New Evidence on the Urbanization of Global Poverty

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The urbanization of the developing world's population has been viewed by some observers as a positive force in economic development, as economic activity shifts out of agriculture to more remunerative activities. Indeed, longstanding theories of economic development, going back to Arthur Lewis and Simon Kuznets, have viewed urbanization as an integral part of economic growth and distributional change (including poverty reduction) in poor countries. By this view, new economic opportunities in urban areas attract rural workers, who gain directly and may also contribute to positive feedback effects in rural areas. To other observers, urbanization has been seen as a largely unwelcome forebear of new sources of poverty. Advocates of this view often point to claimed negative externalities of geographically concentrated poverty and irreversibilities resulting from the costs of migration, which can mean that migrants to urban areas cannot easily return to their former standard of living in rural areas.

Empirical knowledge to inform this debate has been limited and problematic. We do not even have a firm grip of the basic stylized facts, including the extent to which absolute poverty in the world is an urban or a rural phenomenon. While the premise of much development policymaking is that extreme poverty in the developing world is primarily rural, there is a perception in some quarters that this has changed appreciably in recent times; indeed, some observers believe that poverty is now mainly an urban problem. In an early expression of this view, the distinguished scientific journalist and publisher Gerard Piel told an international conference in 1996 that "The world's poor once huddled largely in rural areas. In the modern world they have gravitated to the cities" (Piel 1997: 58).

This study aims to throw new light on the extent to which poverty is in fact urbanizing in the developing world and on the role, if any, urbanization

has played in poverty reduction. We report our results in studying a new data set created for this purpose, covering about 90 developing countries with observations over time for about 80 percent of them.

The motivation for this study, and the steps in our analysis, can be grouped around five claims. We begin with two widely heard claims:

Claim 1: The majority of the developing world's population lives in rural areas, but the share of the urban population is rising and will soon exceed the rural share.

Claim 2: The incidence of absolute poverty is higher in rural than in urban areas of developing countries.

Support for Claim 1 has mainly come from the useful compilations of demographic data and population forecasts produced by the UN Secretariat's Population Division in its regular report, *World Urbanization Prospects*. The "urban" versus "rural" split of the population is largely based on national statistical sources. In these sources, an "urban area" is typically defined by a nonagricultural production base and a minimum population size. However, there are many differences between countries in the definitions used in practice; for example, the minimum population size can vary from 2,000 to 5,000. Some of the measured growth in the urban population stems from changes in the definition of an "urban area"; Goldstein (1990) describes how this happened in China during the 1980s. The distinction between urban and rural areas is also becoming blurred: urban areas are heterogeneous, with a gradation from mega-cities to towns. While very few people (ourselves included) question the validity of Claim 1, a cloud of doubt remains about definitions and magnitudes.[1]

The foundations for Claim 2 are no more secure. Most of our knowledge concerning the urban–rural poverty profile has come from country-specific studies, using local poverty lines and measures. The World Bank's country-specific Poverty Assessments are examples of this type of evidence; compilations of the national (urban and rural) poverty measures can be found in the Bank's *World Development Indicators* (the latest issue is World Bank 2006). Drawing on evidence from these types of data, Ravallion (2002) estimates that 68 percent of the developing world's poor live in rural areas.

Comparability problems also characterize compilations of national poverty statistics. In addition to the aforementioned inconsistencies in how an urban area is defined, different countries define poverty differently. For example, higher real poverty lines tend to prevail in richer countries, which tend also to be more urbanized. And the urban composition of the poor undoubtedly varies with the level of economic development and urbanization. The picture one draws may well be affected by such comparability problems, although the direction of bias in estimates of the urbanization of poverty is unclear.

We address some of the weaknesses in knowledge relevant to Claim 2, but we accept the empirical foundations of Claim 1, based on existing nation-

al-level definitions of urban and rural areas. By estimating everything from the primary data (either directly from the unit-record data when available or from specially designed tabulations from those data), we ensure a relatively high degree of internal consistency in quantifying the urban–rural poverty profile. We introduce a change in the methodology of the World Bank's global poverty counts using international poverty lines, which have not previously been split by urban and rural areas.[2] We combine country-specific estimates of the differential in urban–rural poverty lines with existing purchasing power parity (PPP) exchange rates and survey-based distributions.[3] Thus we make the first decomposition of the international "$1 a day" poverty counts by urban and rural areas. We reaffirm Claim 2 from these new data. We also highlight a number of unresolved questions about the available data. What does Claim 1 imply for the future validity of Claim 2? Does population urbanization mean that the urban poverty problem will soon overshadow the rural problem? We use our new estimates to assess the validity of three further claims:

Claim 3: The urban sector's share of the poor is rising over time.

Claim 4: The poor are urbanizing faster than the population as a whole.

Claim 5: Population urbanization is a positive factor in overall poverty reduction.

Past support for Claims 3 and 4 has largely come from cross-country comparisons (from data sources similar to those supporting Claim 2), which suggest that the urban share of the poor tends to be higher in more urbanized countries and that the urban poverty rate tends to be higher relative to the overall rate, consistent with Claim 4 (Ravallion 2002). Here too there are doubts about the empirical foundations of these claims. There is no obvious reason why the comparability problems noted above with reference to Claims 1 and 2 would be time invariant, so biases in the measured pace of the urbanization of poverty cannot be ruled out. And the fact that the evidence for Claims 3 and 4, which are about dynamics, has largely come from cross-sectional data leaves room for doubt; possibly the pace of poverty's urbanization over time at the country level will look very different from the cross-country differences observed at one date.

If the distribution of income within urban and rural areas remains unchanged, then Claim 2 implies that the overall poverty rate—the proportion of the total population (urban + rural) living below the poverty line—will fall as the urban population share rises, consistent with Claim 5.[4] This can be termed a "Kuznets process" of urbanization, whereby a representative slice of the rural distribution is transformed into a representative slice of the urban distribution.[5] Given that the urban distribution has lower poverty, aggregate poverty must fall. According to the Kuznets Hypothesis (Kuznets 1955), if the urban sector also has higher inequality than the rural sector (as is typically

the case in developing countries), then aggregate inequality will rise in the early stages of urbanization, and eventually fall. The reality may well be more complex, with distributional changes within each sector and interlinkages; for example, even if urbanization puts upward pressure on urban poverty, there can be offsetting gains to the rural economy, such as through rural labor-market tightening and remittances back to rural residents stemming from migration to urban areas.

Claim 4 is interpretable as the outcome of what can be termed a "mixed Kuznets process." Intuitively, urbanization entails gains to the poor (both directly as migrants and indirectly via remittances), but the gains are not large enough for all previously poor new urban residents to escape poverty. Thus the migration process puts a brake on the decline in the incidence of urban poverty, even when rural poverty and total poverty are falling. To give a sharp characterization of this effect, suppose that a proportion δ of the population shifts from rural to urban areas, of which a proportion α attains the pre-existing urban distribution of income (the successful migrants) while $1-\alpha$ retains the rural income distribution. (Only when $\alpha=1$ do we have a pure Kuznets process.) The initial difference in poverty rates between rural and urban areas is $H^r-H^u>0$, where H^k is the headcount index in sector $k=u,r$.[6] It is plain that this urbanization process will reduce aggregate poverty, as in Claim 5—the national headcount index falls by $\alpha\delta(H^r-H^u)$—but it will increase the poverty rate in urban areas, which rises by $(1-\alpha)\delta(H^r-H^u)/(S^u+\delta)$, where S^u is the initial urban population share.

The following section describes our methods and data. The next two sections assess whether our estimates of urban and rural poverty measures are consistent with Claims 2–5.

Measuring urban and rural poverty in the developing world

We focus on poverty defined in terms of household consumption per capita. Following standard practice, the measures of household consumption (or income, when consumption is unavailable) in the survey data we use are reasonably comprehensive, including both cash spending and imputed values for consumption from own production. We acknowledge that even the best consumption data may not adequately reflect certain "non-market" dimensions of welfare that differ between urban and rural areas, such as access to public services (invariably better in urban areas) and exposure to crime (typically a greater problem in urban areas).

We make two assumptions about poverty measurement. First, we confine attention to standard additively separable poverty measures for which the aggregate measure is the population-weighted sum of individual measures.

This includes the two measures reported in this article: the headcount index and the poverty gap index.[7]

Second, we take it as axiomatic that simply moving individuals between urban and rural areas (or countries), with no absolute loss in their real consumption, cannot increase the aggregate measure of poverty. Relocation on its own cannot change aggregate poverty.

These assumptions justify confining our attention to absolute poverty measures, by which we mean that the poverty line is intended to have a constant real value both between countries and between urban and rural areas within countries.[8] A key issue is then how to deal with the fact that the cost of living is generally higher in urban areas. Casual observation suggests that weak internal market integration and the existence of geographically nontraded goods can yield substantial cost-of-living differences between urban and rural areas. Any assessment of the urbanization of poverty that ignored these cost-of-living differences would simply not be credible. Yet purchasing power parity exchange rates used to convert the international poverty line into local currencies do not distinguish rural from urban areas.

To address this problem we turn to the World Bank's country-specific Poverty Assessments, which have been completed for most developing countries. Each report describes the extent of poverty and its causes in a particular country.[9] The Poverty Assessments are the best available source of information on urban–rural differentials for establishing international poverty lines, although they have not previously been used for this purpose.

This article uses country-specific urban and rural poverty lines from the Poverty Assessments in establishing the urban–rural differential in international poverty lines. Besides the change in methodology, our methods closely follow those outlined in Chen and Ravallion (2004), which provides the latest available update of the World Bank's global poverty measures for persons living on $1 and $2 a day. We follow the longstanding tradition in poverty measurement at the World Bank and elsewhere of relying on primary survey data to the maximum extent feasible.

