
Recounting Poor People

This chapter is about the numbers of poor people in the world, and how such numbers have changed during the past 40 years, and especially the past 20. Why this exercise, one might justifiably ask. National governments bring out annual reports on the subject of who poor people are, how many of them there are, where they are located, and so on. The World Bank, which is dedicated to precisely the goal of removing poverty, brings out annual reports on the subject, and has produced three important volumes (*World Development Report* in 1980, 1990, and 2000) and hundreds of related documents. Of what importance could an additional report be, especially one emanating from the research confines of not only not a financial institution, but a mere researcher? If the results are broadly the same, what will be the value added? If the results are radically different, who will believe them? Precisely my sentiments.

But what if precisely the same methods as the World Bank's were used, along with the same published data, the same definitions, and the same techniques? What if the recount then showed vastly different and fewer numbers of poor people?

The recount suggests that the poverty numbers are very different. The differences can theoretically arise out of differences in exchange rates, growth rates of consumption, and "survey capture"; that is, the proportion of consumption (or income) that the survey captures of national accounts (known as NA; see the next chapter for a detailed discussion). With this important caveat, I obtain the following results: The World Bank's figure for the number of poor people in 1999 is 1.15 billion or 22.7 percent of the population; my replication of the World Bank's method and data

yields 19.1 percent; and my own survey capture data yield 12.8 percent.¹ Using a different and higher poverty line (\$1.50) and NA means deflated by 15 percent to account for underestimation and undercoverage of rich people in household surveys, I obtain the “final estimate” of 688 million in 1999 and 650 million (13.1 percent of the population) in 2000.

Whether 1.15 billion (or 620 million or 650 million), we should care that the number of poor is a very large number. We should also care because we are told that the number has stayed broadly constant for the past 15 years, and especially the 15 years of the famed globalization period, the period when two poor nations, China and India, ostensibly showed remarkable progress in winning *their* wars on poverty. We should care because, besides the important goal of monitoring, the numbers of poor people affect the capacity of nonpoor people to help them. If the number is too large, then resources have to be spread thinly. If the number is small, then resources can be targeted more finely. The mean daily income of poor people was estimated to be about \$0.79 in 2000. This means that the average poor person needs \$0.29 extra a day to push her above the poverty line of \$1.08 per day.

Thus, simple mathematics tells us that we can today live in a world free of poverty. If there are 455 million poor people (adjusted NA data with the \$1.08 poverty line), it will cost the international aid-giving community only \$48 billion annually to eliminate poverty as we know it; if there are 620 million poor people (survey means), the amount needed is \$65 billion—and in 2000, aid flows were roughly \$60 billion.² We know where poor people are (mostly in sub-Saharan Africa and parts of Asia), so targeting is not a problem. If 1.15 billion people are poor, then the annual aid effort involved to eliminate poverty (on a flow basis) is \$121 billion a year—somewhat less manageable, and perhaps why the aid agencies have asked the industrialized world to shell out an extra \$50-60 billion to end poverty.

If the number of poor people is actually 650 million, then the head count ratio (HCR) is 13.1 percent, given that the developing world’s population was 4.93 billion in 2000. This HCR is put in perspective by noting that the goal of the international institutions, as expressed via the UN Millennium Declaration, is for the percentage of poor people in the world in 2015 to be half the number prevailing in the early 1990s—i.e., half of 30 percent, or 15 percent. Thus, toward that goal, 15 years *hence*, and *already achieved today*, resources are being raised to fight the nonexistent

1. Part of the difference between the World Bank estimate (22.7 percent) and mine (12.8 percent) is due to the use of consumption PPP versus official PPP estimates; and part may be due to different estimates of the survey capture ratio for different countries.

2. The purchasing power parity (PPP) dollar is almost the same as the US dollar for the industrialized world. There has been inflation of about 20 percent since 1993; so all PPP 1993 numbers can be multiplied by 1.2 to arrive at estimates of current US dollars.

poverty of tomorrow. Some might say it does not get more Kafkaesque than this.

This is only part of the different results reached. But now the reader is asked for patience with the brickwork. Documenting what ultimately is a simple counting number is an involved exercise, made considerably more complicated when the new numbers, from an individual researcher, fly directly in the face of so much received wisdom (from an authoritative source like the World Bank). It has been made more difficult by the sure knowledge that provision of the usual bounty of evidence would not suffice—there can be no ambiguity about the *new* numbers.

