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### **China is Poorer Than We Thought, But No Less Successful in the Fight Against Poverty**

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#### **Poverty**

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## **CHINA IS POORER THAN WE THOUGHT, BUT NO LESS SUCCESSFUL IN THE FIGHT AGAINST POVERTY**

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Our previous estimates of global poverty measures revealed a substantial contraction in the incidence of poverty in China over the period 1981-2004; the latest update in Chen and Ravallion (2007) indicates that the proportion of China's population living below an international poverty line of \$1.08/day at 1993 prices fell from 64% in 1981 to 10% in 2004; the number of poor by this measure fell by about 500 million.

This international poverty line was converted to local currency using the 1993 Purchasing Power Parity (PPP) rate for China produced from the country-level price surveys done by the International Comparison Program (ICP). The PPP gives the conversion rate for a given currency into a reference currency (the \$US) designed to assure parity in terms of purchasing power over commodities. However, these calculations for China rested on an estimate of the country's PPP for 1993 that was not based on a 1993 price survey, but rather was an updated version of an older (1986) PPP for China.<sup>1</sup> China's estimated level of poverty in 2004 was thus rooted in a PPP rate that was almost 20 years old, and even then was not drawn from the ICP.<sup>2</sup>

In this light, the new estimates in World Bank (2008) of China's PPP rate for 2005, based on the ICP price survey for that year, are undeniably important new data. The results for China's first participation in the ICP have already attracted considerable attention, as they suggest that China's economy in 2005 is 40 percent smaller than we thought. For example, Keidel (2007) claims that the new PPP for China adds 300 million to the count of that country's poor. Some

observers have gone further to claim that the new PPP casts doubt on the extent of China's, and (hence) the world's, progress over time against poverty.<sup>3</sup>

All this begs for a more careful scrutiny of China's new PPP and its implications for the extent of poverty in the country and how much progress it has made against poverty. This paper focuses solely on the implications of the new consumption PPP released by World Bank (2008).<sup>4</sup> Our analysis combines the results of the 2005 ICP with a new compilation of national poverty lines for developing countries and tabulations of the distribution of consumption and income in China provided by the National Bureau of Statistics (NBS), based on their household surveys, and our interviews with staff of NBS.

### **The 2005 PPP Rate for China**

The 2005 ICP is clearly the most complete assessment to date of how the cost of living varies across the countries of the world. The ICP collected primary data on the prices of a list of internationally comparable goods and services from each of a large number of outlets within 146 countries. The 2005 ICP is a clear improvement over the ICP effort for 1993, which was the last base-year used for our global poverty measures. The number of countries participating in the price survey is larger (146, as compared to 117 in 1993) and the surveys have been implemented in a more scientific basis. New methods were used for measuring government compensation and housing. Ring comparisons (linking regional PPP estimates) were also done for a much larger set of countries (18 in all), which priced global goods. The 2005 data were also subjected to more rigorous validation methods. Otherwise, the PPPs calculated from the ICP data (and presented in

World Bank, 2008) follow standard methods; as in the past, the Bank uses a multilateral extension of the bilateral Fisher price index.<sup>5</sup>

Given that this is the first time that China has participated in the ICP, one can hardly be very surprised to find that the new PPP differs from the old one. But the difference is large indeed. The new estimate of the consumption PPP for China is 3.46 Yuan to the \$ (4.09 if one excludes government consumption), as compared to a PPP rate of 1.42 for 1993. The corresponding “price level indices” (PPP divided by market exchange rate) are 0.52 in 2005 versus 0.25 in 1993. This paper focuses on the implications of this major data revision for our knowledge about the extent of poverty in China by international standards. China merits close attention because it is not only the world’s most populous country, but also the country that has made the greatest progress against poverty since about 1980s. (In due course we will also produce new estimates for the rest of the developing world.)

