

EMPLOYMENT PAPER

2003/49

**Global poverty:
National accounts-based
versus survey-based estimates**

Massoud Karshenas



Employment Sector

INTERNATIONAL LABOUR OFFICE GENEVA

Employment Sector

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School of Oriental and African Studies

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Foreword

This study is a part of the on-going work on poverty being done in the employment strategy department. The purpose of this study is to provide poverty estimates for the low and middle-income developing countries, which are internationally comparable and are also consistent with the national accounts statistics. The main reason for making alternative estimates to those already published by the World Bank is that the latter are inconsistent with the national accounts income and expenditure aggregates, and hence with most other macroeconomic aggregates which are of interest to the debate on globalization, poverty alleviation and growth.

The paper examines some of the outstanding methodological issues that have a significant bearing on the measurement and analysis of poverty in the developing countries. Three inter-related issues are discussed, namely, those relating to the choice of a poverty line for international comparison of poverty, those related to the inter-country pricing and valuation issues, and finally issues related to the comparability of survey based and national accounts based poverty measures.

This forms the basis for the calculation of new poverty measures, consistent with national accounts income and expenditure estimates. The paper is mainly concerned with the money-metric measures of income or consumption poverty, and the poverty lines considered are the \$1 and \$2 poverty lines defined by the World Bank.

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1. Introduction

The purpose of this study is to provide poverty estimates for the low and middle-income developing countries, which are internationally comparable and are also consistent with the national accounts statistics. Despite the fact that poverty reduction now forms a key component of international development targets and strategies, a number of basic but important methodological and measurement issues with regard to the internationally comparable poverty estimates remain unresolved. In the next section we begin by examining some of the outstanding methodological issues that have a significant bearing on the measurement and analysis of poverty in an international context. A number of inter-related issues are reviewed, namely, those relating to the choice of a poverty line for international comparison of poverty, those related to the inter-country pricing and valuation issues, and finally issues related to the comparability of survey based and national accounts based poverty measures. This forms the basis for the new estimation method discussed in the final section, which utilizes the information in household surveys and tries at the same time to be consistent with national accounts income and expenditure estimates. The main reason for providing alternative estimates to those already published by the World Bank is that the latter are inconsistent with the national accounts income and expenditure aggregates, and hence with most other macroeconomic aggregates which are of interest to the debate on globalization, poverty alleviation and growth.

2. Some conceptual and measurement issues

Since poverty is a multifaceted concept its measurement can take various forms incorporating different dimensions of deprivation. Different indicators of economic capabilities (e.g., ownership of productive assets), human capabilities (health, education, nutrition etc.), and political and social capabilities (human rights, political power, etc.) are one set of indicators on the basis of which poverty measures can be constructed. Sometimes composite indices are constructed on the basis of a combination of these indicators, e.g., the human development index and the human poverty index of UNDP (see, also Sahn and Stifel, 2000). Another set of poverty indicators, namely, the money-metric measures, are based on income or consumption of households or individuals. Here we are mainly concerned with the money-metric measures of absolute poverty, and more specifically with the \$1 and \$2 a day headcount poverty measures defined by the World Bank. On the empirical side, two important sets of methodological issues are involved in measuring absolute income or consumption poverty: (a) the choice of an absolute poverty line, and (b) the choice of a metric (income/consumption) and the measurement of its distribution. We shall discuss these briefly in turn.

The scope and relevance of international poverty lines

The first set of issues concern the choice of the poverty line(s), appropriate for international comparison of poverty. This is a very important issue because not only poverty measures and their trends over time are highly sensitive to this choice, but also issues such as the relationship between poverty and economic growth are also critically affected by it. This issue has received much less attention than it deserves in policy discussions and in academic studies of poverty. At a basic conceptual level the definition of an internationally comparable poverty line boils down to the question of whether one can define a basket of goods and

services constituting the basic needs of the individuals in low and middle-income countries. And whether this can be converted into a single internationally comparable value index.

There are a number of problems associated with making the absolute poverty line concept operational. The first problem is to calculate a set of conversion factors that translate the value of the basic needs basket into internationally comparable values. A more fundamental problem, however, is to define the basic needs baskets in accordance with the differences in ecology and climate, institutions, social norms and practices, and available goods and services in different countries. Such variations in local circumstances imply that the same basket of goods and services may mean different degrees of hardship and poverty in different countries and over time. The quality of poverty measures and their international comparability depends on the degree to which these problems are dealt with satisfactorily – a task that can be undertaken only with careful empirical research.

A sensible approach may be to define the international poverty line as a composite index of the official poverty lines in individual countries. For example, the \$1 a day and \$2 a day poverty lines adopted by the World Bank are said to be based on averages of official poverty lines for a small number of low and lower middle income countries, measured in 1985 purchasing power parity (PPP) exchange rates. The World Bank reports the headcount and poverty gap indicators based on these two poverty lines at both regional and individual country levels. The adoption of the \$1 poverty line is based on research findings showing that this corresponds to the average of national poverty lines for a number of low-income countries.¹ In order to form some idea of the nature of poverty that these two poverty lines delineate, it would be helpful to examine the command of the \$1 and \$2 poverty lines over resources in typical developing economies in current dollars.

The two poverty lines are measured in 1985 purchasing power parity (PPP) exchange rates, which are meant to take into account variations in the cost of living in different countries and over time.² For example, the relative consumer price level for low-income African countries in the late 1990s (at 1985 base) was on average about 0.51, which indicates that 51 cents at current exchange rates and prevailing prices in an average African country has the same purchasing power as \$1 in international prices in 1985. The one-dollar a day poverty line in 1985 international prices therefore translates into a 51 cent a day poverty line at current prices and exchange rates for an average African country. The same poverty line for an average low-income Asian country on the other hand is about 31 cents a day. Correspondingly, the \$2 poverty line for the average African and Asian low-income countries translates into \$1.02 and 61 cents respectively at current prices and exchange rates.

There are of course wide variations around these regional averages for individual countries depending on country-specific price levels. What is important, however, is that all these poverty lines at current official exchange rates, are supposed to express the same purchasing power in terms of local consumer prices, equivalent to \$1 and \$2 a day in 1985 international prices. In other words, they constitute a set of internationally comparable poverty lines. A convenient way of calculating internationally comparable poverty measures in low-income countries, which has become the conventional method, is to convert the current

¹ Ravallion et al, (1991). According to this study (*ibid*, p.27) ‘...it appears that the relationship between a country’s poverty line and mean income tends to be flat at low income levels...We find that a consumption level of \$31 per month is actually a far more common poverty line for the dozen or so low income countries for which poverty lines have been calculated’.

² The World Bank has recently changed the base year from 1985 to 1993, and the two poverty lines have correspondingly changed to \$1.08 and \$2.15 in 1993 prices. It appears that apart from changing the base year, the World Bank 1993 PPP rates have also re-estimated some of the earlier measures in Penn World Tables version 5.6 (see, e.g., Chen and Ravallion 2000). Since there is no official documentation on this and the data are not available publicly, we have used the original Penn World Tables version 5.6 PPP rates and the \$1 and \$2 poverty lines in 1985 PPP exchange rates.

consumption or income values to 1985 international prices and use the same \$1 and \$2 poverty lines for all the countries.

The poverty measures based on these two poverty lines can be very sensitive to the estimates of price level differences between countries. Purchasing power parity (PPP) estimates, based on price and quantity data generated by the Summers and Heston International Comparison Program, are conventionally used for this purpose. However, the PPP exchange rates for a large number of poor countries in the ICP are extrapolations based on PPP rates in 'similar' countries, with possibly serious inaccuracies. Furthermore, even when accurately estimated, the consumption PPP exchange rates are based on the general consumer price indices of each country and hence may not be appropriate for comparing the consumption basket of the poor. The GDP PPP exchange rates are even more inappropriate. Weaknesses in these purchasing power parity estimates can potentially lead to major distortions in global poverty estimates.³