Definitions and Methods

How do we know the consumption levels of the poor? Via national household *surveys* of consumption. What if these surveys are not conducted annually, as they most often are not? In that all too common instance, NA data are used to “update” the mean consumption figures in the nonsurvey years. How is the update done? By imputing the NA real consumption growth to the observed real survey mean of consumption in the previous survey year. This is the method used by Chen and Ravallion (2001) and in the first such methodological study, by Ravallion, Datt, and van de Walle (1991).

Are the data on distributions obtained for the present study different from those available at the World Bank? No. The NA data are also the same (indeed, obtained from the World Bank’s *World Development Indicators* CD-ROM, and supplemented for 2000 with the IMF financial statistics CD-ROM). Are the methods the same? Yes.³ Then how is it possible that radically different conclusions have been reached, on both the level of absolute poverty today, and its trend since 1985?

Using Different PPP Exchange Rates

Per capita income and consumption data (surveys or NA) are available in nominal units of the local currency for each country and for each year. These data are converted into purchasing power parity (PPP) figures using an exchange rate of local currency to PPP.⁴ How the PPP exchange

3. As argued in other chapters, the data used in this study are possibly the most extensive to date, and the methods used for generating detailed distributions from limited data are somewhat more advanced. But none of the conclusions about considerably reduced poverty hinge on either new data or advanced methods.

4. The PPP exchange rates can be very different from US dollar exchange rates. For example, in 1999, the PPP exchange rate for India was Rs8.65 per PPP dollar, compared with an exchange rate of Rs43.1 per US dollar. The corresponding figures for China were 1.81 and 8.28.

rate is itself derived is not usually discussed, because it is considered either too involved a question, or not a question per se. It is involved because the PPP method has been developed by hundreds of researchers during the past 30 years. It is not considered a question because researchers take these data in the same manner they take for granted industrial production data, inflation data, or GDP data.

No one—not the official source of poverty figures, or any institution, or any outside researcher—is questioning the PPP estimates. This is not because everyone believes that these figures are accurate; it is only because no one has the capacity, or the resources, to come up with a “better” estimate of the PPP exchange rate. It is also recognized that PPP methods will improve with economic progress, and keep on improving for decades to come.

The estimates of the PPP exchange rate, and the corresponding *current* per capita income in PPP dollars, at 1993 prices, are available on the *World Development Indicators* CD-ROM. In 1987, for example, the per capita annual PPP income for Indonesia is reported as 2,354, for Ethiopia 717, and for India 1,665. That is, India is twice as rich as Ethiopia, and Indonesia is 50 percent richer than India—figures that pass the “smell” test.

If the data used by the present study and by Chen and Ravallion are the same, and if we are both using the same method (reliance on survey means), then we both should be obtaining identical results on income distribution, HCR, and so on. But we are not—indeed, the difference is as much as 10 percent of the developing world’s population. This study gets 13 percent as HCR for 1999, with survey means of consumption; Chen and Ravallion obtain 23 percent. What is causing this large wedge?

It appears that this large difference is being caused by the fact that I am using the published annual PPP exchange rates but the World Bank is using a separate exchange rate series, called the “consumption” PPP exchange rate. This PPP “consumption” exchange rate series was until recently *internal* to the World Bank, and even now it is available for only one year, 1993, and that only on the Web.⁵ The World Bank’s flagship data publication, *World Development Indicators*, has yet to publish this internal series.

According to the *World Development Indicators 2001*, the published PPP exchange rate is “based on price and *expenditure* surveys conducted by the International Comparison Programme (ICP) and represent[s] the conversion factors applied to equalize price levels across countries” (p. 293; emphasis added). Given that the exchange rates are based on expenditures, what is the additional derivation needed to determine a consumption PPP exchange rate? Does the published PPP exchange rate not pertain to

5. The World Bank estimates of poverty using the 1993 consumption exchange rates have been in circulation for the past 3 years, but only now these deflators been made publicly available via the Web, <http://www.worldbank.org/research/povmonitor>.

Table 6.1 Differences in income and consumption purchasing power parity (PPP) exchange rates, 1993

Region	PPP exchange rate ^a		Gap (percent) ^b
	Official	Consumption	
East Asia	167.3	164.6	1.6
South Asia	6.5	7.8	-18.3
Sub-Saharan Africa	98.5	93.5	5.2
Middle East and North Africa	1,302.4	1,305.2	-0.2
Central Asia	2.9	2.8	1.1
Latin America	54.4	54.2	0.3
Eastern Europe	12.7	15.8	-21.9
Industrialized world	137.8	145.0	-5.1
Developing world	176.6	175.4	0.7
World	159.7	160.1	-0.3

a. The official PPP exchange rate is available for each year on the *World Development Indicators* CD-ROM; the “consumption” PPP exchange rate is available only for 1993, and only at the Web site given below.

b. The gap is the (log) percent difference between the official PPP exchange rate and the new “consumption” exchange rates. A negative sign for the gap means that the mean income is understated by the consumption PPP method relative to the official PPP estimate.