An alternative approach to global poverty measurement is to combine pre-existing inequality measures from survey data at the country level with the estimates of mean consumption or income from the national accounts.[10] This is not a defensible option for delineating an urban–rural split of global poverty measures, allowing for cost-of-living differences, since neither the inequality measures nor the means from the national accounts would then be valid. This method is also questionable in the limiting case when the cost-of-living difference is zero. On the one hand, it is not clear that the national accounts data can provide a more accurate measure of mean household welfare than the survey data that were collected precisely for that purpose. On the other hand, even acknowledging the problems of income underreporting

and selective survey compliance, one cannot presume that the discrepancies between survey means and the national accounts aggregates (such as private consumption per person) are distribution neutral; more plausibly, the main reasons why surveys underestimate consumption or income would also be those that lead to an underestimation of inequality.[11]

In almost all cases, the Poverty Assessment poverty lines were constructed using some version of the cost-of-basic-needs method.[12] This method aims to approximate a cost-of-living index that reflects the differences in prices between urban and rural areas, weighted by the consumption patterns of people living close to the country-specific poverty line. This procedure is consistent with the use of an absolute poverty standard across countries.

While our method appears to be the best currently feasible option, internal consistency is questionable if the urban–rural cost-of-living differential varies by income. This eventuality may stem from differences in prices between the poor and others, or differences in consumption patterns. Then the differential from the Poverty Assessment may not be appropriate for the international poverty lines. If the cost-of-living differential tends to rise with income, then the Poverty Assessments will tend to overestimate urban poverty based on the $1 a day poverty line in middle-income countries relative to low-income countries, given that the poverty line will tend to be above the international line for most middle-income countries. To help assess robustness, we also estimate poverty measures for a "$2 a day" poverty line that is more typical of the poverty lines used in middle-income countries.

Another data constraint that can create internal inconsistencies is that in setting poverty lines, location-specific prices are typically available only for food goods. Also, while nutritional requirements for good health provide a defensible anchor in setting a reference food bundle, it is less obvious in practice what normative criteria should be applied in defining "non-food basic needs." The problem is compounded by the fact that poor rural infrastructure (such as incomplete electrification) means that some non-food goods found in urban areas will not be consumed in rural areas.

In addressing these concerns in applied poverty measurement (including the Bank's Poverty Assessments), the non-food component of the poverty line is typically set according to food demand behavior in each sub-group of the population for which a poverty line is to be determined. Different methods are found in practice, but they share the common feature that the non-food component of the poverty line is found by looking at the non-food spending of people close to the food poverty line, which is the cost for that sub-group of a reference food bundle (which may itself vary according to differences in relative prices or other factors). Thus spending on non-food items such as clothing and housing is included consistently with the food poverty line. This typically entails a larger (sometimes appreciably larger) allowance for non-food spending in urban areas.

While this approach appears to be a reasonable and operational approach to the problem of setting the non-food component of the poverty line, it may introduce some degree of relativism into the poverty measures, depending on the properties of the food demand functions, which may shift with factors that are not deemed relevant to absolute welfare comparisons. For example, better-off urban consumers may choose to cut their food spending to afford certain non-food goods that are not even available to rural consumers.

We use two poverty lines, $32.74 and $65.48 per person per month, both at 1993 PPP, interpreted as the "$1 a day" and "$2 a day" lines ($1.08 and $2.15 more precisely). The international rural line is converted to local currency by the Bank's 1993 consumption PPP rate.

We then use the ratio of the urban poverty line to the rural line from the Poverty Assessment (generally the one closest to 1993 if there is more than one) to obtain an urban poverty line for each country corresponding to its PPP-adjusted "$1 a day" rural line.[13]

Taking the international poverty line to be the rural line rather than the urban line is an arbitrary choice, although it is broadly consistent with the original idea of the "$1 a day" poverty line as deliberately conservative. Indeed, the original set of poverty lines on which the World Bank's international line was based was for rural areas (Ravallion, Datt, and van de Walle 1991; World Bank 1990). The precise line used by the Bank is $32.74 per month ($1.08=$32.74 x 12/365 per day), which is the median of the lowest ten poverty lines in the original compilation of (largely rural) poverty lines, as documented in Ravallion et al. (1991) (although the PPPs have been updated and revised since then; see Chen and Ravallion 2004 for details).[14] By implication, our aggregate poverty count will tend to increase, given that urban poverty lines are generally higher than those for rural areas.

Appendix 1 provides a formal exposition of our approach and explains how it differs from past methods used to quantify the extent of the urbanization of poverty.

Table 1 gives a regional summary of the poverty lines, and Appendix 2 provides the urban–rural poverty line differential by country. On average, the urban poverty line is about 30 percent higher than the rural line, although the numbers vary from region to region. In Eastern Europe and Central Asia, the urban poverty line is only 5 percent higher on average, while in Latin America and the Caribbean it is 44 percent higher on average.

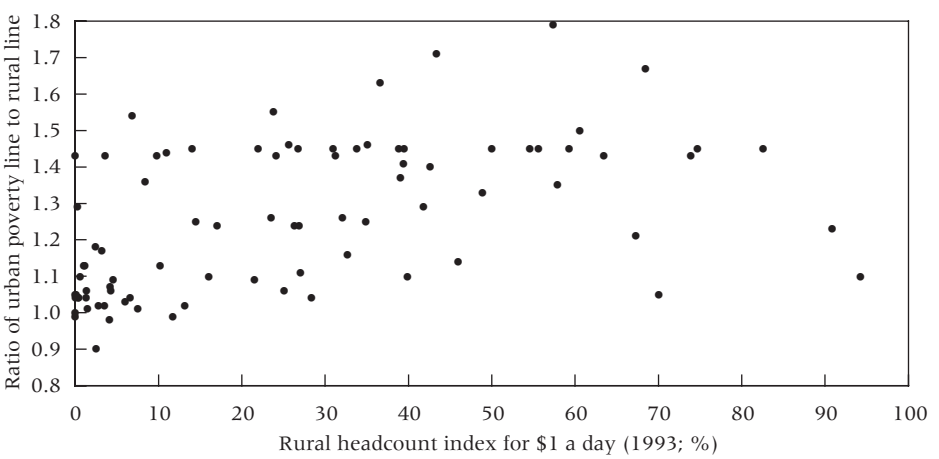
As can be seen in Figure 1, there is a tendency for poorer countries to have higher ratios of the urban line to the rural line; the correlation coefficient of the poverty-line ratio with the rural headcount index for $1 a day is 0.518 in 1993 (n=89); for the $2 a day headcount index, the correlation is 0.521 (both are significant at better than the 1 percent level). This finding is consistent with the hypothesis that internal market integration tends to improve as countries become less poor.

TABLE 1 Population-weighted urban poverty lines in 1993 PPP

Region	Urban poverty line ($/day) corresponding to rural poverty line	
	$1.08	$2.15
East Asia and Pacific	1.40	2.79
Eastern Europe and Central Asia	1.13	2.27
Latin America and Caribbean	1.55	3.10
Middle East and North Africa	1.19	2.37
South Asia	1.40	2.79
Sub-Saharan Africa	1.39	2.77
Total	1.39	2.79

In all cases, the distributional data were in nominal terms, to which we applied the appropriate urban or rural poverty lines. In two-thirds of cases, the Poverty Assessment gives explicit urban and rural poverty lines, and we used these to construct the cost-of-living ratio and hence the urban poverty line corresponding to the international rural line. When explicit urban–rural lines were not reported in the Poverty Assessment, but a deflator was applied to adjust for the urban cost-of-living differential, we "backed out" the latter from the real and nominal consumption numbers given in the micro data (in some cases this was already done in the form of a price index in the data files). When urban–rural lines (either explicit or implicit) were not available, we applied the population-weighted regional average poverty-line differential to the country in question. We used the country-specific consumer price indexes to adjust the urban and rural index over time. For most countries, we had little choice but to assume that the poverty-line differential is constant over

FIGURE 1 Plot of urban–rural poverty line differential against rural headcount index



time; in only a few cases (though for some of the largest countries, including China, India, and Nigeria) did we have separate urban and rural consumer price indexes with which to calculate a date-specific urban–rural poverty line differential. Table 2 gives the numbers of countries in each data category at the regional level.

We derived rural and urban income/consumption per capita distributions for 87 low- and middle-income countries from 208 household surveys representing 92 percent of the population of the developing world; Appendix 2 provides details of country coverage and survey dates.[15] Of these surveys, 157 are for consumption expenditure and 51 are for income. Within the 87 countries, 19 use only one distribution, 38 have two distributions, and the remaining 30 use at least three distributions over the period.[16] All household surveys used here are national in coverage except Argentina and Uruguay, which cover only the urban population (though 90 percent or more of their populations live in urban areas).

The use of a per capita normalization in measuring poverty is standard in the literature on developing countries; for example, virtually all of the Poverty Assessments use household income or consumption per capita, as have the past international $1 a day poverty counts. Lanjouw and Ravallion (1995) have questioned the general presumption that there is little scope for economies of size in consumption for the poor. Mean household size tends to be higher in rural than urban areas of developing countries, so introducing an allowance for economies of size in consumption will narrow the urban–rural differential in mean living standards. We expect that this would also hold for poverty measures.

The surveys are scattered over time. We estimate the poverty measures for four reference years spanning the range of the data, namely 1993, 1996, 1999, and 2002. To estimate regional poverty at a given reference year, we "line up" the surveys in time using the same method described in Chen and

TABLE 2 Number of countries by type of data

Region	Countries with urban–rural distribution data	Countries with rural/urban poverty lines		Number of countries for which regional mean is used
		Explicit in Poverty Assessment	Implicit in data files	
East Asia and Pacific	8	7	0	1
Eastern Europe and Central Asia	21	12	19	1
Latin America and Caribbean	21	12	0	9
Middle East and North Africa	6	5	0	1
South Asia	5	4	1	0
Sub-Saharan Africa	26	13	5	8
Total	87	42	25	20

Ravallion (2004). That publication also describes our interpolation method when the reference date is between two surveys.

The urban population data are from the latest (2006) available issue of the *World Urbanization Prospects* (WUP) (UN 2005). As we noted at the outset, there are undoubtedly differences in the definitions used between countries, which we can do little about here.[17] The WUP estimates are based on actual enumerations whenever they are available. The WUP web site provides details on data sources and how specific cases were handled; see «http://esa.un.org/unup/».