However, while China’s participation in the 2005 ICP is clearly an important step, that participation was Upartial in that the government only agreed to implement the ICP price survey in 11 metropolitan areas, namely Beijing, Chongqing, Dalian, Guangzhou, Harbin, Ningbo, Qingdao, Shanghai, Wuhan, Xiamen, and Xi’an. The price survey was implemented by China’s National Bureau of Statistics (NBS). Using the data from these 11 cities, the ICP has estimated national average prices and the PPP rate. To properly assess the implications of China’s new PPP we need to look carefully for possible sample bias associated with the fact that the ICP price survey only included these 11 cities.

## Sources of Bias in the 2005 PPP for China

Our discussions with NBS staff responsible for implementing the ICP price survey revealed that the choice of these 11 cities was influenced by expectations about the likely availability of the types of goods referred to in the ICP survey, notably the more ‘international’ goods, not readily available throughout China. One would not expect to find that all the commodities identified in the ICP price survey schedule are readily available in most rural areas of China, or even in many urban areas.

Here we try to assess what bias this might entail in the PPP for China. The estimation of “national prices” from the data for 11 cities by the ICP did attempt to re-weight the data to make them nationally representative. Each of the 11 cities was assigned to one of four regional clusters (Capitals, Coastal, Northern, Inner China) and weights were then applied based on urban and rural expenditures shares across eight commodity groups, derived from NBS household surveys.<sup>6</sup> The issue at hand is whether there is sufficient common support between the data for 11 cities and the national distribution to believe that the bias could be eliminated by such a re-weighting the data.<sup>7</sup>

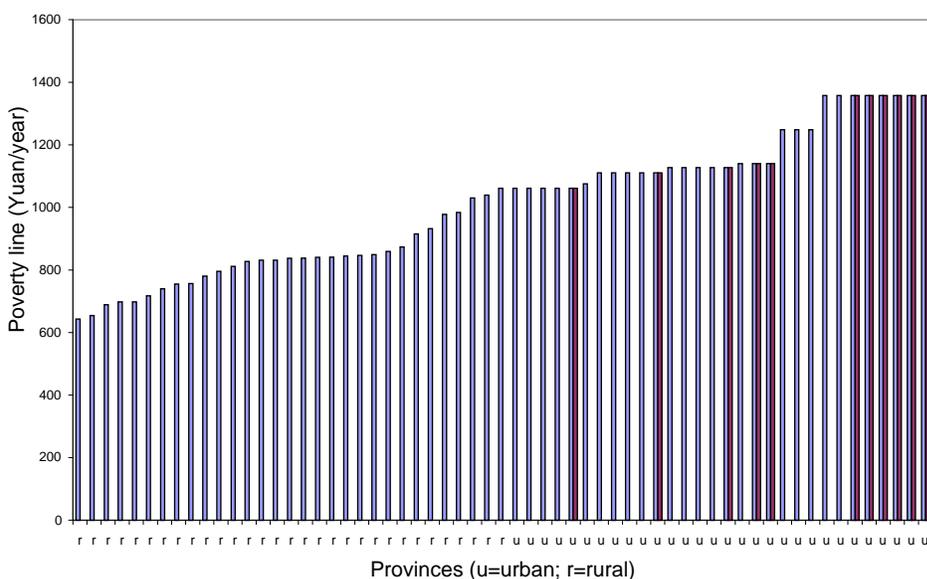
The data for the 11 cities included surrounding “rural” areas, but only about one fifth (22%) of the 1700 outlets from which prices were obtained were in these non-urban areas (World Bank, 2008). We discussed the survey design with the senior statistician of NBS managing the unit implementing the ICP for China and other staff of NBS in Beijing. We were assured that the “rural” coverage was little more than the suburban areas at the urban fringe, and could not be

considered representative of prices in rural areas.<sup>8</sup> This will be a source of bias if price levels differ between urban and rural areas. Evidence from China and other developing countries suggests that such differentials do exist and can be sizable (Ravallion et al., 2007). These urban-rural price differentials can be particularly large for items of consumption that are important for the poor, notably food.

