only a 3.5 percentage point decline. For the $2.16 poverty line, the corresponding responses are the reverse: a 10 percent growth in 1981 would have led to a poverty decline of 3.5 percentage points; today, that same growth would mean a larger, 5.1 percentage point decline.

Appendix I

For calculation of poverty one needs three items of data—the distribution of consumption, the mean, and the poverty line. Countries undertake surveys only on a periodic basis, yet figures for individual country, and world poverty, are computed on an annual basis. How this is possible is explained below.

Poverty line: This is defined on the basis of 1993 PPP consumption exchange rates published by the World Bank.

Distribution of consumption: There are several sources of data on distribution, and prominent in this collection is the Deininger-Squire effort of compiling inequality data. This exercise has now been undertaken by WIDER and is the primary source of information on distribution. Poverty is defined on the basis of per capita consumption. Several countries around the world, and primarily in Latin America, have not undertaken any consumption survey. For such countries, the income distribution is taken to be equal to the consumption distribution.

Mean consumption: This is available from the survey in local currency. All local currency means are converted to means and therefore distribution in 1993 PPP consumption prices. If a consumption survey was undertaken then the mean is used. If no consumption survey was undertaken, then the income survey to national accounts ratio is assumed to be the same for consumption. Multiplying this S/NA income ratio by the national accounts

consumption mean (in 1993 prices) yields an estimate of a distribution and mean for the year in question. If a country has both a consumption and income survey, then only the survey to national accounts ratio for the consumption surveys is used.

For years for which there is no survey: The lagging survey to national accounts ratio is assumed for the years going forward and for years going back, in reverse. Assume that a survey was undertaken for two years 1985 and 1995. The national accounts estimate is available for all the years. This estimate is multiplied by the S/NA ratio for all years before and including 1994, and for all years subsequent, the 1995 S/NA ratio is used. With this method, data are available for all the years for a country if even it had only 1 income or consumption survey.

A country with no survey data is not used in the analysis. It enters the global poverty figures based on the average poverty ratio in the region and year in question.

References

Adams, Richard H. J. R. and John Page (2003). "Poverty, Inequality and Growth in Selected Middle East and North Africa Countries, 1980 – 2000", *World Development*, vol. 31, no. 12, pp. 2027-2048.

Ahluwalia, Montek S., N. Carter, and H. Chenery (1979). "Growth and Poverty in Developing Countries", *Journal of Development Economics* 6, 399-341.

Anderson, W.H. Locke (1964). "Trickling down: The relationship between economic growth and the extent of poverty among American families", pp. 511-524, Vol. LXXVIII, No. 4, *Quarterly Journal of Economics*, November.

Banerjee, Abhijit and Thomas Piketty (2005). Top Indian Incomes, 1982-2000, *World Bank Economic Review*, vol 19,1, pp. 1-20.

Besley, Tim and Robin Burgess (2003). Halving Global Poverty, *Journal of Economic Perspectives*, XXX.

Bhalla, Surjit S. (1997). "Economic Freedom and Growth Miracles: India is Next", World Bank - IMF Annual Meetings, Hong Kong 1997.

Bhalla, Surjit S. (2002a). "Growth and Poverty in India – Myth and Reality", in G. Rao (ed.), *Development Poverty and Fiscal Policy: Decentralization of Institutions,* Oxford University Press, Oxford.

Bhalla, Surjit S. (2002b). *Imagine there's no country: Poverty, Inequality and Growth in the Era of Globalization*, Institute of International Economics.

Bhalla, Surjit S. (2003a). "Recounting the Poor: 1983-99", *Economic and Political Weekly*, Page 338-349, January 25-31.

Bhalla, Surjit S. (2003b). *Not as Poor, nor as Unequal, as you think: India, 1950-2000*. Report on research project entitled *The Myth and Reality of Poverty in India*, Planning Commission, Government of India, May.

Bhalla, Surjit S. (2003c). "Crying Wolf on Poverty: Or How the Millennium Development Goals of poverty reduction have already bean reached", *Economic & Political Weekly*, vol 38, # 27, July 5, pp. 2843-2856.

Bhalla, Surjit S. (2004b). "Poor Results and Poorer Policy: A Comparative Analysis of Estimates of Global Inequality and Poverty", *CESifo Economic Studies,* Vol. 50, No. 1/2004.

Bhalla, Surjit S. (2004b), "Pro-Poor Growth: Measurement and Results", In Ahmed, Sadiq and Suman Bery (eds.), Annual World Bank Conference on Development Economics 2003, World Bank and NCAER, New Delhi.

Bhalla, Surjit S. and Associates (2003). *End of Asian Poverty?,* Report prepared for research project RETA-5917. Asian Development Bank, Manila, May.