Sources: World Bank, *World Development Indicators*, CD-ROM; World Bank Web site: <http://www.worldbank.org/research/povmonitor/>.

consumption? And is consumption not close to three-fourths of income for most poor countries?

Differences between World Bank Consumption and Official PPPs

In other words, it really should not matter whether one uses the published PPP rates or the “consumption” PPP exchange rates. And it does not—except for some key, heavily populated poor countries. Table 6.1 reports the population-weighted means for the two exchange rates for different regions of the world, and the gap between them; the gap signifies the amount by which the “consumption” PPP exchange rate is understating purchasing power relative to the official PPP exchange rate. For the world as a whole, and even for the developing world in the aggregate, there is virtually no difference between the two. Given that the PPP exchange rate is commonly accepted, and widely disseminated, this is an additional reason for ignoring the “consumption” exchange rate (which has the additional disadvantage of being available for only 1993).

Unfortunately, the new World Bank estimates of poverty are based on these recently disseminated “consumption” PPPs. Eastern Europe has the

highest underestimate, – 21.9 percent, but this does not matter for poverty calculations around the \$1.08 poverty line. For the largest poor region, in terms of the percentage of the world's poor, South Asia, the "consumption" PPP estimate is a huge 18.3 percent *lower* than the official PPP estimate. For sub-Saharan Africa, purchasing power is boosted upward by 5.2 percent by the World Bank consumption estimate. Aggregating these two results, one finds that sub-Saharan Africa is "richer" than South Asia by 23.5 percent—purely on account of using "consumption" PPP estimates rather than official PPP estimates.

Relative to official PPP estimates, the use of the consumption PPP data overstates poverty for India and understates it for Africa. For South Asia, the overstatement is in the neighborhood of 250 million extra poor people. For sub-Saharan Africa, the error is an understatement of poverty, but the magnitude is small, about 15 million. So for just these two regions, the use of consumption PPP estimates increases the world poverty estimates by 235 million.

What assumption reduces the average South Asian's purchasing power by 18 percent? Perhaps this new "consumption" exchange rate is closer to the "truth"; perhaps not. Unfortunately, there has been no vetting of this important issue, and there could not have been, because the consumption exchange rates have just been released on the Web, and only for a period 9 years ago, 1993.

Even if the consumption exchange rate is considered "better," how does one use it? How are the 1993 exchange rate values converted into values for other years? What happens if countries begin to open up (as all of South Asia has done during the past decade)? The use of the new consumption exchange rate series raises several new questions without answering any old questions. And it causes havoc with poverty figures calculated using official PPP exchange rates.

Before we move on, into the realm of PPP transformations, let us note one simple logical relationship about surveys, national accounts, and poverty lines—that is, there is a one-for-one correspondence between *an undercount in the surveys and a lowering of the poverty line, or between an overcount in the NA and a raising of the poverty line*. This was emphasized above in the discussion on the evolution of international poverty lines. It deserves a reiteration.

The point is that it really does not matter (within bounds) whether one believes that survey data are correct or NA data are correct—as long as one is consistent. If surveys are deemed correct, and it is believed that they correctly capture 86.5 percent of NA data (the unrecorded goes for the underestimation by rich people, and noncoverage of rich people, prisons, and nongovernmental organizations), and if it is believed that a survey-based poverty line of \$1.30 is the appropriate poverty line, then if NA data are to be used, the poverty line for NA data should be 1.30 divided by 0.865, or \$1.50.

As was noted above, there is a problem with the use of the consumption exchange rate for South Asia. The severity of this problem is indicated by the following analysis for India for just 1 year, 1993-94. Assume that the true unknown nominal consumption level is equal to X , and the known poverty line is PPP \$1.30. The consumption mean can either be approximated by the NA estimate for the same year (Rs547 per capita per month) or approximated by a household (National Sample Survey, 1993-94) mean for the same year (Rs328 per capita per month). Note that the survey mean is only 60 percent of the NA mean.

For 1993, the published PPP exchange rate for India is Rs5.95 (i.e., it took Rs5.95 to buy one current international dollar). The survey mean of Rs328 per capita per month⁶ translates into PPP \$54.60 (income data). Curiously, the World Bank Web site does not publish the survey mean for the 1993-94 Indian survey; nor does it publish the mean for the 1998 Indian household survey.⁷ But it does publish a mean for the 1992 survey, \$41.56, which translates into a consumption of \$42.84 in 1993-94 at 1993 PPP prices.⁸ Given the consumption exchange rate of Rs7.016 for 1993 (obtained from the World Bank Web site), this translates into a consumption level (in current and constant 1993 rupees) of Rs300.6 per capita per month for 1993. This “derived” survey mean of Rs301 for India for 1993-94 is Rs27 lower than the *actual* mean of Rs328!