When the aim is to measure poverty in China, the best available way of comparing the cost-of-living facing the poor between urban and rural areas is the new set of poverty lines constructed for China as part of a research project in NBS, in collaboration with the present authors.<sup>9</sup> These have entailed estimating the cost of a food bundles (deemed adequate for basic nutritional attainment given Chinese food tastes) in both urban and rural areas of all China's provinces, and then adding an allowance for non-food goods. Region-specific food bundles were used, with separate food bundles for urban and rural areas, valued at median unit values by province. The food bundles were based on the actual consumption of those between the poorest 15<sup>th</sup> percentile and the 25<sup>th</sup> percentile nationally. These bundles are then scaled to reach 2100 calories per person per day, with a maximum of 75% of the calories from foodgrains.<sup>10</sup> Median unit values (expenditure divided by quantity at the commodity level) in urban and rural areas of each province were used for valuation. Allowances for non-food consumption were based on the nonfood spending of households in a neighbourhood of the point at which total spending equals the food poverty line in each province (and separately for urban and rural areas). These estimates indicate that the urban cost-of-living for the poor is 37% higher than in urban areas in 2005; the cost of food alone is 42% higher in urban areas.

Figure 12.1 plots the poverty lines for 2002 by province, split urban-rural, and identifies the provinces containing the 11 cities. There are two key observations to be made. Firstly, the 11 cities roughly span the range of the poverty lines for urban areas. So it appears to be plausible that the re-weighting done by the ICP team could deliver a credible estimate for urban China. Indeed, assigning the 11 cities to their respective provinces, we see that the range is identical (Figure 12.1). The urban poverty line varies from a minimum of 1061 Yuan (per person per year) to a maximum of 1358 Yuan across China's provinces. The food component of the poverty line varies across provinces from 784 Yuan to 1229 Yuan while amongst the 11 cities it varies from 800 Yuan to 1229 Yuan. The cost of living facing the poor in the 11 cities comes reasonably close to matching that found in urban China as a whole.

**Figure 12.1. Rural and urban poverty lines by province**



Note: The dark (red) bars correspond to the urban areas of the provinces that include the 11 cities used in the ICP price survey for 2005.

The second observation from Figure 12.1 is that the 11 cities have a far higher implied cost of living for the poor than found in rural areas. The (population-weighted) mean of the urban poverty lines for the provinces containing the 11 cities is 1243 Yuan, as compared to 1195 Yuan for all urban areas; by contrast the mean for the rural lines is 849 Yuan.<sup>11</sup>

These tests cannot be considered conclusive, given that the 11 cities may well have higher prices than other urban areas, in the same province. Non-negligible price differentials between large and small cities are known to exist elsewhere.

However, from these observations, it is reasonably clear that the prices obtained in the 2005 ICP survey are un-representative of China's rural areas, where prices are appreciably lower for many goods, especially food for which the poor tend to have the highest budget share. And it is plain that there is no way one could credibly correct this problem by re-weighting the data, given the narrow region of common support evident in Figure 12.1. The direction of bias is clear: the new consumption PPP overstates the cost-of-living in China, and this bias is likely to be larger for the poor, who naturally have a high budget share for food. As we will see in the next set of calculations, it remains true that China is poorer than we all thought, but not as much so as the uncorrected 2005 consumption PPP suggests.

### **International Poverty Lines**

Chen and Ravallion (2004, 2007) used a line of \$32.74/month at 1993 PPP, or \$1.08 per day.

This was chosen as a deliberately conservative line, whereby the amount of absolute poverty in

the world was judged by the standards of what “poverty” means in the poorest countries of the world; naturally, better off countries tend to have higher poverty lines, as shown in Ravallion et al. (1991). The precise line used was set at the median of the lowest 10 lines in a sample of 33 national poverty lines, though this was shown to be virtually the same poverty line if instead one estimated the expected value of the poverty line in the poorest country, which gave a line of \$31.96 per month (\$1.05 per day). (This was estimated by Chen and Ravallion, 2001, using a regression of the log of the poverty line on a quadratic function of the level of mean consumption per person at PPP.)