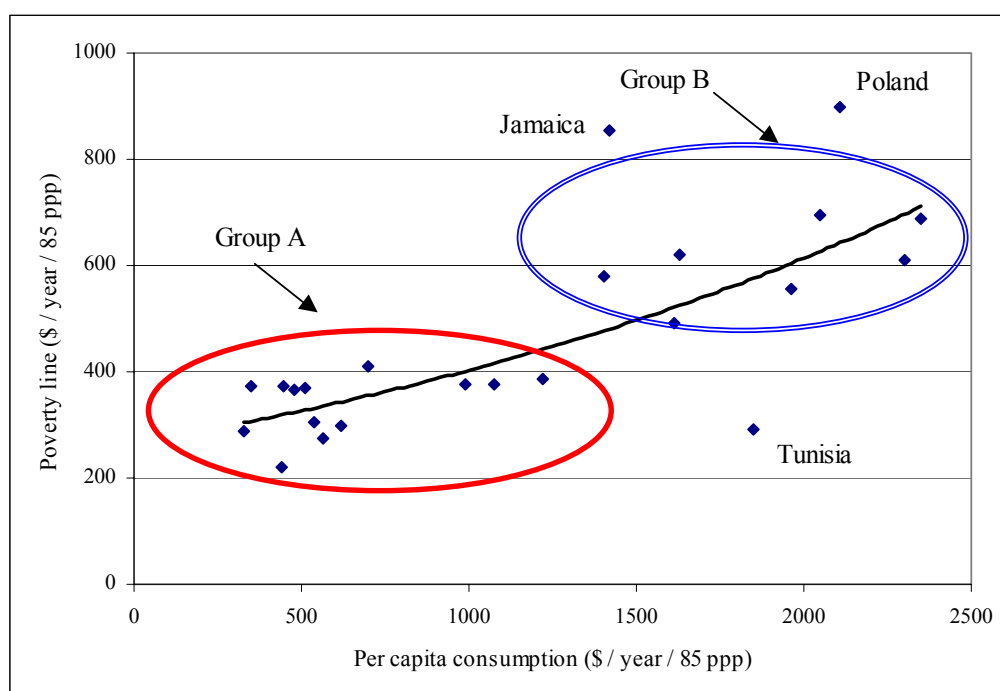
Valuation issues apart, the question still remains that even if the one-dollar or the two-dollar poverty lines refer to the same real consumption basket in different countries, to what extent these consumption baskets correspond to the national poverty lines. We have plotted the national poverty lines for a number of low-income countries in Figure 1. Both the poverty lines and the consumption figures are calculated at 1985 PPP rates. This chart, which is replicated on the basis of data provided in Ravallion et al (1991), clearly shows an upward relationship between average consumption and national poverty lines. National poverty lines range from \$200 per year to \$900, in countries with average per capita consumption levels below \$2500 a year at 1985 PPP exchange rate. In current dollar terms this corresponds to countries with average per capita consumption levels of less than around \$1000 to \$1200.

Countries within this range of per capita consumption can be roughly classified into two groups according to their average national poverty lines. Group A countries in Figure 1, that is the group in the range of below \$1000 per annum consumption (in 1985 PPP dollars), have an average poverty line close to the \$1 a day line. Group B countries, that is, the group in the upper range of \$1000 and \$2500 per capita consumption per year (in 1985 PPP terms), are clustered closer to the \$2 a day poverty line. The international convention of using the \$1 poverty line for the low-income countries and the \$2 line for the upper low-income countries for measuring extreme absolute poverty, therefore, seems to be of relevance to these per capita income ranges and become less relevant to higher income developing countries.

Even within these income ranges, the two poverty lines should be regarded as nothing more than rough approximations to poverty lines in individual countries in the relevant income ranges. As the three outlying observations in the upper income range in Figure 1 indicate, the difference between poverty measures based on national poverty lines and those based on the conventional \$1 and \$2 international poverty lines can be very large. The poverty measures based on the international poverty lines, therefore, are likely to be very different from those obtained under national norms. The international measures refer to the condition of living below \$1 or \$2 a day, which is not the same as poverty defined by official poverty lines in individual low income countries in any other than a very approximate way. This lack of correspondence with the conventional notions of poverty defined at the national level is the inevitable price which needs to be paid for the sake of international comparability. The same principals, namely international comparability and consistency, should be also the main guiding principles in resolving other methodological problems in estimating global poverty discussed in the following sections.

³ See Deaton (2000).

Figure 1. The relationship between national official poverty lines and per capita consumption per annum in 1985 international prices



National accounts-based versus survey-based estimates

Household income and expenditure surveys are designed to measure the distribution of income and consumption across a sample of households. Average consumption per household is calculated on the basis of self-reported expenditures (cash and imputed values from own stock) on various items. Gross incomes available to households are calculated on the basis of information reported on wages and salaries of employees and income from self-employment, property income and current transfers. Household surveys are normally conducted on one or more occasions during the year, each visit covering short 'recall' periods of a week or a month. Household surveys also vary with respect to the size and coverage of the sample as well as the level of aggregation and details of the questionnaire. The incidence of poverty within the population is then calculated by estimating the mean annual income or consumption of the households in the sample, estimating the distribution of consumption across households and individuals, and setting a monetary poverty line to calculate the proportion of the households and individuals below the poverty line or any other indicator of poverty.

It may be analytically convenient to think of poverty estimates derived in this way as having two components; one arising from the location of the poverty line relative to the mean of the distribution (which we may refer to as the scale factor), and another arising from the shape of the distribution (which we may refer to as the shape or distribution factor). Of course the separation of the two components is only for analytical convenience – in reality poverty differences across countries, or their changes over time, are generated by combined and often interdependent effects of the two. Correspondingly, one may regard measurement errors in poverty estimates as being caused by measurement errors in the distribution of income or consumption (the shape factor), or those in the estimated average income or consumption (the scale factor), or as is often the case the errors in both distributional and scale factors.

Important sources of error in this estimation process are the measurement errors arising from various factors such as defects in the sample design, variation in response rates, inaccurate reporting of income and expenditure, etc. Such sources of error and their empirical

significance have been extensively discussed in the literature, and can simultaneously affect both the shape and the scale factors.⁴ An important problem, which can lead to serious measurement errors in comparative work of the nature considered here, is the extent to which the survey means are accurate estimates of the population's average income or consumption. Household surveys furnish better indicators of the distributional aspects of income and expenditure than the scale factors. In particular, surveys conducted in different countries and at different points in time, and with very short recall period of a week or a month, normally need to be calibrated in order to provide comparable scale factors or distribution means, even when they are reasonable indicators of the distribution of income or expenditure.

Estimates of average private income or consumption per capita can also be derived from national accounts data, and it is widely known that estimates of consumption and income per capita from national accounts data diverge from those derived from household surveys (see, e.g., Bhalla 2000, Pyatt 2000, Ravallion 2000, 2001, and Deaton 2000, Karshenas 2001). In order to examine the nature and extent of the divergence between the two series, which can also provide some idea of the nature of calibration needed to make survey means comparable across countries and over time, it will be useful to empirically examine the relationship between the national accounts and survey averages.

The World Bank provides two relatively large data sets based on household expenditure and income surveys on its web site. One is the data set used by Chen and Ravallion (2000), largely based on World Bank's Living Standard Measurement Surveys (LSMS), which has recently become available on the World Bank's web site. The second data set is the Deininger and Squire (1996) data set, which is also available on the World Bank's web site.⁵ In this paper we focus on the former dataset. The list of sample countries and observations is shown in Table 1, along with survey averages and the average per capita consumption from national accounts. Both data series in the Table are in 1985 PPP exchange rates. The per capita consumption series are based on Penn World Tables 5.6, and the survey mean come from the World Bank dataset. The 172 observations in the Table consist of all the countries in the World Bank data, excluding the countries for which the Penn World Tables do not provide national accounts data.

The examination of the data in Table 1 clearly brings into light the substantial differences in mean consumption for individual countries between the two series, and more worryingly the contrasting trends between the two series over time for a large number of countries in the sample.⁶

⁴ For some more recent discussions see, Atkinson and Brandolini (2001), Pyatt (2000), and Szekely and Hilgert (1999).

⁵ See, World Bank (2001) and Deininger and Squire (1996).

⁶ It is not unfortunately clear to what extent the differences between the two series are due to the updating of the PPP exchange rates by the World Bank compared to the Penn World Tables data. The differences in the PPP exchange rates between the two series are likely to affect more the cross-country differences between the two series than the variations across time. To the extent that the differences between the two series arise due to the differences between the PPP rates, some of the conclusions in the above paragraph may need to be modified.

Table 1. Survey based and national accounts based per capita consumption/income in sample observations

Obs.	Country	Year of survey	Per capita consumption N.A. based	Survey mean	Survey Type	Obs.	Country	Year of survey	Per capita consumption N.A. based	Survey mean	Survey Type
1	Algeria	1988	1385	1875	E	87	Philippines	1994	1261	990	E
2	Algeria	1995	1362	1755	E	88	Philippines	1997	1342	1224	E
3	Bangladesh	1984	730	535	E	89	Rwanda	1984	592	518	E
4	Bangladesh	1985	754	586	E	90	Senegal	1991	851	708	E
5	Bangladesh	1988	766	519	E	91	Senegal	1994	802	754	E
6	Bangladesh	1991	796	499	E	92	Sierra Leone	1989	645	544	E
7	Bangladesh	1995	886	613	E	93	South Africa	1993	1825	2388	E
8	Botswana	1985	1075	975	E	94	Sri Lanka	1985	1472	875	E
9	Burkina Faso	1994	402	478	E	95	Sri Lanka	1990	1488	965	E
10	Central Afr Rep.	1993	403	455	E	96	Sri Lanka	1995	1884	981	E
11	Cote d'Ivoire	1985	1051	1632	E	97	Tanzania	1991	304	736	E
12	Cote d'Ivoire	1986	1059	1486	E	98	Thailand	1988	1961	1442	E
13	Cote d'Ivoire	1987	1065	1458	E	99	Thailand	1992	2276	1005	E
14	Cote d'Ivoire	1988	969	1160	E	100	Thailand	1996	3212	1599	E
15	Cote d'Ivoire	1993	882	1017	E	101	Thailand	1998	2565	1543	E
16	Cote d'Ivoire	1995	823	948	E	102	Tunisia	1985	1958	2107	E
17	Ecuador	1988	1783	831	E	103	Tunisia	1990	2065	2267	E
18	Ecuador	1994	1822	839	E	104	Turkey	1987	2305	2007	E
19	Ecuador	1995	1822	989	E	105	Turkey	1994	2175	1893	E
20	Egypt	1991	1243	985	E	106	Uganda	1989	466	640	E
21	Egypt	1995	1547	2657	E	107	Uganda	1992	443	598	E
22	Ethiopia	1981	232	558	E	108	Zambia	1991	348	434	E
23	Ethiopia	1995	229	658	E	109	Zambia	1993	269	319	E
24	Gambia	1992	623	505	E	110	Zambia	1996	279	346	E
25	Ghana	1987	630	854	E	111	Zimbabwe	1990	614	647	E
26	Ghana	1989	608	887	E	112	Bolivia	1990	1227	1117	I
27	Guyana	1993	598	498	E	113	Brazil	1985	2932	1651	I
28	India	1983	592	428	E	114	Brazil	1988	2904	1624	I
29	India	1986	622	466	E	115	Brazil	1989	2905	1543	I
30	India	1987	618	457	E	116	Brazil	1993	2879	1640	I
31	India	1988	674	464	E	117	Brazil	1995	3342	1904	I