Bhalla, Surjit S. and Tirthatanmoy Das (2005). "Pre- and Post Reform India: A Revised Look at Employment, Wages and Inequality", *India Policy Forum*, 2005/6, vol. 2, pp. 183-254

Bhalla, Surjit S. and Homi Kharas (1991a), chapters 2, 3 and 4 in World Bank *on Malaysia,* 'Growth, Poverty Alleviation and Improved Income Distribution in Malaysia: Changing Focus of Government Policy Intervention', No. 8667-MA, June.

Bourguignon, François (2004). "The Poverty-Growth-Inequality Triangle", Paper prepared for a lecture delivered at the "Indian Council for Research on International Economics Relations", Delhi, February 4.

Burnside, Craig and David Dollar (2000). "Aid, Policies and Growth", *American Economic Review*, 90(4), pp. 847-868.

Chakravarti, Ashok, *Aid, Institutions and Development,* forthcoming, Oxford University Press, 2005.

Chen, Shaohua and Martin Ravallion (2001). "How Did the World's Poorest Fare in the 1990s?", *Review of Income and Wealth*, 47:283-300.

Collier, Paul and David Dollar (2000). *Can the World Cut Poverty in Half? How Policy Reform and Effective Aid Can Meet International Development Goals.* Development Research Group, World Bank, Washington, DC, Photocopy (July).

Datt, Gaurav and Martin Ravallion (1992). "Growth and Redistribution Components of Changes in Poverty: A decomposition with Application to Brazil and India", *Journal of Development Economics*, 38: 275-295.

Datt, Gaurav and Martin Ravallion (2002). "Is India's Economic Growth Leaving the Poor Behind?", Volume 16, Number 3, Summer 2002, Pages 89-108, *Journal of Economic Perspectives.*

Deaton, Angus (2001). "Counting the World's Poor: Problems and Possible Solutions",. *World Bank Research Observer*, volume 16, No. 2, Fall.

Deaton, Angus (2004). *Measuring Poverty in a Growing World (or Measuring Growth in a Poor World)*, Woodrow Wilson School, February. Chapter XXX, this volume.

Deininger, Klaus and Lyn Squire (1996). "A New Data Set Measuring Income Inequality", *World Bank Economic Review,* vol.10(3), 565-592.

Dollar, David and Art Kraay (2002). "Growth Is Good for The Poor", *Journal of Economic Growth*, 7, pp. 195-225.

Dubey, A. and S. Gangopadhyay (1998). *Counting the Poor: Where are the Poor in India?* Sarvekshana Analytical Report 1. New Delhi: Department of Statistics, Government of India.

Easterly, W., R. Levine and D. Roodman (2003). *New Data, New Doubts: Revisiting Aid, Policies, and Growth,* Working Paper No. 26, Center for Global Development, Washington DC.

Kakwani, Nanak (1980). *Income Inequality and Poverty: Methods of Estimation and Policy Applications.* Oxford: Oxford University Press.

Kakwani, Nanak (1993). Poverty and Economics Growth with Application to Côte D'

Ivoire, *Review of Income and Wealth* 39, pp. 121-139.

Klasen, Stephan (2001). "In Search of The Holy Grail: How to Achieve Pro-Poor

Growth?", mimeo.

Kravis, Irving B., et al., (1975), A *System of International Comparison of Gross Product

and Purchasing Power*, Baltimore, John Hopkins University Press.

Milanovic, Branko (2002a). "True World Income Distribution, 1988 and 1993: First

calculations Based on Household Survey Alone"' *Economic Journal*, 112:51-92.

Ravallion, Martin (2000). "Should Poverty Measures be Anchored to the National

Accounts?", *Economic and Political Weekly*, Pp 3245-3252, August 26- September 2.

Ravallion, Martin (2002). "Have we already met the Millennium Development Goals for

Poverty?"*, Economic and Political Weekly*, Nov. 16-22.

Ravallion, Martin (2003). "Measuring Aggregate Welfare in Developing Countries: How

Well Do National Accounts and Surveys Agree"*, Review of Economics and Statistics*,

85(3): 645-52.

Ravallion, Martin and Gaurav Datt (1999). *When Is Growth Pro-Poor? Evidence from the Diverse Experiences of India's States.* Policy Research Working Paper WPS 2263, World Bank.

Reddy, G. Sanjay, and Thomas W. Pogge. (2002). "How Not to Count The Poor", www.socialanalysis.org. Chapter XXX, this volume.

Sachs, Jeffrey D. (2005). *The End of Poverty,* The Penguin Press, New York.