The simplest way one might imagine updating the old “\$1 a day” line for 1993 to 2005 prices would be to apply the US rate of inflation over that period. Updating the \$32.74/month 1993 PPP for inflation over 1993-2005 (using the Consumer Price Index for the US) gives \$44.25 (\$1.45/day). However, this calculation makes two strong assumptions: (1) that the 1993 PPPs on which the old “\$1 a day” line was based are correct and (2) that the principle of purchasing power parity holds, whereby the PPP for a given country evolves over time according to differences in that country’s rate of inflation and that for the US. We have already noted the problems with the 1993 ICP and that there are a number of comparability problems between the 1993 and 2005 ICP data. Ravallion, Chen and Sangraula (RCS) (2008) provide an econometric test using a new set of national poverty lines (which we return to below). Their test firmly rejects the joint implications of the PPP principle and comparability of the 1993 and 2005 PPP’s. RCS also show that if one compares fixed national poverty lines (fixed in local currency at a given date) valued at the 1993 versus 2005, the estimated poverty line at the 2005 PPP corresponding

to the 1993 line of \$32.74 is \$36.06 (with a standard error of \$4.07). This is significantly lower than the figure of \$44.25 for 2005 obtained by only adjusting for inflation in the US.

These observations echo those made in Chen and Ravallion (2001, 2004) concerning the 1993 round of the ICP. Then it was also noted that there was a serious comparability problem, in that case between the 1985 PPPs based on Penn World Tables (PWT) and the Bank's PPPs at base 1993; the comparability problems related to both the primary data and the methods used. So Chen and Ravallion (2001) also argued that it is wrong to simply adjust for inflation in the US between 1985 and 1993 to update the poverty line.<sup>12</sup>

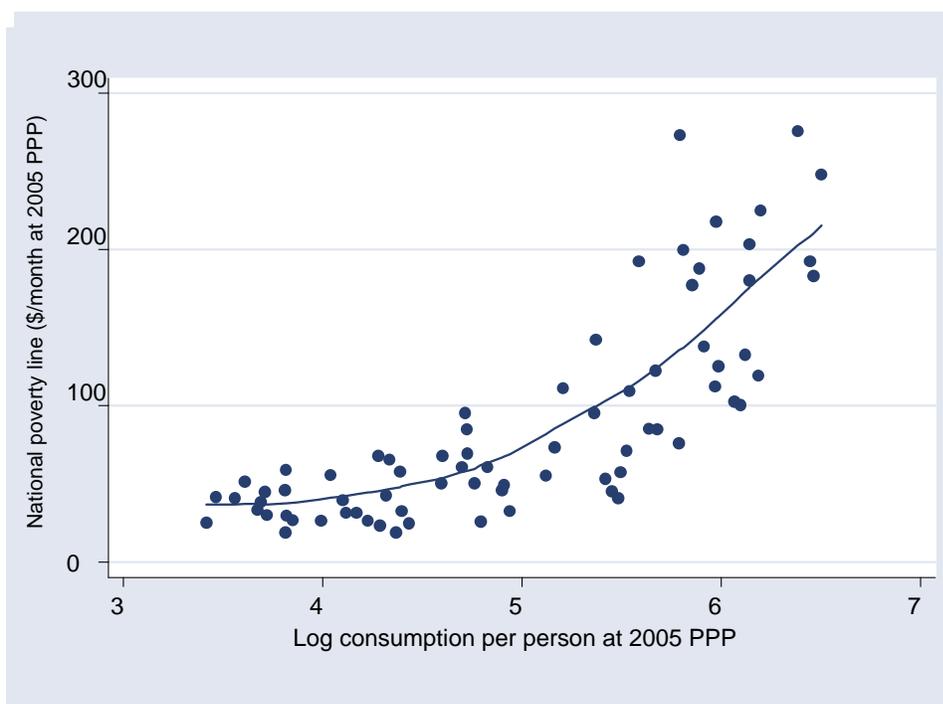
Given these concerns, a better approach is to return to the basic idea behind the "\$1 a day" poverty line. From the outset, this was designed to be a representative poverty line for low-income countries. The original \$1 per day poverty line was chosen as being representative of the poverty lines found amongst low-income countries (Ravallion et al., 1991). The same principle was applied by Chen and Ravallion (2001) in up-dating the poverty line using the new PPPs for 1993. As we showed in that paper, simply adjusting for inflation in the US between 1985 and 1993 to update the international poverty line gives a line that is well above those found in low-income countries.