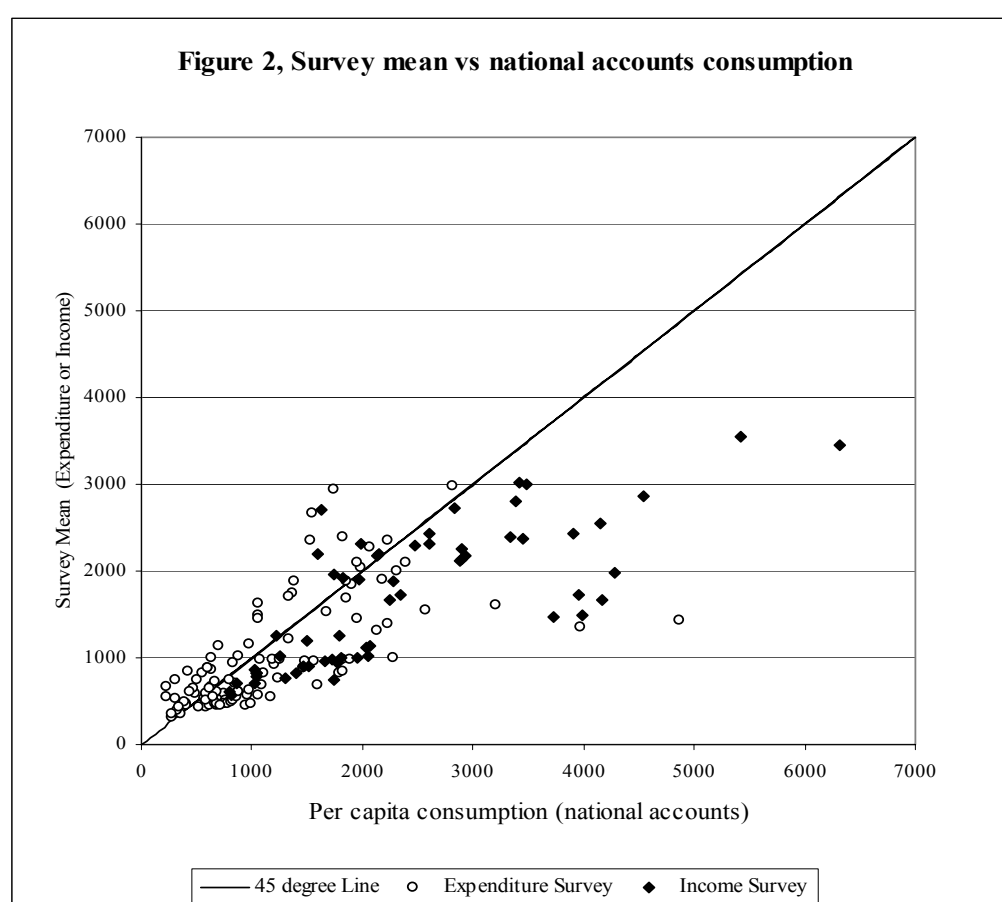
Obs.	Country	Year of survey	Per capita consumption N.A. based	Survey mean	Survey Type	Obs.	Country	Year of survey	Per capita consumption N.A. based	Survey mean	Survey Type
32	India	1989	679	454	E	118	Brazil	1996	3451	1930	I
33	India	1990	681	463	E	119	Brazil	1997	3487	2449	I
34	India	1992	745	462	E	120	Chile	1987	2155	1713	I
35	India	1994	746	477	E	121	Chile	1990	2471	1646	I
36	India	1995	781	474	E	122	Chile	1992	2834	2032	I
37	India	1996	820	492	E	123	Chile	1994	3384	2087	I
38	India	1997	837	500	E	124	China	1985	808	373	I
39	Indonesia	1984	965	559	E	125	China	1990	794	380	I
40	Indonesia	1987	971	619	E	126	China	1992	867	443	I
41	Indonesia	1990	1085	689	E	127	China	1993	1306	441	I
42	Indonesia	1993	1244	762	E	128	China	1994	1393	468	I
43	Indonesia	1996	1562	962	E	129	China	1995	1517	508	I
44	Indonesia	1998	1591	680	E	130	China	1996	1656	557	I
45	Jamaica	1988	1856	1688	E	131	China	1997	1718	561	I
46	Jamaica	1989	1898	1843	E	132	China	1998	1815	577	I
47	Jamaica	1990	1856	1876	E	133	Colombia	1988	2359	2680	I
48	Jamaica	1993	2130	1316	E	134	Colombia	1991	2343	2977	I
49	Jamaica	1996	2224	1388	E	135	Colombia	1995	2608	1958	I
50	Jordan	1987	2810	2987	E	136	Colombia	1996	2602	1908	I
51	Jordan	1992	2227	2348	E	137	Costa Rica	1986	2062	834	I
52	Jordan	1997	1985	2043	E	138	Costa Rica	1990	2239	1319	I
53	Kenya	1992	641	997	E	139	Costa Rica	1993	2345	1340	I
54	Kenya	1994	547	819	E	140	Costa Rica	1996	2282	1424	I
55	Lesotho	1986	696	1133	E	141	Dominican Rep.	1989	1823	1587	I
56	Lesotho	1993	600	891	E	142	Dominican Rep.	1996	1634	2260	I
57	Madagascar	1980	856	557	E	143	El Salvador	1989	1256	963	I
58	Madagascar	1993	529	434	E	144	El Salvador	1995	2044	984	I
59	Mali	1989	427	853	E	145	El Salvador	1996	2032	1096	I
60	Mali	1994	354	361	E	146	Guatemala	1987	1746	682	I
61	Mauritania	1988	567	534	E	147	Guatemala	1989	1774	861	I
62	Mauritania	1993	680	606	E	148	Honduras	1989	1044	713	I
63	Mauritania	1995	642	661	E	149	Honduras	1990	1019	562	I
64	Mexico	1984	3977	1344	E	150	Honduras	1992	1037	674	I

Obs.	Country	Year of survey	Per capita consumption N.A. based	Survey mean	Survey Type	Obs.	Country	Year of survey	Per capita consumption N.A. based	Survey mean	Survey Type
65	Mexico	1992	4875	1427	E	151	Honduras	1994	1034	633	I
66	Morocco	1985	1330	1709	E	152	Honduras	1996	1046	585	I
67	Morocco	1990	1527	2352	E	153	Mexico	1989	4175	1279	I
68	Mozambique	1996	590	589	E	154	Mexico	1995	3987	1149	I
69	Nepal	1985	393	492	E	155	Panama	1989	1591	1941	I
70	Nepal	1995	489	584	E	156	Panama	1991	1734	1590	I
71	Nicaragua	1993	880	606	E	157	Panama	1995	1990	1668	I
72	Niger	1992	313	523	E	158	Panama	1996	2136	1548	I
73	Niger	1995	331	402	E	159	Paraguay	1990	1490	993	I
74	Nigeria	1985	712	459	E	160	Paraguay	1995	1968	1550	I
75	Nigeria	1992	675	720	E	161	Peru	1996	1787	1008	I
76	Nigeria	1997	512	753	E	162	Thailand	1981	1463	685	I
77	Pakistan	1987	942	456	E	163	Thailand	1988	1961	692	I
78	Pakistan	1990	990	463	E	164	Trinidad & Tobago	1988	5418	2914	I
79	Pakistan	1993	1053	573	E	165	Trinidad & Tobago	1992	6323	2661	I
80	Pakistan	1996	1167	558	E	166	Uruguay	1989	3414	2494	I
81	Panama	1997	2394	2095	E	167	Venezuela	1981	4534	2026	I
82	Peru	1985	1744	2939	E	168	Venezuela	1987	4149	1906	I
83	Peru	1994	1683	1528	E	169	Venezuela	1989	3907	1811	I
84	Philippines	1985	1110	833	E	170	Venezuela	1993	4288	1612	I
85	Philippines	1988	1205	920	E	171	Venezuela	1995	3960	1317	I
86	Philippines	1991	1190	975	E	172	Venezuela	1996	3726	1011	I

Notes: Per capita consumption data are in 1985 ppp exchange rates. The survey mean consumption and income data have been converted by using 1.08 conversion factor given by the World Bank (2001). Beyond 1992, the Penn World Tables data are extrapolated using real per capita growth of consumption in constant dollars given in WDI 2001.