Using the household survey data, we also drew urban population shares from each survey's internal sample weights. We found that these two sets of weights differ for some countries. This was mainly a problem in the data for sub-Saharan Africa. To test robustness we recalculated the estimates for sub-Saharan Africa using the survey-based urban population shares (giving results more consistent with Chen and Ravallion 2004). The rate of decline in poverty estimates over time is somewhat higher using the census shares, but the difference is modest.[18]

The urbanization of poverty 1993–2002

Tables 3 and 4 give our aggregate results. Consistent with Claim 2, we find that rural poverty incidence is appreciably higher than urban. The "$1 a day" rural poverty rate in 2002 of 29 percent is more than double the urban rate. Similarly, while we find that 70 percent of the rural population lives below $2 a day, the proportion in urban areas is less than half that figure. The rural share of poverty in 2002 is 76 percent using the $1 a day line, and slightly lower using the $2 line. This is higher than the widely cited estimate of 68 percent obtained by Ravallion (2002) using a population-weighted aggregate of national poverty measures. This is a non-negligible difference, representing the reclassification of more than 80 million poor people from urban to rural areas.

Over the decade as a whole, we find a 5.5 percentage point decline in the "$1 a day" poverty rate, from 27.8 percent in 1993 to 22.3 percent in 2002. This was sufficient to reduce the overall count of the number of poor by about 100 million people. However, there is a marked difference between urban and rural areas. The rural poverty rate fell much more than the urban rate. The count of 106 million fewer poor by the $1 a day standard is the net effect of a decline of 153 million in the number of rural poor and an increase of 47 million in the number of urban poor. Similarly, the progress in reducing the total number of persons living on less than $2 a day in rural areas by 117 million was accompanied by an increase of 63 million in the number of urban poor, giving a net drop in the poverty count of only 54 million (Table 4).

Our aggregate results point to a higher overall poverty rate and a slightly lower rate of poverty reduction than found in Chen and Ravallion (2004). In comparing our results for 1993 in Table 3 to the Chen–Ravallion estimates, using essentially the same methods but without allowing for an urban–rural differential in the cost of living, we find that the $1 a day headcount index is about 2.2 percentage points higher in 1993 (27.8 percent versus 25.6 percent) and that it declines at a rate of about 0.6 percentage points per year, as compared to 0.7 percentage points. The higher level is unsurprising (given that we have allowed for a higher poverty line in urban areas). The lower pace of overall poverty reduction reflects the fact that the urban headcount index for $1 a day shows no trend decline (Table 3). Thus, we find that past methods that have ignored the urban–rural cost-of-living difference (including the Chen–Ravallion method) have underestimated poverty in a segment of the economy with a below-average rate of poverty reduction over time, hence such methods have slightly overestimated the overall speed of poverty reduction.

The lack of a trend in the overall urban poverty rate implies that the main proximate causes of the overall decline in the poverty rate evident in Tables 3 and 4 are (i) urban population growth (at a given urban–rural poverty rate differential) and (ii) falling poverty incidence within rural areas. To help quantify the relative importance of these factors, we can decompose[19] the change in overall poverty between 1993 and 2002 as:

$$H_{02} - H_{93} = w^r (H^r_{02} - H^r_{93}) + w^u (H^u_{02} - H^u_{93}) + w^s (S^u_{02} - S^u_{93}) + error \qquad (1)$$

where H_t is the aggregate headcount index, H^k_t is the headcount index for sector k=u,r and t=(19)93, (20)02, and (as before) S^u is the urban population share. The first two terms on the right hand side are the sector contributions (with time-invariant weights w^u and w^r), and the third term ($w^s(S^u_{02} - S^u_{93})$) is the urban–rural population shift effect (weighted by w^s), which we call the "urbanization component." The decomposition is exact (*error*=0) if we choose the weights $w^k = S^k_{02}$ and $w^s = (H^u_{93} - H^r_{93})$.[20] Table 5 gives the results.

We find that 4.2 percentage points of the 5.5 percentage point decline in the aggregate $1 a day poverty rate between 1993 and 2002 is attributable to lower rural poverty, 0.3 percentage points to lower urban poverty, and 1.0 percentage point to population urbanization. Three-quarters of the aggregate poverty reduction is attributable to falling poverty within rural areas. One-fifth is attributed to urbanization.

This assessment does not allow for any indirect gains to the rural poor from urban population growth. The urbanization component in equation (1) can be interpreted as the direct contribution of a rising urban population share to total poverty reduction, given the initial difference in urban and

TABLE 3 Urban and rural poverty measures using a poverty line of $1.08/day (in 1993 PPP)

	Number of poor in millions			Headcount index (%)			Urban share of the poor (%)	Urban share of population (%)
	Urban	Rural	Total	Urban	Rural	Total		
1993								
East Asia and Pacific	28.71	407.17	435.88	5.6	35.5	26.2	6.6	31.1
China	10.98	331.38	342.36	3.3	39.1	29.1	3.2	29.8
Eastern Europe and Central Asia	6.12	6.37	12.49	2.1	3.7	2.7	49.0	63.1
Latin America and Caribbean	26.07	28.55	54.62	7.8	22.4	11.9	47.7	72.3
Middle East and North Africa	0.77	4.29	5.07	0.6	3.8	2.1	15.3	52.8
South Asia	107.48	383.30	490.78	35.3	43.6	41.4	21.9	25.7
India	94.28	324.55	418.83	40.1	48.9	46.6	22.5	26.2
Sub-Saharan Africa	66.42	206.73	273.15	40.2	53.1	49.2	24.3	29.8
Total	235.58	1,036.41	1,271.99	13.5	36.6	27.8	18.5	38.1
Excluding China	224.60	705.03	929.63	15.9	35.5	27.3	24.2	41.6
1996								
East Asia and Pacific	19.34	264.54	283.88	3.3	23.0	16.4	6.8	33.5
China	6.59	204.60	211.20	1.7	24.8	17.4	3.1	32.2
Eastern Europe and Central Asia	7.77	9.15	16.93	2.6	5.3	3.6	45.9	63.2
Latin America and Caribbean	31.34	28.95	60.29	8.8	22.7	12.4	52.0	73.6
Middle East and North Africa	0.75	5.05	5.80	0.5	4.2	2.2	12.9	53.9
South Asia	115.43	384.97	500.40	34.8	41.6	39.8	23.1	26.4
India	103.06	324.75	427.81	40.5	46.8	45.1	24.1	26.8
Sub-Saharan Africa	82.32	221.37	303.69	43.4	54.0	50.6	27.1	31.6
Total	256.96	914.02	1,170.98	13.6	31.5	24.4	21.9	39.5
Excluding China	250.36	709.42	959.78	16.7	42.0	26.8	26.1	41.9

1999								
East Asia and Pacific	19.53	268.24	287.76	3.0	23.5	16.1	6.8	36.1
China	6.93	220.78	227.71	1.6	27.0	18.2	3.0	34.9
Eastern Europe and Central Asia	7.42	10.65	18.07	2.5	6.1	3.8	41.1	63.2
Latin America and Caribbean	33.90	29.85	63.75	8.9	23.5	12.6	53.2	75.0
Middle East and North Africa	1.31	5.17	6.47	0.9	4.2	2.4	20.2	54.8
South Asia	120.15	402.40	522.55	33.4	41.6	39.4	23.0	27.1
India	102.51	321.06	423.58	37.4	44.3	42.4	24.2	27.5
Sub-Saharan Africa	92.05	228.85	320.90	42.6	53.1	49.6	28.7	33.4
Total	274.36	945.15	1,219.51	13.4	31.9	24.3	22.5	40.9
Excluding China	267.42	724.38	991.80	16.6	33.7	26.4	27.0	42.9
2002								
East Asia and Pacific	16.27	223.23	239.50	2.3	19.8	13.0	6.8	38.8
China	4.00	175.01	179.01	0.8	22.4	14.0	2.2	37.7
Eastern Europe and Central Asia	2.48	4.94	7.42	0.8	2.9	1.6	33.4	63.5
Latin America and Caribbean	38.33	26.60	64.93	9.5	21.2	12.3	59.0	76.2
Middle East and North Africa	1.21	4.88	6.09	0.8	3.8	2.1	19.9	55.8
South Asia	125.40	394.34	519.74	32.2	39.1	37.2	24.1	27.8
India	106.64	316.42	423.06	36.2	42.0	40.3	25.2	28.1
Sub-Saharan Africa	98.84	228.77	327.61	40.4	50.9	47.2	30.2	35.2
Total	282.52	882.77	1,165.29	12.8	29.3	22.3	24.2	42.3
Excluding China	278.52	707.76	986.28	16.3	31.7	25.0	28.2	43.4

TABLE 4 Urban and rural poverty measures using a poverty line of $2.15/day (in 1993 PPP)

	Number of poor in millions			Headcount index (%)			Urban share of the poor (%)	Urban share of population (%)
	Urban	Rural	Total	Urban	Rural	Total		
1993								
East Asia and Pacific	199.84	976.38	1,176.22	38.6	85.1	70.6	17.0	31.1
China	117.33	752.19	869.52	35.6	88.6	73.8	13.5	29.8
Eastern Europe and Central Asia	43.60	34.49	78.09	14.7	19.8	16.6	55.8	63.1
Latin America and Caribbean	75.92	60.35	136.28	22.8	47.3	29.6	55.7	72.3
Middle East and North Africa	15.96	40.82	56.78	12.5	35.8	23.5	28.1	52.8
South Asia	237.38	770.65	1,008.02	78.0	87.6	85.1	23.6	25.7
India	193.65	607.54	801.19	82.3	91.5	89.1	24.2	26.2
Sub-Saharan Africa	110.45	331.96	442.41	66.9	85.2	79.8	25.0	29.8
Total	683.15	2,214.65	2,897.80	39.1	78.2	63.3	23.6	38.1
Excluding China	565.83	1,462.46	2,028.28	40.0	73.7	59.7	27.9	41.6
1996								
East Asia and Pacific	169.18	812.09	981.26	29.2	70.6	56.7	17.2	33.5
China	101.47	598.05	699.52	25.9	72.5	57.5	14.5	32.2
Eastern Europe and Central Asia	49.77	39.81	89.59	16.7	22.9	19.0	55.6	63.2
Latin America and Caribbean	95.61	61.17	156.78	26.8	47.9	32.4	61.0	73.6
Middle East and North Africa	17.57	44.78	62.34	12.6	37.5	24.1	28.2	53.9
South Asia	259.94	813.58	1,073.52	78.4	88.0	85.5	24.2	26.4
India	215.45	629.45	844.90	84.7	90.7	89.1	25.5	26.8
Sub-Saharan Africa	131.64	346.62	478.25	69.4	84.5	79.7	27.5	31.6
Total	723.70	2,118.04	2,841.74	38.2	72.9	59.2	25.5	39.5
Excluding China	622.23	1,519.99	2,142.21	41.4	90.0	59.8	29.1	41.9