Thus, there are two “gaps” involved in a calculation of mean consumption for India for 1993. First is the gap in the estimate of survey mean consumption in current 1993 rupees. The official figure for mean consumption is Rs328; the derived World Bank estimate for the survey mean (Rs300) is a full (log) 9 percent lower.⁹ There should really be a zero gap, because in both instances the survey estimate of the mean is being reported. The second gap occurs because of the difference between the consumption and official PPP exchange rates—Rs7.016 versus Rs5.95, a (log) gap of 16.5 percent. The two gaps—9 percent for a lower survey mean and 16 percent due to different PPP estimates—together amount to 25 percent lower average consumption; and this artificially lower

6. The official survey data are published separately for rural and urban India. The published mean for rural India is Rs281.4, and that for urban India is Rs458 per capita per month, with an urbanization rate of 26.3 percent.

7. Thus it appears that all the available national survey data are not being used to arrive at the survey means used for calculations of poverty. This insertion of “private judgments” is another reason to prefer national accounts data to survey data (see the next chapter).

8. Ravallion, Datt, and van de Walle (1991) and Chen and Ravallion (2001) suggest using growth in national accounts when survey data are not available; between 1992 and 1993, there was 3 percent per capita consumption growth in India.

9. This inexplicable gap persists over time; for 1997, the last date for which Indian survey data are posted on the World Bank Web site, the estimated gap in Indian survey consumption is 7.9 percent.

consumption means that poverty is artificially boosted in India by at least 15-20 percent for any given poverty line!

The World Bank's stated purchasing power of an Indian in 1993 is Rs300, and not Rs328 as yielded by surveys, and not Rs547 as yielded by NA. If the survey means are deemed accurate, then a \$1.08 poverty line has been transformed into a \$1.18 poverty line via the use of incorrect survey means, and a \$1.39 poverty line via the use of consumption PPP estimates rather than official PPP estimates! Note that for most parts of the world, the poverty line is \$1.08, because there are no differences between official survey means and World Bank survey means, and no differences between consumption and official PPP estimates (except in South Asia and Eastern Europe).

Now, if the NA data are deemed "correct," and if the NA data closely match the survey data in one country and not in another (as in China, where the survey/national accounts [S/NA] ratio in 1999 was 82.1 percent, in contrast to the Indian S/NA ratio of 55.7 percent in the same year), then for China the World Bank poverty line is \$1.32 (1.08 divided by 0.82) while for India the World Bank poverty line is \$2.50 (1.39 divided by 0.557).

No—there is no typo there. The World Bank poverty line for India in 1999 was not \$1.08 a day but \$2.50, and for China it was only \$1.39. It does not take much to calculate that for China the poverty level (independent of level of income or income distribution concerns) will be substantially below India's; as a guess, this roughly translates into a difference of 30 percentage points in the head count ratio! Given India's population of 1 billion, that is an error of about 300 million.

Perhaps it is the case that the "error" for India is balanced somewhere else. As is shown above (in table 6.1), that is not the case. All countries in South Asia are afflicted by the underestimation of consumption, and overestimation of poverty and disease. But for most other countries of the world, including the populated countries of East Asia, the World Bank consumption PPP does not deviate much from the official PPP; for example, the consumption PPP exchange rate for China for 1993 is 1.42, as is the official PPP exchange rate. It is interesting to observe that in all their global poverty publications, the only country for which the World Bank publishes separate poverty estimates is China. Perhaps if the same policy had been followed for all the regions (singling out the largest country in each region), the problem caused by differing PPP estimates would have been identified earlier, and rectified.

This deciphering of the basis for the official poverty estimates helps unravel some mysteries. Table 6.2 highlights the virtual confusion. National accounts data for 1993 suggest that the average South Asian is about (log) 7 percent richer than the average African. Surveys, by capturing less and less of the NA in South Asia, and more and more of the NA in Africa, reduce this 7 percent gap in favor of the South Asians to a 24 percent gap in

Table 6.2 Which data do you believe? Per capita consumption, 1993

Region	National accounts	Survey, official PPP exchange rates	Survey, World Bank "consumption" PPP exchange rates
South Asia	3.0	2.10	1.48
Sub-Saharan Africa	2.8	2.66	2.40

PPP = purchasing power parity

Sources: World Bank, *World Development Indicators*, CD-ROM; World Bank Web site: <http://www.worldbank.org/research/povmonitor/>.

favor of the Africans! The use of the World Bank's new "consumption" PPP exchange rates exaggerates this relative African richness to 48 percent, or about twice the amount suggested by survey data and official PPP estimates.