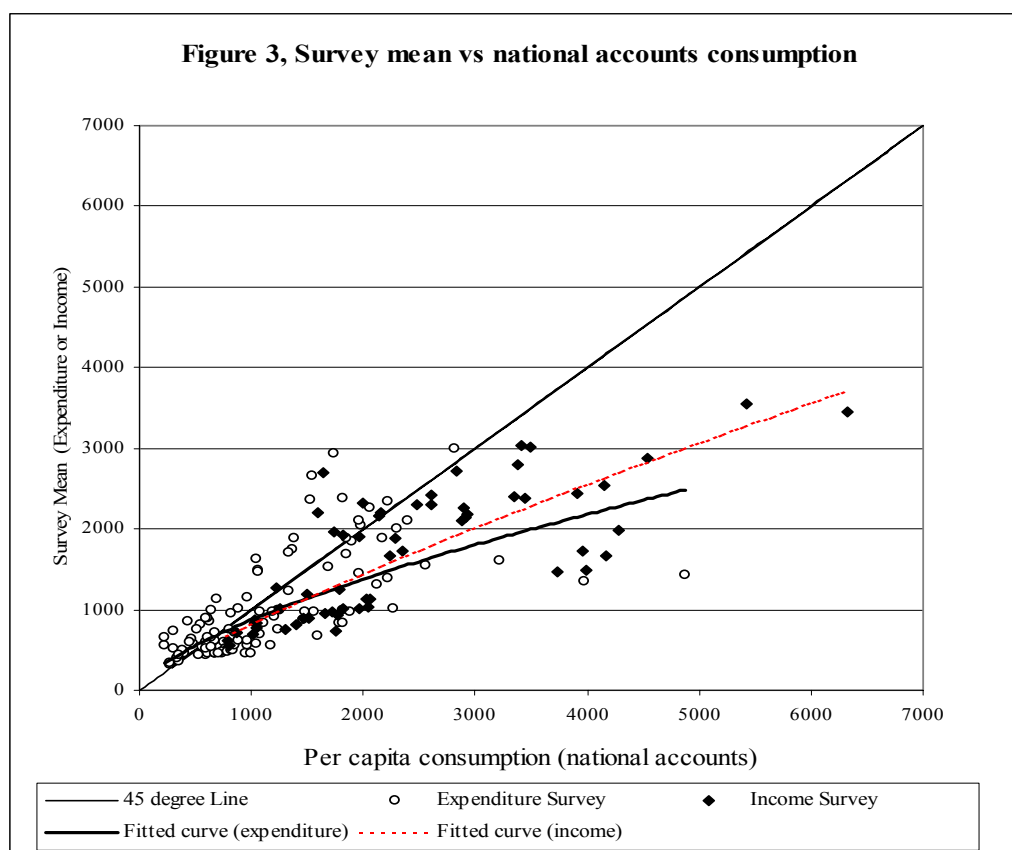
Sources: Penn World Tables, 5.6, World Bank (2001), and World Bank, WDI 2001.

The scatter plot of the two series in Figure 2 helps delineate some of the important aspects of the relationship between the survey based and National Accounts based averages. Firstly, it is not the case that the survey results systematically underestimate average consumption relative to N.A. estimates, as has been highlighted in the India debate (see, e.g., Bhalla, 2000, Ravallion, 2000a). As can be seen from Figure 2 in a large number of countries the reverse seems to be the case. A closer examination of the data in Table 1 shows that this is also true in the case of trends over time for individual countries.⁷ Secondly, it appears that there is a systematic relationship between per capita consumption levels and the relative magnitude of the two series, in that the ratio of survey means to national accounts averages follows a declining pattern as per capita incomes grow. Thirdly, there appears to be a significant positive relationship between the two series, as shown in the fitted curves in Figure 3.⁸ In other words, the expected value of the survey means, both for income and expenditure surveys, seems to have a systematic relationship with national accounts average consumption.



⁷ For example, according to the household survey data average consumption increased by over 17 per cent in Ethiopia between 1981 and 1995. According to the national accounts data, however, this variable fell by over 13 per cent between these two years. In Bangladesh between 1984 and 1991, according to household surveys average consumption fell by close to 7 per cent, but the national accounts data indicate a growth of average consumption of over 13 per cent in the same period.

⁸ The estimation of the fitted curves is discussed in the next section.



The discrepancy between the survey mean and national accounts scale factors has important implications for the analytics of poverty, not adequately taken into account in the current literature. For example, the results of econometric work on poverty and growth, where poverty estimates are based on household survey measurements and growth figures are based on national accounts estimates can be very misleading.⁹ Growth elasticity of poverty estimates based on this type of mixing data are also highly suspect – as, relative to national accounts the average consumption in household surveys seem to be higher in some poor countries, and systematically lower in relatively richer ones.¹⁰ Because of this discrepancy between the different regions or income groups, the usual explanations put forward in the literature to account for the lack of consistency between the two data-sources are also incomplete.¹¹ The use of poverty estimates based on survey means to delineate ‘normal patterns’ between poverty and per capita GDP can be also misleading.¹²

The use of survey means or national accounts per capita consumption as alternative scale factors in measuring poverty clearly makes a substantial difference to the results. The next critical question is, which of the two scale factors are more appropriate. Both series are likely to contain considerable measurement errors. For household surveys, a major problem is to ensure consistency between surveys. Best practice consumption measures use very long

⁹ See e.g., Collier and Dollar 1999.

¹⁰ For similar reasons poverty estimates discussed in Sala-i-Martin (2002), based on extrapolating World Bank poverty estimates using GDP growth, can be misleading.

¹¹ In the literature (e.g., Dutt 1999, Ravallion 2001) it is mainly attempted to explain the likely reasons why in a country like India household survey data may underestimate the level and growth of consumption relative to national accounts estimates. As seen above, however, there are countries where the reverse is true.

¹² See, e.g., Lipton (1998) and Lipton and Litchfield (2001), where the discrepancies between the ‘normal patterns’ and individual country measures are used to rank country performances.

lists of specific items to estimate household consumption, but short-cut methods which are widely used lead to underestimation of consumption. Imputing the monetary value for self produced consumption goods rather than market purchases is always complex. Bias also arises in sample selection, in which there is generally an under-representation of the poor, and in response patterns, with a tendency for underestimation of non-wage income and the higher non-response tendency in the higher income strata. These sources of error affect both the scale and distribution factors in household surveys. It is not, however, uncommon to find the scale factors in household surveys more unreliable and volatile than the distribution factors. The conventional wisdom is that unless calibrated by external information, averages or scale factors are unlikely to be comparable across the different household expenditure surveys – even when they are reliable information sources regarding the distribution of income or consumption.

An important reason for this is that household surveys cover relatively short durations, with a week or a month recall period, conducted in one or more occasions during the year. Lengthening the recall period beyond a few days can lead to serious errors resulting from short memory of the respondents, and increasing the frequency of the survey can be very costly.¹³ As income and expenditure are not uniformly distributed over the year, the extrapolation of annual averages from sample surveys thus becomes problematic. Hence, even when surveys contain fairly accurate information regarding the distribution of expenditure across households or individuals, they can give rise to very volatile and unreliable scale factors, or distribution means on an annual basis. A serious problem that needs consideration is thus the extent to which average consumption or income in household surveys need to be adjusted to reflect the population averages.

For national accounts, the basic problem is that private consumption is calculated as a residual, and errors in the estimation of other components of the GDP all impinge on the consumption estimate. Another problem with the national accounts estimates of private consumption is that they implicitly include spending by unincorporated businesses and non-profit organizations (such as religious groups, clubs, trade unions, political parties and hospitals). To the extent that these items do not affect the consumption of the poor, the use of the national accounts consumption averages leads to an underestimation of poverty. In any event, these items together with the imputed residential rents which are included in the national accounts private consumption, are not always recorded in household surveys, and can add up to large differences between the two series. This is one of the main reasons for the difference between average income and consumption in the national accounts from the survey means, and the growing wedge between the two series with increasing per capita income as shown in Figure 2.¹⁴

Which of the two series is more appropriate as the scale factor in poverty measurement depends on the nature of measurement error in household surveys as well as the purpose of the study. For example if the main source of error in household surveys is underestimation of the income of the rich, household surveys give inaccurate estimates of both the distribution of income and mean income, but will produce accurate poverty estimates, as the measurement errors do not affect the lower end of the distribution. Maintaining that the main source of error in household surveys is likely to be the

¹³ The sensitivity of poverty measures to the change in recall period is exemplified by the following quote from Deaton (2002, p.14), ‘... when the Indian NSS experimentally changed the recall period for food from 30 to 7 days, the estimated poverty rate was cut by a half.’