1999								
East Asia and Pacific	166.03	796.67	962.69	25.7	69.7	53.8	17.3	36.1
China	89.22	593.80	683.02	20.5	72.6	54.5	13.1	34.9
Eastern Europe and Central Asia	50.07	44.46	94.53	16.7	25.5	20.0	53.0	63.2
Latin America and Caribbean	102.65	61.56	164.21	27.0	48.5	32.4	62.5	75.0
Middle East and North Africa	20.73	48.81	69.54	13.9	39.6	25.5	29.8	54.8
South Asia	270.88	846.45	1,117.33	75.3	87.5	84.2	24.2	27.1
India	218.06	649.41	867.47	79.5	89.6	86.8	25.1	27.5
Sub-Saharan Africa	150.54	362.76	513.30	69.6	84.2	79.4	29.3	33.4
Total	760.90	2,160.71	2,921.61	37.1	72.9	58.2	26.0	40.9
Excluding China	671.68	1,566.91	2,238.60	41.6	72.9	59.5	30.0	42.9
2002								
East Asia and Pacific	126.71	711.45	838.16	17.8	63.2	45.6	15.1	38.8
China	53.45	507.48	560.93	10.7	65.1	43.8	9.5	37.7
Eastern Europe and Central Asia	32.07	32.22	64.29	10.7	18.7	13.6	49.9	63.5
Latin America and Caribbean	109.25	58.36	167.61	27.1	46.4	31.7	65.2	76.2
Middle East and North Africa	19.90	48.12	68.02	12.4	37.6	23.5	29.3	55.8
South Asia	290.29	876.30	1,166.59	74.6	86.8	83.4	24.9	27.8
India	229.91	667.89	897.80	78.1	88.6	85.6	25.6	28.1
Sub-Saharan Africa	167.72	370.83	538.55	68.5	82.5	77.5	31.1	35.2
Total	745.94	2,097.29	2,843.23	33.7	69.7	54.4	26.2	42.3
Excluding China	692.48	1,589.81	2,282.30	40.5	71.3	57.9	30.3	43.4

TABLE 5 Decomposition of the change in poverty 1993–2002

	Total change in headcount index 1993–2002 (percentage points)	Decomposition		
		Rural sector	Urban sector	Population shift
$1.08/day				
East Asia and Pacific	–13.14	–9.57	–1.27	–2.31
China	–15.07	–11.04	–1.02	–3.01
Eastern Europe and Central Asia	–1.08	–0.29	–0.78	–0.01
Latin America and Caribbean	0.41	–0.29	1.27	–0.57
Middle East and North Africa	0.01	0.03	0.08	–0.09
South Asia	–4.28	–3.28	–0.87	–0.14
India	–6.23	–5.01	–1.09	–0.12
Sub-Saharan Africa	–2.07	–1.43	0.06	–0.70
Total	–5.47	–4.20	–0.31	–0.96
$2.15/day				
East Asia and Pacific	–25.03	–13.37	–8.08	–3.58
China	–29.98	–15.58	–9.95	–4.45
Eastern Europe and Central Asia	–2.96	–0.42	–2.52	–0.02
Latin America and Caribbean	2.09	–0.22	3.27	–0.96
Middle East and North Africa	0.08	0.84	–0.08	–0.68
South Asia	–1.72	–0.57	–0.96	–0.18
India	–3.47	–2.12	–1.20	–0.15
Sub-Saharan Africa	–2.21	–1.79	0.58	–1.00
Total	–8.85	–4.92	–2.29	–1.64

rural poverty measures. However, the rural poverty reduction component is also the result (in part at least) of urban population growth, notably through remittances and tighter rural labor markets. We return to this issue below.

Are the poor urbanizing faster than the population as a whole?

For the $1 a day poverty line, the aggregate results in Table 3 indicate that the urban share of the poor is rising (consistent with Claim 3) and that the ratio of urban poverty incidence to total poverty incidence has risen with urbanization (implying Claim 4). The value of H^u/H rises from 0.486 to 0.573 over 1993–2002. The proportionate rate of growth is about 3 percent per year for the share of the poor living in urban areas, versus about 1 percent per year for the overall urban population share.[21] There is naturally a smaller difference between the changes in the levels than for the (proportionate) growth rates. We find that the urban share of the $1 a day poor is rising by about 0.6 percentage points per year over 1993–2002.[22] By contrast, the population as

a whole is urbanizing at a rate of about 0.5 percentage points per year over the same period.[23]

Using the $2 a day poverty line, we find a slightly higher proportion of the poor living in urban areas, but this proportion has been rising at a slower pace than for the $1 a day line. The share of the poor in urban areas is rising at about 0.3 percentage points per year using the higher line—half the absolute rate implied by the $1 a day line. Furthermore, over the period since the late 1990s, Claim 3 is starting to look fragile for the $2 a day line; there is an indication of a deceleration in the urbanization of poverty in Table 4. The ratio of urban poverty to total poverty rose only slightly, from 0.618 to 0.620, between 1993 and 2002. Thus the rate of growth of the aggregate urban share of the poor of about 1.2 percent per annum over 1993–2002 is very close to the growth rate for the population as a whole.[24] Claim 4 is not supported by our results for the $2 a day line.

So Claims 3 and 4 do not hold up as well for the $2 a day poverty line as for the $1 a day line. Urban poverty reduction has clearly played a more important role in aggregate poverty reduction using the $2 line than the $1 line. Of the 8.9 percentage point decline in the poverty rate for the $2 a day line, 4.9 percentage points are attributed to rural poverty reduction (55 percent of the total), 2.3 percentage points to urban poverty reduction, and 1.6 percentage points to the population shift effect (based on equation (1)).

It is of interest to see what happens if we drop China from these calculations, given its size and the fact that China is unusual in a number of respects, notably in the low share of the poor living in urban areas and the slower pace of the urbanization of poverty compared to other developing countries. Tables 3 and 4 also give the aggregate results excluding China. As expected, we now find a higher urban share of the poor. What is more notable is that we now find that H^u/H is rising over time using both poverty lines, supporting Claim 4; excluding China, H^u/H rises from 0.580 to 0.651 for $1 a day and from 0.670 to 0.699 for $2 a day.

We can also assess the validity of Claims 3 and 4 using the country-level estimates underlying Tables 3 and 4. By definition, the share of the poor living in urban areas is $P^u(S^u) \equiv (H^u/H)S^u$, where H^u/H is a function of the urban share of the population, S^u; and $P^u(S^u)$ is the poverty urbanization curve of Ravallion (2002), where the derivation and properties are discussed further. Log differentiating with respect to time, the growth rate in the urban share of the poor is:

$$\frac{\partial \ln P^u(S^u)}{\partial t} = \left(1 + \frac{\partial \ln(H^u/H)}{\partial \ln S^u}\right)\frac{\partial \ln S^u}{\partial t} \qquad (2)$$

We can estimate the elasticity, $\partial \ln(H^u/H)/\partial \ln S^u$, from the country-level estimates underlying Tables 3 and 4. The estimated elasticity is 0.304 (s.e.=0.075; n=348) for the $1 a day line and 0.127 (0.0230; n=348) for the $2 a day line.

The fact that these elasticities are significantly positive implies that the poor urbanize faster than the population as a whole ($\partial \ln P^u(S^u)/\partial t > \partial \ln S^u/\partial t$). While Claim 4 is confirmed, the difference in growth rates is small, especially for the $2 a day poverty line. Slightly higher elasticities are obtained if we allow for regional fixed effects; in that case the estimated elasticities increase to 0.398 (0.100) and 0.211 (0.040) for the $1 and $2 lines respectively.[25] (There was no sign of time effects.)

There are two proximate reasons why the poor are urbanizing faster: first, the proportionate difference between urban and rural poverty rates rises with urbanization; second, the initial gap in poverty rates between the two sectors is large. This can be verified on noting that:

$$\frac{\partial \ln(H^u/H)}{\partial \ln S^u} = \frac{S^u(H^r - H^u)}{H} + \frac{(1-S^u)H^r}{H}\frac{\partial \ln H^u / H^r}{\partial \ln S^u} \quad (3)$$

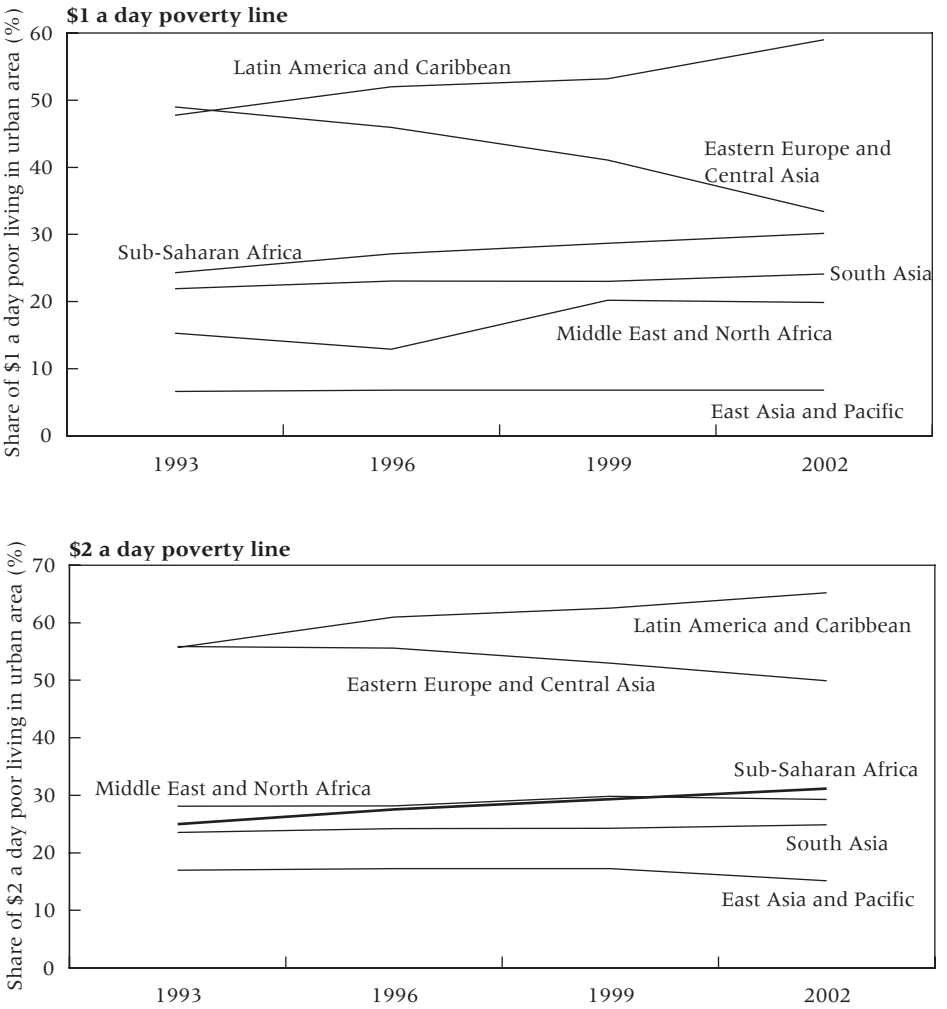
Applying regressions of the log poverty rate differential ($\ln(H^u/H^r)$) on the log urban population share using the pooled data, we cannot reject the null hypothesis that $\partial \ln(H^u/H^r)/\partial \ln S^u = 0$ (the t-ratio is 1.21 for $1 and –0.001 for $2). However, allowing for regional effects, we find that the second component is positive and significant; for the $1 a day headcount index the regression coefficient is 0.268 (t=2.23), while it is 0.140 (t=2.57) for $2 a day. This suggests that both factors are at work.