Sala-i-Martin, Xavier (2002). *The Disturbing Rise of Global Income Inequality.* NBER Working Paper 8904. Cambridge, MA: National Bureau of Economic Research.

Sala-i-Martin, Xavier (2006). *The World Distribution of Income: Falling Poverty and Convergence, Period.* Quarterly Journal of Economics, May, vol. 121:2, p. 351-397.

Srinivasan, T. N. (2004). "Comments", in Sadiq and Suman Bery ed. Annual World Bank Conference on Development Economics 2003, World Bank and NCAER, New Delhi.

WIDER, United Nations University (2008). Inequality Data Set,

http://www.wider.unu.edu/

World Bank (1990). *World Development Report 1990: Poverty*, Oxford University Press.

World Bank (1991). *Growth, Poverty Alleviation and Improved Income Distribution in Malaysia: Changing Focus of Government Policy Intervention* Report 8667-MA. Washington, DC: World Bank.

World Bank (2001). *World Development Report 2000/2001: Attacking Poverty*, Oxford University Press.

World Bank (2003b). *World Development Indicators* (and CD Rom), Washington, DC.

[1] This chapter is a revised version of a paper presented at The Initiative for Policy Dialogue and Rockefeller Foundation Global Poverty Workshop, March 31-April 1, 2003. I am extremely thankful to Tirthanomoy Das for excellent research assistance and an anonymous referee for helpful comments.

[2] Recently, the World Bank has come out with new estimates of PPP data with 2005 as the base year. These estimates are controversial because they show, somewhat inexplicably, that per capita incomes in China, India and most parts of Asia are about 40 percent lower than what was believed only yesterday.

[3] There are two World Bank estimates of poverty reported in this paper: the actual World Bank estimates as reported in Chen-Ravallion (2004) and our estimates of the same, based only on the World Bank method and World Bank data. It is expected that the two will differ, but it is also expected that the two estimates will not differ by much. As it happens, the figures are very close for 2001 and 2004 but somewhat apart in the earlier years.

[4] Sala-i-Martin essentially follows the ACC method while this paper offers a method which uses national account *growth* rates and survey *means*.

[5] The reader is referred to *Imagine*, for an extensive discussion of the issues related to poverty measurement.

[6] Inequality data (distributions) have been gathered from three major sources, namely, Deininger and Squire (1996), WIDER (2008), and data collected from various projects undertaken at Oxus Research: *End of Asian Poverty?*, a report prepared for the Asian Development Bank; *Not as Poor, nor as Unequal as you think*, a report prepared for the Planning Commission, government of India; and the Institute of International Economics publication, *Imagine...* Survey means for middle-eastern economies have been obtained from Adams- Page (2003). Survey data for 18 Asian countries were obtained from the *End of Poverty?*; for other countries the survey means are taken from various sources; if an independent official source of data was not available, then survey means data were obtained from the World Bank websites: the old, www.worldbank.org\povmonitor and the new website http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp.

[7] The World Bank data allows for computation of poverty for 61 countries – 57 traditional developing countries and 4 countries from central Asia (formerly part of the Soviet Union). Our sample consists of 87 traditional and 4 from central Asia. The standard practice (and followed by us as well) is to impute the average percentage poor rate to countries with missing data in order to compute world averages.

[8] It has been speculated (see Ravallion (2000)) that the non-government organizations (NGO) population in India maybe causing a significant part of the divergence between survey and NA means, and growth rates. As pointed out in Bhalla (2003c) the contribution of this factor to overall divergence in survey and NA means is very, very small.

[9] World Bank poverty site http://iresearch.worldbank.org/PovcalNet/PovcalNet.html. It reports an urban poverty level of 21.9 percent and a rural poverty level of 48.88 percent for the $1.08 poverty line for 1993/94. The urbanization rate in India for that year was 26.2 percent. The weighted average of the two poverty levels is 41.8 percent.

[10] If the PPP exchange rate for income is taken (6.0 rather than 7.02) the Indian poverty line, in PPP terms, is not 1.08 but PPP$1.26 per capita per day.

[11] An identical exercise was carried out for three other survey years – 1983, 1987-88 and 1999-2000. While the average multiplier varied, the relative understatement of the different sectors of the population stays constant.

[12] Why this is happening is a major research undertaking; a likely cause is the wider choice of consumption items (which do not make it to the interview list of questions) and the increasing opportunity cost of time (people do not have time for the typical 5 to 6 hour interview – they have other work to do).

[13] Deaton's graph contains annual values of per capita expenditure; the chart reading has been transformed by us into a per capita per day reading rather than a per capita per year reading.

[14] I am thankful to Angus Deaton for pointing me towards Anderson's work.