¹⁴ Deaton (2002), in addition points to the exclusion of the income and consumption from informal activities from the national accounts measures and their inclusion in the survey means as another reason for the divergence between the two series.

underestimation of the income of the rich, Deaton (2002) argues that surveys in general lead to more accurate estimates of poverty, and that using national accounts scale factor is likely to lead to underestimation of poverty. This argument is correct to the extent that the underreporting of the income of the rich is the main source of measurement error in household surveys, which is more likely to be the case in income rather than expenditure surveys. In fact, as can be seen from the data provided in Table 1, in the case of expenditure surveys, in more than 40 per cent of the observations the national accounts averages are less than survey averages. Clearly, in such cases the underreporting of the expenditure of the rich cannot be the main source of discrepancy between the national accounts and expenditure survey averages – the lack of consistency between different survey means arising from the factors discussed above is likely to be more important.

Although attempts are made to standardize household survey practices between countries, standardization of procedures for estimating national accounts is likely to be much more developed. Indeed the ways in which poverty estimates derived from surveys vary from year to year indicate that even within the same country it is difficult to ensure comparability from year to year.¹⁵ This point can be perhaps better appreciated if we consider the hypothetical situation where a statistician is required to estimate national accounts categories such as private consumption and income, based on one or more household surveys, relying on respondents' memories with short recall periods conducted in one or two points in time over the year. If, furthermore, the final estimates are not required to obey the consistency checks imposed by national accounts identities, they will be obviously highly unlikely to produce results which are comparable across countries and over time. Such problems are likely to be magnified in the case of household surveys by variations in questionnaire details, etc.

Under these circumstances, the existing national accounts consumption and income averages may be used to check the consistency of survey means. One may consider a number of plausible rule of thumb criteria for such consistency checks. For example, in a country where national accounts data register high rates of per capita income growth, and income distribution is not changing appreciably, poverty should not increase over time. Similarly, poverty should be higher in country A relative to country B, if per capita GDP or private consumption in country A is appreciably lower than country B and income distribution is not dissimilar between the two. The survey based estimates of poverty by the World Bank clearly do not fulfil these conditions for a relatively large number of countries.

In a recent work I reported poverty estimates for a large number of low-income countries, which combined the distribution data from the household surveys with the national accounts average consumption as the scale factor (Karshenas 2001). The argument being that there is likely to be greater standardization between countries (and also a longer history of experience) in methods of estimating national accounts. Since the \$1 and \$2 poverty lines, for all their defects, are primarily used for the sake of intercountry comparisons of poverty, the national accounts based scale factors may be the more appropriate choice. With this approach, blatant anomalies between GDP per capita and poverty rates will be also reduced. Moreover, the national accounts based estimates appear to be more plausible in relation to other non-monetary indicators of poverty (see Karshenas 2001).

While the two approaches have their own advantages and disadvantages, and both are likely to give rise to poverty estimates with measurement errors, it is likely that the adoption of one scale factor in preference to the other would lead to loss of some valuable information contained in the excluded series. As observed above, for example, the conditional expectation

¹⁵ For example, according to household survey based estimates, 16.5 per cent of the population of Mali was living in poverty in 1989 and 72.3 per cent in 1994, and 48.5 per cent of the population of Tanzania was living in poverty in 1991, and 19.9 per cent in 1993.

of survey mean is significantly associated with the national accounts series, implying such loss of information if we ignore the second series. In this paper we therefore use a third alternative, which is based on using information in the national accounts data to calibrate the survey means.

3. Calibration of the survey based scale factors

Let us assume that the observed survey means are:

$$y_i^* = y_i + \mu_i \quad (1)$$

Where μ_i is the measurement error. Let X_i be a set of external variables that are strongly associated with y_i but independent of the measurement error μ_i , such that:

$$y_i = f(X_i) + \omega_i \quad (2)$$

Where ω_i is a white noise error. Substitute 2 in 1 to get

$$y_i^* = f(X_i) + \mu_i + \omega_i$$

Based on the observed survey mean y_i^* and external variables X_i one should be able to find a consistent estimator for $f(X_i)$, say $\hat{f}(X_i)$. This will be a consistent estimator for the unobservable $E(y_i/X_i) = f(X_i)$, which we can denote as the calibrated survey mean. The accuracy of this method depends on the variances of μ_i and ω_i , or in other words on the magnitude of measurement errors in the observed survey means, and the correlation between the external calibrating variables X_i and the unobserved y_i .

In the case of the household expenditure and income surveys, the obvious external calibrating variables for the survey mean are the national accounts based measures of per capita private consumption expenditure (or per capita income). The national accounts based per capita private consumption expenditure/income should be highly correlated with the survey mean. Since the national accounts consumption expenditure/income in developing countries are estimated independently from the household expenditure surveys, they should also be independent from measurement errors involved in the latter.

Using the national accounts per capita private consumption as the calibrating variable, and assuming a simple log-linear functional form, the following estimates were obtained for the relationship between the survey and national accounts based scale variables:

$$Y = 2.21 + 0.66 C - 1.24 D + 0.17 D \times C \quad R^2 = 0.6801$$

(5.59) (11.29) (-1.99) (2.01) no. Obs. =172

where Y is the survey mean (for both expenditure and income surveys), C is national accounts based per capita private consumption and D is a dummy variable taking the value 0 for expenditure surveys and 1 for income surveys. The resulting regression lines correspond to the fitted curves in Figure 3, discussed in the previous section. The figures in parenthesis are t-ratios based on White's heteroskedasticity consistent standard errors. The regression explains close to 70 per cent of variations in survey mean. The predictions from this type of regression can be used as scale variables in poverty calculations, which will be also consistent with the national accounts data.¹⁶

4. New poverty estimates

As shown in Table 1, a large number of the sample countries only have income distribution data. For these countries we have used the predictions from the above equation to calibrate survey means and measure poverty on that basis. Assuming that no savings takes place within the income and consumption ranges where the \$1 and \$2 poverty lines are located, for the income based surveys headcount measures were obtained by using the income distribution curve in conjunction with the calibrated mean incomes. In the case of the countries where expenditure surveys exist, we have reported the poverty measures from Karshenas (2001), which are based on the actual national accounts consumption means.¹⁷ The estimates are shown in Tables 2 and 3 for the \$1 and \$2 a day poverty lines respectively, along with the World Bank estimates that use the unadjusted survey mean as the scale factor.

The new estimates are plotted against per capita private consumption for the \$1 and \$2 poverty lines respectively in Figures 4 and 5. The Figures also show two logistic trends which best fit the data. One feature of the data which immediately stands out is the close fit of the data to the fitted curves and the steep slope of the curves at the lower end of the per capita consumption scale. For the low income countries, up to \$700 per capita private consumption for the \$1 and about \$1200 for the \$2 poverty lines, poverty declines with the growth of income and consumption, and the variations due to distributional differences across countries are very small. At higher income ranges the relationship between growth and poverty reduction becomes less pronounced and the variations in the distribution of income explain much of the variations in poverty across countries. This phenomenon can be also observed in Figures 6 and 7, where linear trend lines are fitted to the same data for the two samples.

¹⁶ More appropriate methods of estimation can be generalized additive models, or other smoothing techniques for the estimation of conditional means. Also the use of GNP rather than private consumption (because of possibly large measurement errors in the latter) and addition of other external variables may produce more refined calibration.

¹⁷ These estimates are based on my work for Least Developed Countries Report, UNCTAD (2002). I am grateful to the Least Developed Countries Branch, UNCTAD, for providing me with research assistance and permitting the reproduction of the estimates in this paper. The consumption based estimates, however, should also be calibrated in future work.

Table 2. Percentage population living below \$1 a day, national accounts based vs survey based measures

Country	Year	New Estimates	World Bank Estimates	Survey Type	Country	Year	New Estimates	World Bank Estimates	Survey Type
Algeria	1988	4.3	1.8	E	Jamaica	1988	3.3	5.0	E
Algeria	1995	4.5	1.2	E	Jamaica	1989	2.4	3.4	E
Bangladesh	1984	10.4	26.2	E	Jamaica	1990	0.5	0.6	E
Bangladesh	1985	8.0	22.0	E	Jamaica	1993	0.1	4.5	E
Bangladesh	1988	10.0	33.8	E	Jamaica	1996	0.4	3.2	E
Bangladesh	1991	8.9	35.9	E	Jordan	1987	0.0	0.0	E
Bangladesh	1995	7.2	29.1	E	Jordan	1992	0.2	0.6	E
Bolivia	1990	14.3	11.3	I	Jordan	1997	0.2	0.4	E
Botswana	1985	29.8	33.3	E	Kenya	1992	52.8	33.5	E
Brazil	1985	15.9	15.8	I	Kenya	1994	46.5	26.5	E
Brazil	1988	19.1	18.6	I	Lesotho	1986	47.7	30.9	E
Brazil	1989	20.5	20.8	I	Lesotho	1993	56.4	43.1	E
Brazil	1993	17.0	18.8	I	Madagascar	1980	28.9	49.2	E
Brazil	1995	13.7	13.9	I	Madagascar	1993	48.9	60.2	E
Brazil	1996	14.0	14.9	I	Mali	1989	55.6	16.5	E
Brazil	1997	5.3	5.1	I	Mali	1994	67.2	72.3	E
Burkina Faso	1994	68.5	61.2	E	Mauritania	1988	37.6	40.6	E
CAR	1993	70.2	66.6	E	Mauritania	1993	42.7	49.4	E
Chile	1987	14.7	10.2	I	Mauritania	1995	32.7	31.0	E
Chile	1990	10.3	8.3	I	Mexico	1989	4.2	16.2	I
Chile	1992	5.7	3.9	I	Mexico	1995	2.6	17.9	I
Chile	1994	3.1	4.2	I	Morocco	1985	4.6	2.0	E
China	1990	18.2	36.8	I	Morocco	1990	5.5	0.1	E
China	1992	21.9	29.2	I	Mozambique	1996	37.7	37.9	E
China	1993	12.3	29.0	I	Nepal	1985	55.5	40.4	E
China	1994	10.7	24.5	I	Nepal	1995	51.2	37.7	E
China	1995	9.2	21.5	I	Nicaragua	1993	31.9	47.9	E
China	1996	5.3	16.7	I	Niger	1992	76.1	41.7	E
China	1997	5.0	16.5	I	Niger	1995	69.0	61.4	E
China	1998	3.7	16.6	I	Nigeria	1992	33.0	31.1	E
Colombia	1988	12.1	4.5	I	Nigeria	1997	66.7	70.2	E
Colombia	1991	10.6	2.8	I	Pakistan	1987	7.0	49.6	E
Colombia	1995	10.6	8.9	I	Pakistan	1990	6.8	47.8	E