Regional differences

It is evident from Tables 3 and 4 that Claim 2 holds in all regions for both poverty lines, although there are notable differences across regions in the extent of the disparity in poverty rates between urban and rural areas. In 2002, the rural headcount index for East Asia was nine times higher than the urban index, but only 16 percent higher in South Asia, the region with the lowest relative difference in poverty rates between the two sectors. The contrast between China and India is particularly striking, with an urban poverty rate in China in 2002 that is barely 4 percent of the rural rate, while the urban rate is 86 percent of the rural rate in India. Urban poverty incidence in China is unusually low relative to rural, although problems in the available data for China could well lead us to underestimate the urban share of the poor in that country.[26]

The regional differences in the urbanization of poverty are clear in Figure 2, which plots the urban share of the poor by region. The share is lowest in East Asia, due in large part to China. The urban share of the poor is highest in Latin America and the Caribbean, the only region in which more of the $1 a day poor live in urban rather than rural areas (the switch occurred in the

FIGURE 2 Urbanization of poverty by region



mid-1990s). For Latin America and the Caribbean, almost two-thirds of the $2 a day poor live in urban areas.

South Asia and sub-Saharan Africa have the highest regional urbanization of poverty at any given overall urbanization, owing to their relatively high urban poverty rates relative to rural; these are also the regions with the highest overall poverty rates. In 2002, 44 percent of the world's urban poor by the $1 a day line are found in South Asia, and 35 percent are found in sub-Saharan Africa. These proportions are appreciably lower under the $2 a day line, for which 39 percent and 22 percent of the urban poor are found in South Asia and sub-Saharan Africa.

There are other notable regional differences. In the aggregate and in most regions, poverty incidence fell in both sectors over the period as a whole (though with greater progress against rural poverty in the aggregate). Latin America and the Caribbean and sub-Saharan Africa are exceptions: in those regions rising urban poverty was accompanied by falling rural poverty. The poverty-reducing population shift and rural components of equation (1) for these two regions were offset by the poverty-increasing urban component.

While the urban poverty rate for the developing world as a whole was relatively stagnant over time for $1 a day, this is not the case in all regions. Indeed, the urban poverty rate is falling relative to the national rate in both East Asia and Eastern Europe and Central Asia, attenuating the urbanization of poverty. Indeed, in Eastern Europe and Central Asia the urban share of the poor is actually falling over time—a "ruralization" of poverty—even while the urban share of the total population has risen slightly. (There is the hint of a ruralization of $2 a day poverty in East Asia from the late 1990s, again due to China.) The ruralization of poverty in Eastern Europe and Central Asia is not surprising, as it is consistent with other evidence suggesting that the economic transition in this region has favored urban areas over rural areas (World Bank 2005). This has also been the case in China since the mid-1990s (Ravallion and Chen 2007).

South Asia shows no trend in either direction in the urban poverty rate relative to the national rate, and the region has also had a low overall rate

TABLE 6 Estimated elasticities of H^u/H with respect to S^u by region

Region	$1 a day	$2 a day
East Asia and Pacific	1.419 (0.489; 0.007; 32)	0.270 (0.104; 0.015; 32)
Eastern Europe and Central Asia	0.170 (0.441; 0.701; 84)	0.261 (0.228; 0.257; 84)
Latin America and Caribbean	1.094 (0.481; 0.026; 84)	0.462 (0.124; 0.000; 84)
Middle East and North Africa	–0.443 (0.114; 0.001; 24)	–0.038 (0.152; 0.803; 24)
South Asia	0.484 (0.130; 0.002; 20)	0.457 (0.078; 0.000; 20)
Sub-Saharan Africa	0.184 (0.075; 0.016; 104)	0.154 (0.045; 0.001; 104)
Total	0.304 (0.075; 0.000; 348)	0.127 (0.023; 0.000; 348)
With regional fixed effects	0.398 (0.100; 0.000; 348)	0.211 (0.040; 0.000; 348)

NOTES: The first number in parentheses is the White standard error, the second number is the prob. value, and the third is the number of observations. The last row gives the regression for the total sample including a complete set of regional fixed effects.

of urbanization, with little sign of a trend increase in the urban share of the poor. The population shift component of the decomposition in equation (1) is also less important in South Asia.

The urban poverty rate relative to the national rate has shown no clear trend in sub-Saharan Africa, although rapid urbanization of the population as a whole has meant that a rising share of the poor is living in urban areas.

Using the country-level estimates underlying Tables 3 and 4, we can also estimate the elasticity of H^u/H to S^u by region. Table 6 gives the results. Two regions stand out as exceptions to Claim 4: Eastern Europe and Central Asia and Middle East and North Africa. In the former region the elasticity is not significantly different from zero in the country-level data set; this is also true for the latter region using $2 a day, but we find a significant negative elasticity for $1 a day, implying that the poor are urbanizing at a significantly lower rate than the population as a whole.

Urban and rural poverty gaps

So far we have focused on the headcount index. While this is the most common measure in practice, it has the well-known conceptual drawback that it does not reflect changes in living standards below the poverty line. The poverty gap index avoids this problem. Table 7 presents the poverty gap indexes for both poverty lines. The overall patterns are similar to those in Tables 3 and 4, and most of the same comments apply. The urban share of the total poverty gap—the urban poverty gap times the urban population share divided by the total (urban + rural) poverty gap—has risen over time, with about three-quarters of the overall poverty gap found in rural areas in 2002 (slightly lower for $1 a day than $2 a day). One difference is that the $1 a day poverty gap in South Asia is not becoming any more urban over time, although it does become more urban when we use the higher poverty line.

While our results for both the headcount index and the poverty gap index (and both poverty lines) confirm Claim 2, we make a qualification. Among those living below the poverty line, the mean poverty gap is higher in urban areas than in rural areas, using the $1 a day line. The mean income of those living below this line in 2002 was $0.73 in urban areas as compared to $0.77 in rural areas (combining Tables 7 and 3).[27] The ranking is the same in other years, but switches at the $2 a day poverty line.

Population urbanization and poverty reduction

We do not attempt a causal analysis of the poverty impacts of urbanization, but we offer some empirical observations from our data that are at least consistent with Claim 5, namely that population urbanization is a positive factor in reducing poverty.

TABLE 7 Poverty gap indexes for urban and rural areas

	$1.08/day poverty line				$2.15/day poverty line			
	Poverty gap index (%)			Urban share of poverty gap (%)	Poverty gap index (%)			Urban share of poverty gap (%)
	Urban	Rural	Total		Urban	Rural	Total	
1993								
East Asia and Pacific	1.16	9.03	6.58	5.5	11.03	37.52	29.28	11.7
China	0.67	10.10	7.46	2.5	9.15	40.22	31.52	8.1
Eastern Europe and Central Asia	0.50	0.92	0.66	48.3	4.05	5.94	4.75	53.8
Latin America and Caribbean	2.65	9.48	4.54	42.2	8.95	22.38	12.67	51.1
Middle East and North Africa	0.14	0.36	0.24	29.5	2.76	7.62	5.05	28.8
South Asia	9.65	11.60	11.10	22.4	35.04	41.34	39.72	22.7
India	11.09	12.83	12.37	23.5	38.30	44.71	43.03	23.3
Sub-Saharan Africa	20.17	22.14	21.55	27.9	35.93	47.34	43.94	24.4
Total	4.54	10.80	8.41	20.6	15.38	36.23	28.28	20.7
Excluding China	5.44	11.10	8.75	25.9	16.83	34.53	27.16	25.8
1996								
East Asia and Pacific	0.69	5.14	3.65	6.4	7.73	27.22	20.69	12.5
China	0.32	5.44	3.79	2.8	6.03	28.45	21.22	9.2
Eastern Europe and Central Asia	0.62	1.40	0.91	43.3	4.81	7.44	5.78	52.6
Latin America and Caribbean	2.67	9.46	4.46	44.1	10.49	22.61	13.69	56.5
Middle East and North Africa	0.10	0.84	0.44	12.2	2.65	10.08	6.08	23.5
South Asia	9.36	11.25	10.75	23.0	34.79	42.61	40.54	22.6
India	11.22	13.09	12.59	23.9	39.07	46.24	44.32	23.6
Sub-Saharan Africa	20.28	24.02	22.84	28.1	39.29	48.16	45.35	27.4
Total	4.49	9.54	7.54	23.5	15.31	32.98	26.00	23.2
Excluding China	5.57	11.16	8.82	26.5	17.73	34.78	27.63	26.9