However, the set of national poverty lines used in all our previous papers are now rather old, being essentially the same set of poverty lines used by Ravallion et al. (1991).<sup>13</sup> RCS have compiled an entirely new set of 75 national poverty lines from the Bank's country-specific

Poverty Assessments. In each case the national poverty line was converted to 2005 international \$'s using the individual consumption PPP.

Figure 12.2 plots the Chen et al. poverty lines against mean consumption per person (from national accounts data) also using the same 2005 PPP's. The same pattern found by Ravallion et al. (1991) and Ravallion (1998) using the older compilations of national poverty lines is evident in Figure 12.2, with the poverty line rising with mean consumption, but with a low elasticity initially. Thus absolute poverty appears to be the dominant concern in poor countries, with relative poverty emerging at higher consumption levels; for further discussion of why this happens see Ravallion (2008a).

**Figure 12.2. National poverty lines for 74 developing countries plotted against mean consumption using consumption PPPs for 2005**



Note: Fitted values use a lowess smoother with bandwidth=0.8

There are a number of ways one might set a new international poverty line consistent with the original idea of using a line that is typical of the poverty lines found in the poorest countries. Although the relationship in Figure 12.2 is quite flat at low consumption levels, there is still a sizable variance. The lowest poverty line in the data set is \$19.05, though this is found at well above the lowest consumption level; the corresponding consumption level is slightly under \$80 per month. The poverty line corresponding to the country with lowest mean consumption (Malawi) is \$26.11.

However, these estimates are undoubtedly sensitive to measurement errors. Idiosyncratic differences in the data and methods used for setting national poverty lines are also likely to be playing a role. Some averaging is clearly needed. Chen and Ravallion (2001) used a semi-log parametric model for this purpose, in which the log of the national poverty line is regressed on a quadratic function of the level of consumption per capita at PPP. Using the same method on the new data set of national poverty lines gives an estimate of the log poverty line of 3.52 (\$33.75 per month) for the expected poverty line in the poorest country in the sample, with a White standard error of 0.105. Figure 12.2 also gives a more flexible non-parametric regression of the national poverty lines against log mean consumption; the predicted values give the estimated mean poverty line at any given level of mean consumption.<sup>14</sup> The lowest predicted value is \$37.14 per month and the mean of the predicted values in the poorest 15 countries is \$37.98 per month. Since this method does not impose any parametric functional form on the data, it can be considered a more robust estimate of the expected value of the poverty line in the poorest

country. Based on these observations, Ravallion et al. (2008) propose an international poverty line of \$1.25 a day for 2005 (\$38 per month).<sup>15</sup>

It should be noted that the poverty line of \$44.25 for 2005 that one obtains if one updates the old (1993) international line of \$32.74 for inflation in the US is clearly well above the lines found in the poorest countries in Figure 12.2 (echoing the finding of Chen and Ravallion, 2001, comparing the 1993 and 1985 PPPs).

### **New Poverty Estimates for China**

Our primary focus in this paper is assessing the extent of poverty in China based on an international poverty line. Of course, this need not agree with the national poverty line in any one country. Naturally, the PPP for China has no bearing on the poverty counts using national poverty lines (such as reported for China in Ravallion and Chen, 2007). Both the official poverty line for China and the (higher) line used by Ravallion and Chen (2007) are lower than the international line used here. China's official poverty line for rural areas is about \$20/month, making it one of the lowest lines in the developing world. The line used by Ravallion and Chen is closer to the international line, though still lower (at about \$30 per month). (China's official poverty line has not been updated in real terms since the middle 1980s, even though mean household consumption has increased by a factor of about four. At the time of writing, proposals to raise the official poverty line were being seriously considered within the Government of China.)