Country	Year	New Estimates	World Bank Estimates	Survey Type	Country	Year	New Estimates	World Bank Estimates	Survey Type
Colombia	1996	11.8	11.0	I	Pakistan	1993	3.4	33.9	E
Costa Rica	1986	6.1	12.5	I	Pakistan	1996	0.6	31.0	E
Costa Rica	1990	8.6	11.1	I	Panama	1989	26.0	16.6	I
Costa Rica	1993	7.5	10.3	I	Panama	1991	24.8	18.9	I
Costa Rica	1996	8.5	9.6	I	Panama	1995	21.2	14.7	I
Cote d'Ivoire	1985	15.7	4.7	E	Panama	1996	19.7	15.7	I
Cote d'Ivoire	1986	9.3	0.0	E	Panama	1997	7.6	10.3	E
Cote d'Ivoire	1987	11.8	3.3	E	Paraguay	1990	7.8	11.1	I
Cote d'Ivoire	1988	13.2	7.5	E	Paraguay	1995	22.1	19.4	I
Cote d'Ivoire	1993	15.8	9.9	E	Peru	1985	5.9	1.1	E
Cote d'Ivoire	1995	18.5	12.3	E	Peru	1994	7.2	9.1	E
Dominican Republic	1989	12.2	7.7	I	Peru	1996	10.1	15.5	I
Dominican Republic	1996	18.3	3.2	I	Philippines	1985	10.8	22.8	E
Ecuador	1988	7.0	24.9	E	Philippines	1988	7.5	18.3	E
Ecuador	1994	2.2	28.9	E	Philippines	1991	11.7	15.7	E
Ecuador	1995	2.9	20.2	E	Philippines	1994	9.1	18.4	E
Egypt	1991	1.0	4.0	E	Philippines	1997	10.6	14.4	E
El Salvador	1989	22.1	25.5	I	Rwanda	1984	25.4	35.7	E
El Salvador	1995	11.1	25.1	I	Senegal	1991	38.0	45.4	E
El Salvador	1996	13.7	25.3	I	Senegal	1994	23.8	26.3	E
Ethiopia	1981	89.5	32.7	E	Sierra Leone	1989		56.8	E
Ethiopia	1995	89.9	31.3	E	South Africa	1993	20.8	11.5	E
Gambia	1992	42.9	53.7	E	Sri Lanka	1985	0.5	9.4	E
Ghana	1987	29.3	15.9	E	Sri Lanka	1990	0.6	3.8	E
Ghana	1989	32.2	14.0	E	Sri Lanka	1995	0.2	6.6	E
Guatemala	1987	22.4	47.0	I	Tanzania	1991	78.2	48.5	E
Guatemala	1989	25.5	39.8	I	Thailand	1981	10.7	25.7	I
Honduras	1989	37.5	44.7	I	Thailand	1988	1.2	6.0	E
Honduras	1990	35.9	48.6	I	Thailand	1988	0.1	25.9	I
Honduras	1992	32.9	39.0	I	Thailand	1992	0.0	17.9	E
Honduras	1994	33.2	37.9	I	Thailand	1996	0.0	2.2	E
Honduras	1996	31.3	40.5	I	Thailand	1998	0.0	0.0	E
India	1983	29.1	53.9	E	Trinidad and Tobago	1992	0.5	12.4	I
India	1986	27.9	48.3	E	Tunisia	1985	1.3	1.7	E
India	1987	27.6	50.2	E	Tunisia	1990	0.9	1.3	E

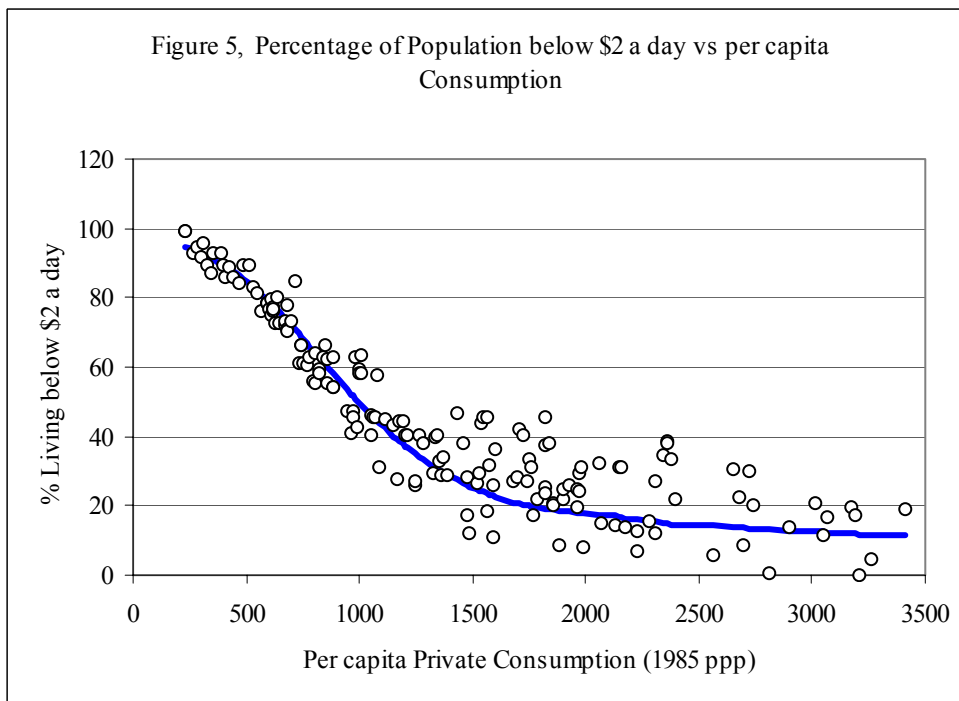
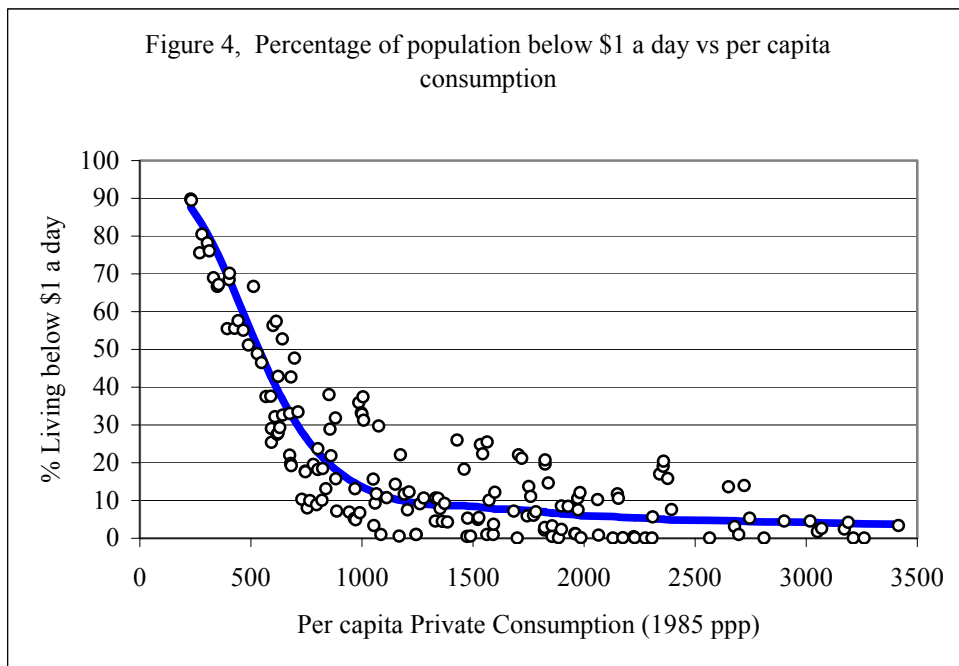
Country	Year	New Estimates	World Bank Estimates	Survey Type	Country	Year	New Estimates	World Bank Estimates	Survey Type
India	1988	22.1	48.8	E	Turkey	1987	0.1	1.5	E
India	1989	19.8	49.2	E	Turkey	1994	0.2	2.4	E
India	1990	19.2	46.6	E	Uganda	1989	55.1	39.2	E
India	1992	17.8	51.1	E	Uganda	1992	57.7	36.7	E
India	1994	17.6	45.1	E	Uruguay	1989	1.0	1.1	I
India	1995	19.6	47.1	E	Venezuela	1981	3.4	6.3	I
India	1996	10.1	46.2	E	Venezuela	1987	2.5	6.6	I
India	1997	13.2	44.2	E	Venezuela	1989	4.6	8.5	I
Indonesia	1984	5.3	36.2	E	Venezuela	1993	0.1	2.7	I
Indonesia	1987	4.9	28.1	E	Venezuela	1995	1.8	9.4	I
Indonesia	1990	1.0	20.4	E	Venezuela	1996	4.6	14.7	I
Indonesia	1993	1.0	14.8	E	Zambia	1991	66.7	58.6	E
Indonesia	1996	1.0	7.8	E	Zambia	1993	75.6	69.2	E
Indonesia	1998	1.0	26.3	E	Zambia	1996	80.5	72.6	E
					Zimbabwe	1990	57.4	36.0	E