1999								
East Asia and Pacific	0.68	5.51	3.77	6.5	6.86	27.20	19.86	12.5
China	0.35	6.34	4.25	2.9	4.87	29.51	20.94	8.1
Eastern Europe and Central Asia	0.56	1.95	1.07	33.1	4.73	8.56	6.14	48.7
Latin America and Caribbean	2.66	9.79	4.45	44.9	10.32	23.40	13.59	56.9
Middle East and North Africa	0.17	0.77	0.44	20.6	3.18	10.78	6.61	26.3
South Asia	9.09	10.48	10.10	24.4	33.41	40.40	38.50	23.5
India	10.36	10.95	10.78	26.4	36.33	42.11	40.52	24.6
Sub-Saharan Africa	19.20	23.63	22.15	29.0	38.57	47.56	44.56	28.9
Total	4.42	9.54	7.45	24.3	14.92	32.52	25.32	24.1
Excluding China	5.52	10.76	8.51	27.8	17.63	33.67	26.79	28.3
2002								
East Asia and Pacific	0.54	4.42	2.92	7.2	4.74	23.79	16.41	11.2
China	0.24	4.96	3.11	3.0	2.33	25.34	16.35	5.6
Eastern Europe and Central Asia	0.21	0.67	0.38	34.8	2.55	5.38	3.58	45.1
Latin America and Caribbean	3.01	8.60	4.33	52.9	10.46	21.44	13.07	61.0
Middle East and North Africa	0.15	0.74	0.41	20.0	2.79	10.06	6.01	25.9
South Asia	8.67	9.18	9.04	26.7	32.66	39.02	37.25	24.4
India	10.04	10.03	10.03	28.1	35.38	40.77	39.26	25.3
Sub-Saharan Africa	16.67	22.53	20.46	28.7	36.56	45.84	42.57	30.3
Total	4.13	8.53	6.67	26.3	13.79	30.46	23.40	25.0
Excluding China	5.27	9.77	7.82	29.3	17.14	32.24	25.69	29.0

Table 3 demonstrates that different regions are urbanizing at different rates over time. These differences are correlated with rates of poverty reduction. Using the country-level estimates for all years, Figure 3 plots the $1 and $2 a day headcount indexes against the urban population shares. There is a strong negative correlation. Figure 4 gives the corresponding plots with a split of the urban and rural sectors. Both urban and rural poverty rates tend to be lower at higher urban population shares, but there is also a clear sign of convergence, such that the absolute gap between urban and rural poverty rates tends to be lower at higher levels of urbanization; the regression coefficient of H^u–H^r on S^u is 0.241 (s.e.=0.033; n=340) for the $1 a day line and 0.262 (s.e.=0.036; n=340) for the $2 line.[28]

Figures 3 and 4 could be misleading if population urbanization is correlated with country or regional characteristics relevant to poverty. To address this concern, we regressed urban and rural poverty rates on the urban population share including additive fixed effects (a dummy variable for each region or country): that is, the mean level of poverty at a given urban population share is allowed to vary by region or country. Table 8 gives the results.[29] Both poverty measures tend to decline as the urban population share rises, although the effects are generally smaller (but more significant) for the country data.[30]

Among the six regions of the developing world, sub-Saharan Africa is an exception to our finding that urbanization has been accompanied by falling overall poverty. Splitting the regression coefficient of the aggregate headcount index for pooled regions and dates on the urban population share between sub-Saharan Africa and the other five regions (with regional fixed effects), the coefficient is –0.396 (0.335) for sub-Saharan Africa versus –1.115 (0.432) for other regions. The urbanization effect is on rural poverty, with no effect

FIGURE 3 National headcount indexes plotted against urban population share (countries and dates pooled)

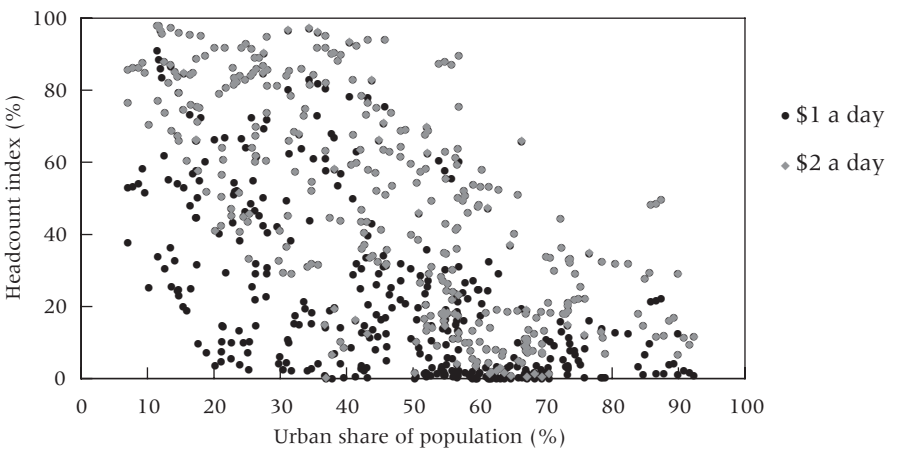
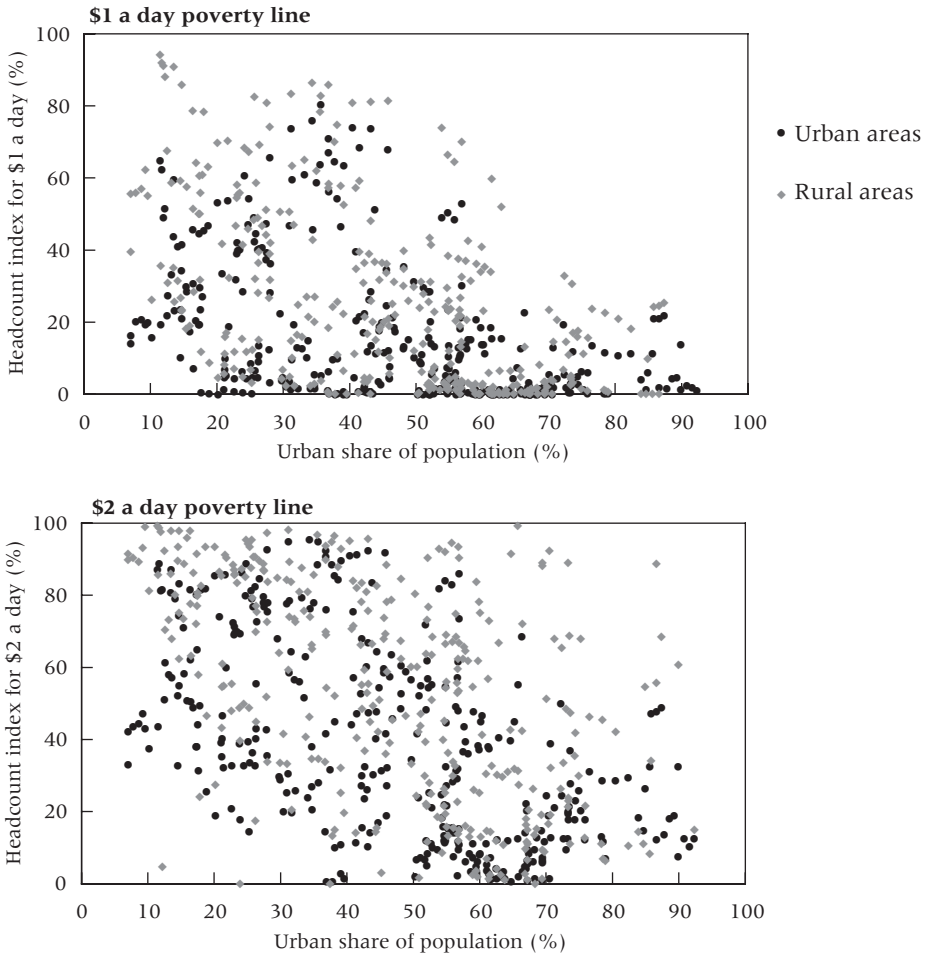


FIGURE 4 Urban and rural headcount indexes plotted against urban population shares



on urban poverty in sub-Saharan Africa and only a small effect in the other five regions.[31]

One can question a strict causal interpretation of these regressions. It is unlikely that population urbanization per se leads to lower poverty, but rather it is due to the economic opportunities that accompany urbanization, both directly (to migrants) and indirectly (to non-migrants in rural areas). All we can reasonably claim from these results is that the data are consistent with the view that the economic changes accompanying urbanization play a generally positive role in overall poverty reduction.

While the precise channels through which population urbanization influences poverty reduction remain unidentified, one additional question of interest can be addressed: Does population urbanization have an effect on the pace of poverty reduction independent of overall growth in mean

TABLE 8 Regression coefficients of poverty measures on urban population shares

	Urban	Rural	National
$1 a day poverty line			
Regions by year (n=24)	–0.206	–1.107	–0.934
	(0.161;0.218)	(0.462;0.028)	(0.386;0.027)
Countries by year (n=348)	–0.422	–0.708	–0.731
	(0.172;0.015)	(0.216;0.001)	(0.195;0.000)
$2 a day poverty line			
Regions by year (n=24)	–1.170	–1.397	–1.592
	(0.696;0.111)	(0.636;0.042)	(0.727;0.043)
Countries by year (n=348)	–0.582	–0.813	–0.897
	(0.216;0.008)	(0.207; 0.000)	(0.209;0.000)

NOTES: Both poverty measures and urban population share in percent. The first number in parentheses is the White standard error, the second number is the prob. value; all regressions include regional or country fixed effects.

consumption? In other words, is there evidence of a distributional effect of urbanization, or is its effect transmitted entirely through economic growth? One reason to expect a distributional effect is based on the literature in development economics on the Kuznets Hypothesis. Some of our empirical results so far do not accord well with the assumptions typically used to motivate the hypothesis. The classic formulation posits what is sometimes called a "Kuznets process" of migration, whereby a representative slice of the rural distribution is transformed into a representative slice of the urban distribution; yet we find signs that the urbanization process has changed distribution within urban areas. Nonetheless, to determine whether there is any sign of a distributional effect of urbanization, we regress the log national headcount index on a quadratic function of both the log mean and the urban population share:

$$\ln H_{it} = \alpha + \beta_1 \ln \mu_{it} + \beta_2 (\ln \mu_{it})^2 + \gamma_1 S^u_{it} + \gamma_2 S^{u2}_{it} + \delta S^u_{it} \ln \mu_{it} + \eta_i + \varepsilon_{it} \qquad (4)$$

for country i at date t, where the overall mean is $\mu_t = n^r_t \mu^r_t + n^u_t \mu^u_t$, where μ^k_t is the mean for sector k=r,u for rural and urban areas, and η_i is a country fixed effect. This equation can be considered a test for the Kuznets Hypothesis in which the relevant "inequality" measure is the distributional component of poverty.[32]

Table 9 gives the results. The estimates for the β parameters are highly significant. We also find a mildly significant positive interaction effect between the log mean and the urban population share, implying that urbanization tends to reduce the growth elasticity of poverty reduction (prob.=0.015 for $1 a day and 0.018 for $2 a day). However, we cannot reject the null hypotheses that γ_1=γ_2=δ = 0 for either $1 a day (prob.=0.085) or $2 a day (prob.=0.160).