Thus in 1993, NA data suggest that the average South Asian income was \$3 a day compared with \$2.80 for Africa. The use of survey data, and "consumption" PPP data, leads us to believe that the average daily consumption of a South Asian was \$1.50, and that of an African was about \$2.40 or (log) 54 percent more!

So far we have discussed only average means and said nothing about the distribution. The share of the bottom 40 percent is higher in South Asia by about (log) 46 percent (21.4 percent consumption share vs. 13.5 percent consumption share). Thus, the 54 percent mean disadvantage is transformed via a better distribution pattern into only an 8 percent disadvantage for the Asian first quintile. This implies that the head count ratio in South Asia and sub-Saharan Africa should be approximately the same (within 4 or 5 percentage points) in 1993; that is, we have identified the source of Williamson's concern and dilemma about the poverty ratios being equal in the two regions.

All Indians Were Dead in 1950, or 1960

Sometime in the early 1980s, the World Bank published a book on the Romanian economy. The analysis in this book showed that Romania had enjoyed East Asian growth rates during the preceding 20 years or so. Going backwards, these growth rates implied an unrealistically low level of per capita income in 1960, which prompted a *Wall Street Journal* editorial to state, "In 1960 all Romanians were dead."

As every analyst and forecaster has discovered, sometimes, even with the best of intentions and the best of methods, a particular analysis can go seriously wrong. And potholes can be discovered in any empirical

exercise. My intention here is not to be clever and show that a curious result can be obtained by using World Bank consumption estimates for India for 1997 (the last such estimate available). It is to show how by most likely getting India wrong, and South Asia wrong, and not counterbalancing this error by an equivalent and opposite error elsewhere, the World Bank estimates of world poverty are serious overestimates of true poverty in the world today.

A necessary and explicitly stated part of the World Bank method is to use NA growth rates when surveys are not conducted. These NA growth rates for income suggest an average annual growth of 2.0 percent per capita for income, from 1950 to 1997.¹⁰ Projecting the World Bank's new "consumption" PPP and survey means estimate of \$45 a month or \$1.48 a day backward to 1950, one obtains a consumption level of 11.4 cents per day; this is the implied World Bank consumption PPP *mean* for India for 1950. For 1960, the average is somewhat higher, at 18 cents a day. To reiterate, these are estimates of the mean consumption of the entire population, not the poor population, at constant 1993 prices. History (at least since 1950) has yet to record such low levels for any economy. The lowest consumption level (NA data) for any country in 1950 was 44 cents a day for China. For 1960, the lowest average consumption level was in Tanzania, at 60 cents a day.

The World Bank's (imputed) figures for India for 1950 are a *fourth* of the lowest level observed; that is, a very poor average Chinese consumed four times as much as an Indian; a very poor average Tanzanian consumed more than three times as much as the even poorer average Indian. Because these consumption levels are for the average, and considerably lower than anything recorded in history, then all Indians must have been dead in 1960, or 1950.

What this smell test suggests is that either the "forecast" for 1950 is wrong, or the present consumption levels à la Chen and Ravallion and the World Bank, are too low. If the latter is true, then the head count ratio for South Asia, and other parts of the world, is too high. If so, the number of poor people in the world is considerably lower than the official figures of 1.15 billion or 1.20 billion. And a considerably lower number is several hundred million; as discussed above, for 1999, the error is about 500 million; that is, the official figure for world poverty, according to the \$1.08 poverty line, is almost *double* the estimate we obtain using survey means but official PPP estimates.

But \$1.08 is not the appropriate poverty line; \$1.30 is, and as discussed in the next chapter, if NA means are used, one should adjust such means downward by a factor (1.3 divided by 1.5) or raise the poverty line by

10. The latest Economic Survey for India reports per capita income for 1950-51 to be Rs3,687, and Rs9,242 for 1997-98, both at 1993-94 prices. These two figures imply a growth rate of 2 percent a year. (National accounts data for consumption for 1950 were not available.)

the same factor. For example, the \$1.08 poverty line gets transformed into a \$1.25 poverty line, and the “correct” poverty line of \$1.30 is raised to \$1.50. The poverty levels according to the correct poverty lines are higher at 13.1 percent of the developing world’s population in 2000, or close to 650 million—still high, but still half of the official estimate.