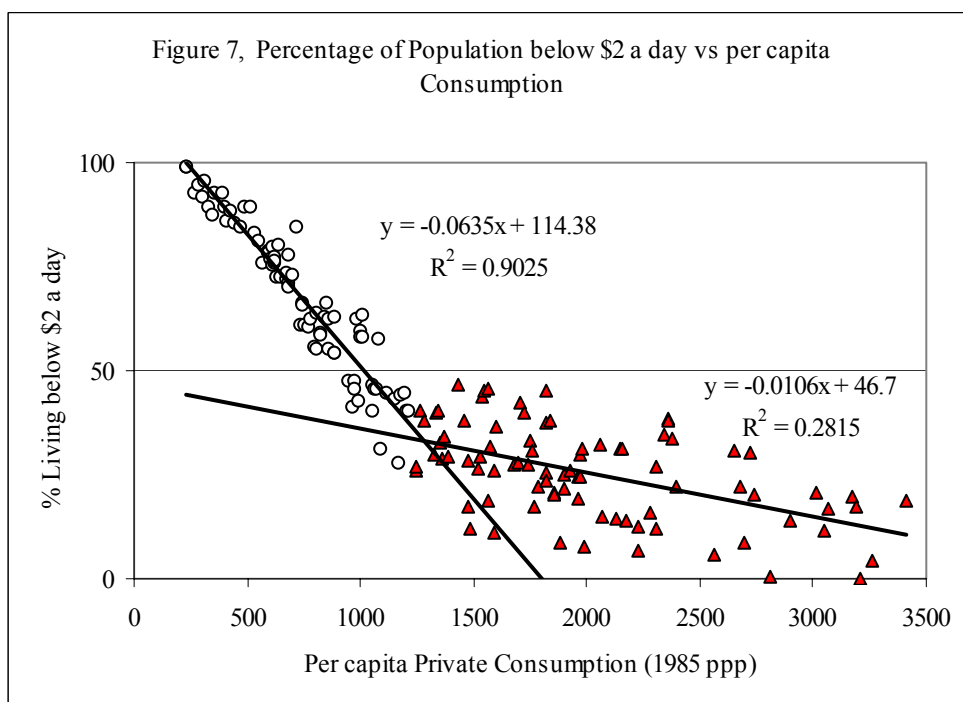
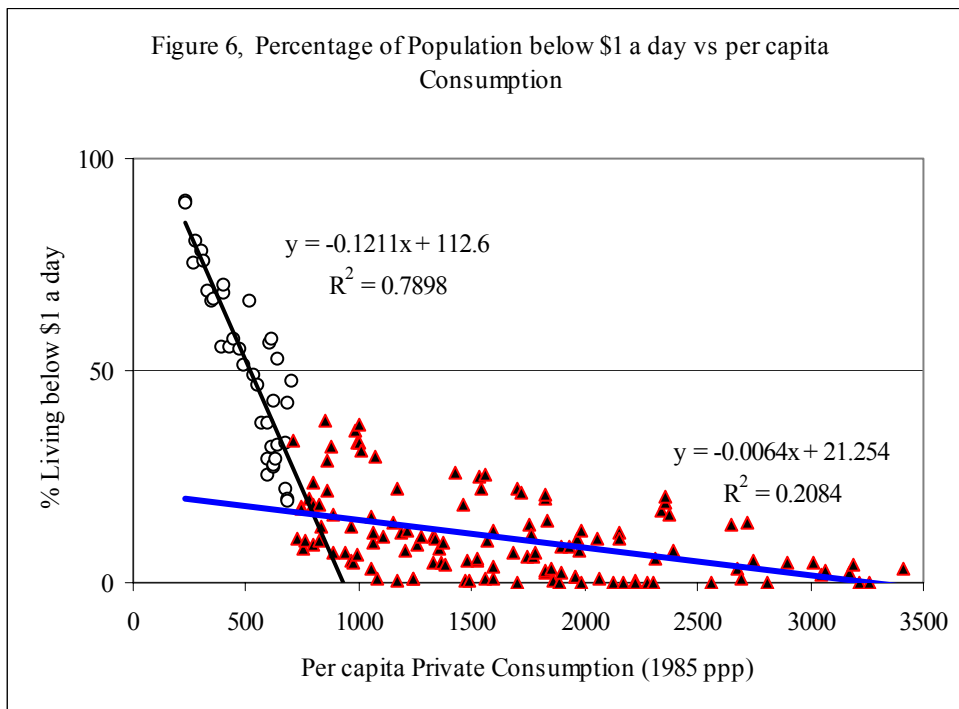
Table 3. Percentage population living below \$2 a day, national accounts based vs survey based measures

Country	Year	New Estimates	World Bank Estimates	Survey Type	Country	Year	New Estimates	World Bank Estimates	Survey Type
Algeria	1995	28.7	15.1	E	Jamaica	1989	21.7	22.1	E
Bangladesh	1984	61.0	84.0	E	Jamaica	1990	20.0	19.3	E
Bangladesh	1985	61.1	79.9	E	Jamaica	1993	14.6	30.1	E
Bangladesh	1988	60.5	85.4	E	Jamaica	1996	6.7	25.2	E
Bangladesh	1991	55.7	86.4	E	Jordan	1987	0.6	0.4	E
Bangladesh	1995	54.3	77.8	E	Jordan	1992	12.5	10.4	E
Bolivia	1990	43.2	38.6	I	Jordan	1997	7.8	7.4	E
Botswana	1985	57.5	61.3	E	Kenya	1992	80.1	63.9	E
Brazil	1985	33.6	36.3	I	Kenya	1994	81.1	62.3	E
Brazil	1988	38.7	38.0	I	Lesotho	1986	73.2	55.5	E
Brazil	1989	38.0	41.5	I	Lesotho	1993	76.8	65.7	E
Brazil	1993	34.6	37.8	I	Madagascar	1980	62.5	80.3	E
Brazil	1995	30.7	33.5	I	Madagascar	1993	83.3	88.8	E
Brazil	1996	30.2	33.9	I	Mali	1989	88.7	55.4	E
Brazil	1997	20.2	17.4	I	Mali	1994	92.7	90.6	E
Burkina Faso	1994	89.5	85.5	E	Mauritania	1988	76.1	78.9	E
CAR	1993	86.0	84.0	E	Mauritania	1993	78.1	81.9	E
Chile	1987	37.8	30.9	I	Mauritania	1995	72.4	70.8	E
Chile	1990	32.4	27.5	I	Mexico	1989	17.5	38.8	I
Chile	1992	27.2	20.6	I	Mexico	1995	17.0	42.5	I
Chile	1994	22.3	20.3	I	Morocco	1985	29.6	16.5	E
China	1990	55.5	70.8	I	Morocco	1990	29.5	7.5	E
China	1992	55.1	65.0	I	Mozambique	1996	78.7	78.4	E
China	1993	40.4	63.7	I	Nepal	1985	92.9	86.0	E
China	1994	37.8	60.3	I	Nepal	1995	89.2	82.5	E
China	1995	34.0	55.6	I	Nicaragua	1993	62.8	77.8	E
China	1996	28.4	50.2	I	Niger	1992	95.5	84.1	E
China	1997	26.6	49.2	I	Niger	1995	89.6	85.3	E
China	1998	25.8	49.5	I	Nigeria	1992	73.5		E
Colombia	1988	31.2	14.7	I	Nigeria	1997	89.6	90.8	E
Colombia	1991	29.6	11.6	I	Pakistan	1987	47.4	88.9	E
Colombia	1995	31.1	26.8	I	Pakistan	1990	42.7	87.9	E