TABLE 9 Test for distributional effects of urbanization on poverty

	$\ln\mu$	$(\ln\mu)^2$	S^u	S^{u2}	$S^u\ln\mu$	R^2	Prob. for test
$1	3.912	–0.840	–9.073	–0.043	2.659	0.574	0.085
	(1.303;0.003)	(0.162;0.000)	(4.678;0.054)	(4.217;0.992)	(1.090;0.015)		
$2	4.266	–0.732	–4.086	–1.590	1.733	0.607	0.160
	(0.855;0.000)	(0.107;0.000)	(3.134;0.194)	(2.810;0.572)	(0.726;0.018)		

NOTES: Prob. value based on robust standard errors in parentheses. All regressions included a constant term. N=348.

These tests suggest that the main channel connecting population urbanization to poverty is through aggregate economic growth. This was also true for each region separately except for sub-Saharan Africa, where for the $2 a day line we could reject the above null hypothesis, though only at the 2 percent level (prob.=0.0176).

Conclusions

Widely heard concerns about the urbanization of poverty in the developing world have been neither well informed by data nor cognizant of the broader economic role of urbanization in overall poverty reduction. We have provided new estimates of the urban–rural breakdown of absolute poverty measures, drawing on more than 200 household surveys for about 90 countries and exploiting the World Bank's Poverty Assessments for guidance on the urban–rural cost-of-living differential affecting the poor, to supplement existing estimates of the purchasing power parity exchange rates for consumption.

We estimate that about three-quarters of the developing world's poor still live in rural areas when our assessment is based on international poverty lines that aim to have a constant real value (between countries and between urban and rural areas within countries). However, poverty is clearly becoming more urban. Indeed, the poor are urbanizing faster than the population as a whole, reflecting a lower-than-average pace of urban poverty reduction. The concern about the seemingly slow pace of urban poverty reduction in much of the developing world must be counterbalanced by the more rapid progress against rural poverty. Over 1993–2002, while 50 million people were added to the count of $1 a day poor in urban areas, the aggregate count of the poor fell by about 100 million, thanks to a decline of 150 million in the number of rural poor.

Our empirical findings are broadly consistent with the view that the process of urbanization has played a quantitatively important positive role in overall poverty reduction, such as by providing new opportunities to rural out-migrants (some of whom escape poverty in the process) and through the second-round impact of urbanization on the living standards of those who

remain in rural areas. What we see here suggests a compositional effect on the changing urban population, whereby the slowing of urban poverty reduction is the "other side of the coin" to what is in large part a poverty-reducing process of urbanization. Nor do we find any sign of adverse distributional effects of urbanization; instead, the main channel linking population urbanization to poverty reduction appears to be the rate of economic growth. Yes, the poor are gravitating to towns and cities, but more rapid poverty reduction through economic growth will probably entail an even faster pace of urbanization.

We find some marked regional differences in a number of respects. The majority of Latin America's poor live in urban areas, while this figure is less than 10 percent in East Asia (due mainly to China). The pattern of falling total poverty incidence with population urbanization is far less evident in sub-Saharan Africa, where the population (including the poor) has been urbanizing, yet with little reduction in aggregate poverty. There are also exceptions at the regional level to the overall pattern of the urbanization of poverty; for example, we find signs of a ruralization of poverty in China and in Eastern Europe and Central Asia.

Our results also have implications for assessments of overall progress against poverty. Compared to past estimates ignoring urban–rural cost-of-living differences, we find a somewhat higher aggregate poverty count for the world and a somewhat slower pace of poverty reduction. These differences stem from the higher cost of living and the slower pace of poverty reduction in urban areas revealed by our study.

Appendix 1: Theoretical exposition

To outline our approach in more precise terms, let Z^r denote the international rural poverty line, which is fixed across all countries on the basis of existing PPP exchange rates; for example, this might be "$1 a day" in international PPP $s. Our international urban poverty line at a given date is $(Z_i^u/Z_i^r)Z^r$ where Z_i^k is the national poverty line for sector $k=u,r$ in country i, based on the Poverty Assessment. The aggregate international headcount indexes of rural and urban poverty across N countries indexed $i=1,\ldots,N$ are then:

$$H^r = \sum_{i=1}^{N} S_i^r F_i^r(Z^r) \text{ and } H^u = \sum_{i=1}^{N} S_i^u F_i^u[(Z_i^u / Z_i^r)Z^r] \tag{A1}$$

where S_i^k is country i's share of the total population in sector k, and F_i^k is the cumulative distribution of consumption in sector k of country i (F_i^k is a non-decreasing function for all k and i). The "global" aggregate headcount index is then $H = S^rH^r + S^uH^u$. The urban share of the poor in country i is $P_i^u \equiv S_i^uH_i^u/H_i$ while it is $P^u \equiv S^uH^u/H$ globally.

How will our change in methodology affect existing poverty measures? Consider first the international ($1 a day) measures. For these, our change will obviously

increase the overall headcount index as long as $Z_i^u \geq Z_i^r$ for all i. The change will also increase P_i^u for all i. The outcome is less obvious when the comparison is made with the national measures:

$$H_{PA}^r = \sum_{i=1}^{N} S_i^r F_i^r(Z_i^r) \text{ and } H_{PA}^u = \sum_{i=1}^{N} S_i^u F_i^u(Z_i^u) \quad \text{(A2)}$$

(Here we use the subscript *PA* to signify the urban and rural poverty measures based on the national poverty lines used in the country-specific Poverty Assessments.) There is nothing general one can say about the effect of switching from the national poverty lines to the international lines, as this will clearly depend on the level of the international line as well as the properties of the distribution functions, F_i^k. However, some special cases are instructive. Suppose that the international rural line is set at the lower bound of the national poverty line. Clearly, then, both the urban and rural international poverty measures (based on (A1)) will be no higher than those based on the aggregation of national measures (based on (A2)). (This situation is reversed when the international line is set at the upper bound of the national line.) This case is of interest given that (as noted above) the $1 a day line is deliberately conservative, in that it is intended to be a poverty line appropriate to the poorest countries (Ravallion, Datt, and van de Walle 1991; World Bank 1990). The implication for the share of total poverty found in rural areas is theoretically ambiguous.

Note, however, that the $1 a day line is not strictly a lower bound, but rather an average of the lines found among low-income countries. The precise line used by the Bank is the median of the lowest ten poverty lines in the original compilation of (largely rural) poverty lines, as documented in Ravallion, Datt, and van de Walle (1991) (although the PPPs have been updated and revised; see Chen and Ravallion 2004 for details). The fact that the line is not a strict lower bound means that the curvature properties of the distribution functions start to come into play. For example, if the international poverty line is set at the mean of the national lines and these are everywhere below the mode of the (unimodal) distributions, then the measures based on the international lines will again be below those based on the aggregation of national poverty measures. (This follows from well-known properties of convex functions.) However, putting these special cases aside, the implications of re-calculating the urban–rural poverty profile for the developing world based on international poverty lines rather than national poverty lines are theoretically ambiguous.

Appendix 2 Survey data sets by country, date, and welfare indicator

Region/country	Share of 2002 regional population represented (%)	Survey years	Welfare measure	Ratio of urban/ rural poverty lines (1993)[a]
East Asia and Pacific	94.61			1.30
Cambodia		1994, 2004	Expenditure	1.23
China		1993, 1999, 2002	Expenditure	1.37
Indonesia		1993, 1999, 2002	Expenditure	1.11
Laos		1992	Expenditure	1.04
Mongolia		2002	Expenditure	1.16
Philippines		1998, 2000	Expenditure	1.46
Thailand		2002	Expenditure	1.54
Vietnam		1992/93, 1998, 2002	Expenditure	1.24
Eastern Europe and Central Asia	91.82			1.05
Albania		1996, 2002	Expenditure	1.05
Armenia		1998/99, 2001, 2002, 2003	Expenditure	1.02
Azerbaijan		2001, 2002, 2003	Expenditure	1.01
Belarus		1998, 2001, 2002	Expenditure	1.00
Bulgaria		1995, 2001, 2003	Expenditure	1.04
Estonia		2000, 2002	Expenditure	0.98
Georgia		1997, 1999, 2002	Expenditure	1.02
Hungary		1999, 2002	Expenditure	0.99
Kazakhstan		1996, 2002	Expenditure	1.04
Kyrgyz		1998, 2000, 2002	Expenditure	1.10
Latvia		2002	Expenditure	1.02
Lithuania		1998, 2002	Expenditure	1.01
Macedonia		1999, 2002	Expenditure	1.05
Moldova		1997, 1998, 2002	Expenditure	1.06
Poland		1999, 2002	Expenditure	1.04
Romania		1998, 2002	Expenditure	1.17
Russia		1998, 2002	Expenditure	1.07
Tajikhstan		1999, 2002	Expenditure	1.06
Turkey		2002	Expenditure	1.03
Ukraine		1996, 2003	Expenditure	1.04
Uzbekistan		1998, 2002	Expenditure	1.04
Latin America and Caribbean	96.67			1.44
Argentina		1992, 1996, 1998, 2002, 2003, 2004	Income	1.43
Bolivia		1997, 1999, 2002	Income	1.40
Brazil		1990, 1993, 1996, 1998, 2001, 2002, 2003, 2004	Income	1.55
Chile		1990, 1994, 1996, 1998, 2000, 2003	Income	1.43
Colombia		1996, 1998, 2000, 2003	Income	1.25
Costa Rica		1992, 1998, 2001, 2004	Income	1.36
Dominican Rep		1992, 2000, 2003	Expenditure	1.06
Ecuador		1994, 1998	Income	1.24
El Salvador		1995, 1998, 2000, 2002	Income	1.71
Guatemala		1998, 2000, 2002	Income	1.09
Haiti		2001	Income	1.43
Honduras		1992, 1999, 2003	Income	1.41

/...

Appendix 2 (continued)

Region/country	Share of 2002 regional population represented (%)	Survey years	Welfare measure	Ratio of urban/ rural poverty lines (1993)[a]
Jamaica		1990, 1996, 2000	Expenditure	0.90
Mexico		1992, 1994, 1998, 2000, 2002	Expenditure	1.44
Nicaragua		1993, 1998, 2001	Income	1.43
Panama		1996, 2002	Income	1.43
Paraguay		1998, 2003	Income	1.43
Peru		1994, 2002	Income	1.26
Trinidad and Tobago		1992	Income	1.43
Uruguay		1992, 1998, 2001, 2003	Income	1.43
Venezuela		1992, 1996, 2004	Income	1.43
Middle East and North Africa	69.56			1.10
Egypt		1995, 1999/00	Expenditure	1.09
Iran		1994, 1999	Expenditure	1.13
Jordan		2002/03	Expenditure	1.13
Morocco		1990/91, 1998/99	Expenditure	1.29
Tunisia		1995, 2000	Expenditure	1.18
Yemen		1998	Expenditure	0.99
South Asia	98.48			1.30
Bangladesh		1991/92, 1995/96, 2000	Expenditure	1.29
India		1993/94, 2005	Expenditure	1.37
Nepal		1995/96, 2003/04	Expenditure	1.24
Pakistan		1992/93, 1998/99, 2001/02	Expenditure	1.13
Sri Lanka		1999/00, 2002	Expenditure	1.10
Sub-Saharan Africa	75.03			1.29
Benin		2003	Expenditure	1.79
Botswana		1993/94	Expenditure	1.45
Burkina Faso		1994, 1998, 2003	Expenditure	1.45
Burundi		1998	Expenditure	1.45
Cameroon		1996, 2001	Expenditure	1.45
Cape Verde		2001	Expenditure	1.45
Ethiopia		2000	Expenditure	1.46
Gambia		1998	Expenditure	1.26
Ghana		1991/92, 1998/99	Expenditure	1.35
Ivory Coast		1998, 2002	Expenditure	1.25
Kenya		1994, 1997	Expenditure	1.45
Lesotho		1995	Expenditure	1.45
Madagascar		1997, 2001	Expenditure	1.14
Malawi		2004/05	Expenditure	1.45
Mali		1994, 2001	Expenditure	1.45
Mauritania		1995/96, 2000	Expenditure	1.10
Mozambique		1996/97, 2002/03	Expenditure	1.67
Niger		1994/95	Expenditure	1.50
Nigeria		1996/97, 2003	Expenditure	1.05
Rwanda		1997, 2000	Expenditure	1.45
Senegal		1994/95, 2001	Expenditure	1.63
South Africa		1995, 2000	Expenditure	1.45
Swaziland		2000/01	Expenditure	1.45
Tanzania		1991/92, 2000/01	Expenditure	1.21
Uganda		1992/93, 1999, 2002	Expenditure	1.10
Zambia		1996, 1998, 2002/03	Expenditure	1.45
Total	94.46			1.30

[a]The ratios of urban to rural poverty lines by region and total are population-weighted averages. These are given for readers, but are not used in the analysis.

Notes

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1 The Panel on Urban Population Dynamics (2003) makes recommendations on how to address the problem of different definitions of "urban," but the implementation of their recommendations is not feasible with the survey data used for poverty measurement currently available in most countries.

2 The only previous estimate of the urban–rural split of poverty that we know of, by Ravallion (2002), was essentially based on the poverty measures from the World Development Indicators, using country-specific poverty lines rather than an international line, such as the $1 a day standard.

3 PPP exchange rates correct for the fact that non-traded goods tend to be cheaper in poorer countries (where wages are lower). We use the World Bank's PPPs.

4 This will hold for a broad class of population-weighted additive poverty measures; Atkinson (1987) characterizes this class of poverty measures in more formal terms and provides examples.

5 For a thorough analysis of the distributional implications of urbanization under the Kuznets process see Anand and Kanbur (1993).

6 The headcount index is the proportion of the population living in households with consumption per person below the poverty line. Note that the poverty rate for migrants is $\alpha H^u + (1-\alpha)H^r \geq H^u$.

7 The poverty gap index is the mean distance below the poverty line as a proportion of the line (where the mean is taken over the whole population, counting the non-poor as having zero poverty gaps). On the larger set of additively separable measures see Atkinson (1987).

8 This does not allow the possibility that a new migrant to urban areas experiences relative deprivation. One can question how relevant this possibility is for the very poor (Ravallion and Lokshin 2005).

9 To give an indication of the scale of a Poverty Assessment, the average cost is about $250,000. Most assessments are public documents.

10 Examples are Bourguignon and Morrisson (2002), Bhalla (2002), Sala-i-Martin (2006), and Ackland, Dowrick, and Freyens (2006). The internal consistency of the compilations of existing inequality measures is also questionable; the measures differ in terms of the recipient unit (household versus individual) and the ranking variable (household versus per capita). Only by re-estimating consistently from the micro data (as we have done) is it possible to address these consistency problems.

11 For example, Banerjee and Piketty (2005) attribute up to 40 percent of the difference between the higher growth of GDP per capita and the lower growth of mean household per capita consumption from household surveys in India to unreported increases in the incomes of the rich. Selective compliance with random samples could well be an equally important source of bias, although the sign is theoretically ambiguous; Korinek, Mistiaen, and Ravallion (2006) provide evidence on the impact of selective non-response for the United States. On the problems of selective non-response in surveys more generally see Groves and Couper (1998).

12 The precise method used varies from country to country, depending on the data available. On the methods used in setting poverty lines see Ravallion (1994, 1998).

13 For example, $1.08 a day at 1993 purchasing power parity represents 1.53 yuan per person in China, which is equivalent to 2.42 yuan at 1999 prices; this is the rural

poverty line used for the 1999 household survey data for China. The poverty lines used by the Bank's Poverty Assessment for China imply an urban–rural differential of 1.37, so the urban poverty line for 1999 is 3.32 yuan per person.

14 Chen and Ravallion (2001) also estimate the expected poverty line in the poorest country, which is $1.05 per day, although there is of course a variance around this estimate; the 95 percent confidence interval is ($0.88, $1.24).

15 It was not feasible to obtain separate rural and urban distributions for all the countries used in Chen and Ravallion (2004) since for some we only have grouped data and in a few cases there is no rural–urban identifier in the individual record data. So we use here a subset of the data set we have compiled for 100 developing countries' income or consumption distributions from some 600 household surveys spanning 1980 to 2004, which is an updated version of the data base described in Chen and Ravallion (2004); the data are available from the PovcalNet site: «http://iresearch.worldbank.org/povcalnet».

16 For some countries we did not use all available surveys, as some were not considered sufficiently comparable over time; countries for which this is the case include India, Mongolia, Cambodia, Malawi, and Gambia.

17 In some cases WUP made adjustments to ensure consistency over time, but there do not appear to have been any adjustments between countries.

18 For 1993, 1999, and 2002 the headcount indexes for sub-Saharan Africa were 51.3, 49.2, and 46.9 percent using census shares as compared to 51.4, 49.8, and 47.6 percent using the implicit weights from the survey data.

19 This is one of the decompositions for poverty measures proposed by Ravallion and Huppi (1991).

20 One might prefer to use the initial population shares as the weights for sector components, but this makes very little difference (the residual is small), and the exact decomposition is neater.

21 The OLS regression coefficient of the log share of the $1 a day urban poor on time is 2.78 percent (s.e.=0.57), while for the log urban population share it is 1.17 percent (0.002).

22 The OLS regression coefficient of the share of the urban poor for the $1.08 a day poverty line on time is 0.591 with a standard error of 0.105.

23 The regression coefficient of S^u on time is 0.469 (s.e.=0.005). There is no sign of a deceleration in the rate of urbanization over this period, although there is other evidence of a deceleration in urban population growth relative to prior decades; see Brockerhoff (1999).

24 The regression coefficient of the log share of the urban poor for the $2 a day poverty line on time is 1.14 percent with a standard error of 0.37.

25 The fact that these are unweighted regressions means that China gets a lower weight than the population-weighted aggregates in Tables 3 and 4; as we have already seen, the aggregate results without China are more consistent with Claims 3 and 4, and with these regressions.

26 The main problem is that (until recently) the sample frame for China's national urban and rural surveys was based on the registration system rather than street addresses. Thus recent migrants to urban areas are likely to be undercounted in the urban surveys since their registration will still be rural. On the plausible assumption that rural migrants are poorer than the average urban resident, we will underestimate urban poverty incidence.

27 This calculation is based on the fact that the mean income of the poor is given by $Z(1–PG/H)$.

28 There is also evidence that the child health advantages of cities over towns and villages (as measured by infant mortality rates) have tended to diminish over time (Brockerhoff and Brennan 1998).

29 As a further test, we repeated the regressions in Table 8 allowing for an independent time trend, but we found a similar pattern, with significant regression coefficients on urban population share for both national and rural poverty; the urbanization effect is not just reflecting a trend reduction in poverty. The regression coefficients on the urban

population share were –0.934 (0.386), –1.107 (0.462), and –0.206 (0.161) for the national, rural, and urban $1 a day headcount indexes respectively.

30 For completeness, Table 8 gives the regression for the national poverty measures, but note that an identity links the urban and rural measures and the urban population share to the national measure. A consistent regression for the national poverty measure would include a squared term in the urban population share; we also tested this specification, and the results were consistent with expectations.

31 For rural poverty the regression coefficient is –0.407 (0.278) for sub-Saharan Africa versus –1.344 (0.515) in the other five regions. For urban poverty the corresponding coefficients are –0.014 (0.473) and –0.271 (0.143).

32 The presence of a country effect in this test is important; for further discussion, and evidence that the Kuznets Hypothesis does not hold when one allows for country effects, see Bruno, Ravallion, and Squire (1998); for a useful review of the evidence on the Kuznets Hypothesis see Fields (2001: Chapter 3).

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