Country	Year	New Estimates	World Bank Estimates	Survey Type	Country	Year	New Estimates	World Bank Estimates	Survey Type
Colombia	1996	31.2	28.7	I	Pakistan	1993	40.4	80.6	E
Costa Rica	1986	17.2	32.1	I	Pakistan	1996	27.8	84.7	E
Costa Rica	1990	24.8	29.2	I	Panama	1989	46.5	32.0	I
Costa Rica	1993	24.3	28.2	I	Panama	1991	43.6	36.0	I
Costa Rica	1996	25.9	26.3	I	Panama	1995	40.1	30.5	I
Cote d'Ivoire	1985	46.4	24.8	E	Panama	1996	37.5	32.0	I
Cote d'Ivoire	1986	45.7	25.8	E	Panama	1997	21.9	25.1	E
Cote d'Ivoire	1987	45.5	27.7	E	Paraguay	1990	32.8	38.7	I
Cote d'Ivoire	1988	47.4	36.4	E	Paraguay	1995	42.1	38.5	I
Cote d'Ivoire	1993	54.2	44.9	E	Peru	1985	27.2	9.9	E
Cote d'Ivoire	1995	58.5	49.4	E	Peru	1994	27.4	31.3	E
Dominican Republic	1989	36.3	28.7	I	Peru	1996	31.5	41.4	I
Dominican Republic	1996	38.1	16.0	I	Philippines	1985	44.9	61.3	E
Ecuador	1988	22.1	58.8	E	Philippines	1988	40.4	55.5	E
Ecuador	1994	25.4	64.3	E	Philippines	1991	44.6	55.0	E
Ecuador	1995	23.6	52.3	E	Philippines	1994	40.4	53.1	E
Egypt	1991	25.9	42.6	E	Philippines	1997	40.6	45.1	E
El Salvador	1989	44.4	50.0	I	Rwanda	1984	78.5	84.6	E
El Salvador	1995	30.9	53.4	I	Senegal	1991	66.3	73.0	E
El Salvador	1996	33.2	51.9	I	Senegal	1994	64.0	38.4	E
Ethiopia	1981	99.0	82.9	E	Sierra Leone	1989		74.5	E
Ethiopia	1995	99.0	76.4	E	South Africa	1993	45.4	35.8	E
Gambia	1992	76.6	84.0	E	Sri Lanka	1985	17.4	51.3	E
Ghana	1987	72.7	53.2	E	Sri Lanka	1990	12.1	40.6	E
Ghana	1989	75.3	51.9	E	Sri Lanka	1995	8.5	45.4	E
Guatemala	1987	45.4	73.2	I	Tanzania	1991	91.9	72.5	E
Guatemala	1989	45.8	64.3	I	Thailand	1981	39.7	59.7	I
Honduras	1989	63.3	70.4	I	Thailand	1988	24.6	37.5	E
Honduras	1990	62.7	74.2	I	Thailand	1988	28.0	56.4	I
Honduras	1992	58.3	65.8	I	Thailand	1992	15.7	54.0	E
Honduras	1994	59.7	65.4	I	Thailand	1996	0.1	28.0	E
Honduras	1996	58.4	68.8	I	Thailand	1998	5.8	28.2	E
India	1983	78.3	89.8	E	Trinidad and Tobago	1992	2.1	39.0	I
India	1986	76.2	87.6	E	Tunisia	1985	19.4	13.1	E

Country	Year	New Estimates	World Bank Estimates	Survey Type	Country	Year	New Estimates	World Bank Estimates	Survey Type
India	1987	77.3	88.7	E	Tunisia	1990	15.1	11.6	E
India	1988	72.0	87.7	E	Turkey	1987	12.1	15.9	E
India	1989	71.1	88.8	E	Turkey	1994	14.1	18.0	E
India	1990	70.1	87.9	E	Uganda	1989	84.4	72.9	E
India	1992	66.3	88.0	E	Uganda	1992	85.8	77.2	E
India	1994	66.1	86.9	E	Uruguay	1989	8.8	6.6	I
India	1995	62.7	87.8	E	Venezuela	1981	18.8	22.6	I
India	1996	59.3	86.8	E	Venezuela	1987	19.9	24.7	I
India	1997	62.9	86.2	E	Venezuela	1989	20.7	26.6	I
					Venezuela	1993	4.5	17.9	I
Indonesia	1984	41.1	79.5	E	Venezuela	1995	11.7	28.8	I
Indonesia	1987	45.7	75.8	E	Venezuela	1996	14.1	36.4	I
Indonesia	1990	31.4	70.7	E	Zambia	1991	87.3	81.5	E
Indonesia	1993	27.1	61.6	E	Zambia	1993	93.0	89.5	E
Indonesia	1996	18.6	50.5	E	Zambia	1996	94.6	91.7	E
Indonesia	1998	11.0	76.0	E	Zimbabwe	1990	79.7	76.7	E





The above phenomenon is to a large extent explained by the location of the poverty line relative to the mean of the income distribution for the countries concerned. At high poverty levels, where the poverty line cuts off the income distribution curve near its mode, variations in mean income or consumption lead to large variations in headcount poverty – much larger than commonly observable distributional changes can generate. Also at very high poverty rates, say above 60 per cent, where the poverty line is not close to the mode of the income distribution, changes in poverty resulting from mean income variations are relatively small, but at these poverty levels possible changes from redistribution of income are even smaller – because there is little income to redistribute. Hence the close fit of the curves at the low income ranges discussed above. The reverse of these arguments apply at the relatively high

per capita income levels (that is, high relative to the poverty line) where income distribution plays a more important part in explaining variations in poverty across countries.

What the above highlights is that the whole poverty and growth debate really depends on where we locate the poverty line and what sample of countries we choose – a point that seems to have been lost in the sophisticated and growing econometric literature on the subject. One should be also able to draw a similar conclusion using the World Bank poverty estimates as long as growth is measured with reference to household survey means. What has compounded the confusion in some studies is the mixing of survey mean based poverty estimates with growth data based on national accounts.

Bibliography

- Atkinson, A.B. and A. Brandolini (2001), 'Promise and Pitfalls in the Use of 'Secondary' Data-Sets: Income Inequality in OECD Countries as a Case Study', *Journal of Economic Literature*, vol.39, pp.771-99, September.
- Bhalla, S.S. (2000), *Growth and Poverty in India: myth and reality*, mimeo (<http://www.oxusresearch.com/economic/asp>).
- Chen, S. and M. Ravallion (2000), *How did the world's poorest fare in the 1990s?*, mimeo, World Bank: Washington D.C.
- Collier, P. and D. Dollar (1999), *Aid Allocation and Poverty Reduction*, Development Research Group, World Bank: Washington D.C.
- Deaton, A. (2002), *Data for monitoring the poverty MDG*, mimeo, Research Programme in Development Studies, Princeton University.
- Deaton, A. (2000), *Counting the world's poor: problems and possible solutions*, mimeo, Research Program in Development Studies, Princeton University.
- Dutt, G. (1999), 'Has poverty in India declined since the Economic Reforms?', *Economic and Political Weekly* no.34, December 11-17.
- Deininger, K. and L. Squire (1996), 'A new Data Set Measuring Income Inequality', *World Bank Economic Review*, v.10, no.3, pp.565-91 (data available at: <http://www.worldbank.org/research/growth/dddeisqu.htm>).
- Hamner, L., G. Pyatt and H. White (1997), *Poverty in sub-Saharan Africa: what can we learn from the World Bank's Poverty Assessments?*, mimeo, Institute of Social Studies: The Hague.
- Karshenas, M. (2001), *Measurement and Nature of Absolute Poverty in Least Developed Countries*, Economic Working Paper Series, no. 129, SOAS, University of London.
- Lipton, M. (1998), *Successes in anti-poverty*, ILO, Geneva.
- Lipton, M. and Litchfield, J. (2001), *Successes in anti-poverty: National-level poverty performance*, Employment Paper 2001/22, ILO, Geneva.
- Pyatt, G. (2000), *The distribution of living standards within countries: some reflections on an evolving international data base*, mimeo, Institute of Social Studies, The Hague, the Netherlands.
- Ravallion, M. (2000), *Do National Accounts Provide Unbiased Estimates of Survey-based Measures of Living Standards?*, mimeo, World Bank, Washington D.C.
- Ravallion, M. (2000a), 'Should poverty measures be anchored in national accounts?', *Economic and Political Weekly*, August 26-September 2, 2000, pp. 3245-3252.
- Ravallion, M. (2001), *Growth, Inequality and Poverty: Looking Beyond Averages*, mimeo, World Bank, Washington D.C.
- Ravallion, M., G. Datt and D. van de Walle (1991) 'Quantifying Absolute Poverty in the Developing World', *Review of Income and Wealth*, no.37, pp.345-361.
- Sala-I-Martin, X. (2002), *The disturbing 'rise' of global income inequality*, NBER Working paper No. 8904, Cambridge, M.A.
- Szekely, M. and M. Hilgert (1999), *What is behind the inequality we measure: An investigation using Latin American Data*, Working Paper no. 409, Inter-American Development Bank: Washington D.C.
- UNCTAD (2002), *The Least Developed Countries Report 2002, Escaping the Poverty Trap*, Geneva.
- World Bank (2001), www.worldbank.org/research/povmonitor/index.htm, World Bank: Washington D.C.