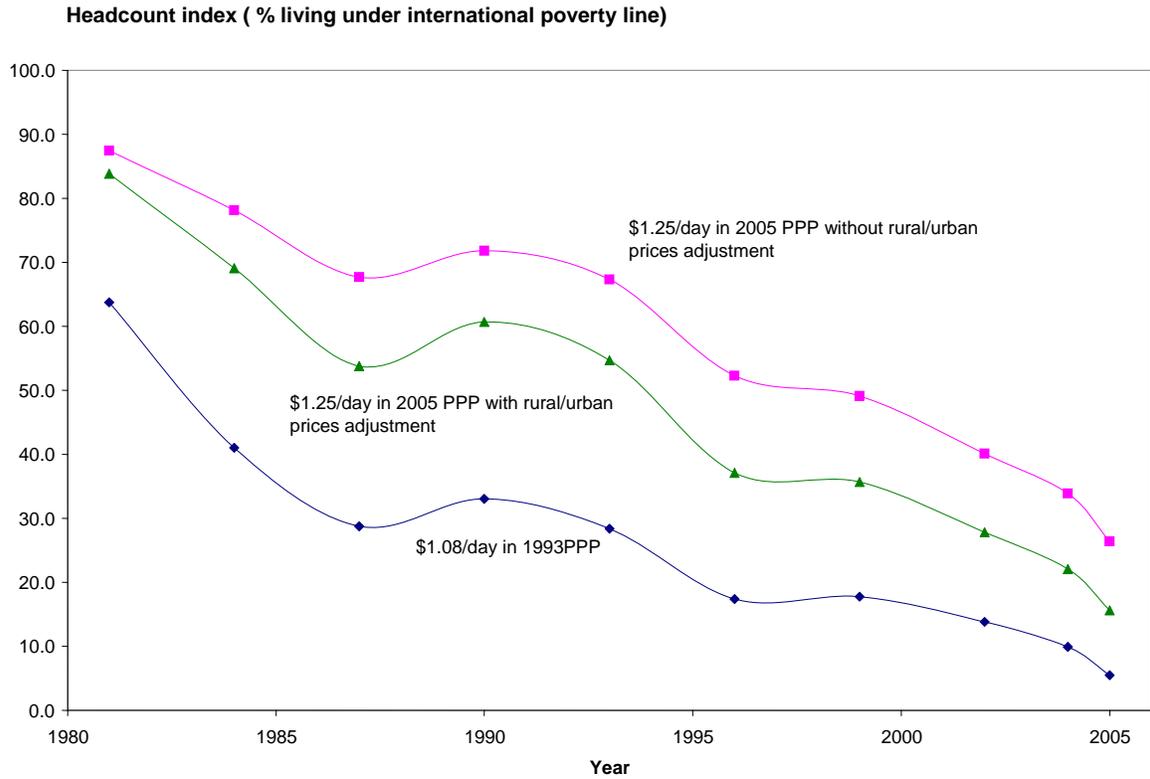
In estimating China's poverty rate using the international poverty lines our estimation methods follow Chen and Ravallion (2004, 2007). We focus initially on household consumption expenditure as the welfare indicator for measuring poverty. This follows our past practice in measuring global poverty. However, we also report results for income poverty measures, which are more common in poverty analysis for China.

We readily acknowledge that the sense in which the old and new poverty lines can be meaningfully compared is rather limited, given that so much has changed (as we have emphasized above). However, it is a natural to ask what the combined effect of all our changes has been. (The underlying distributional data are the only thing that has not changed, beyond updating the series to 2005.)

Table 12.1 gives estimates using both the old (1993) PPP and two new poverty lines. One of these lines simply updates the 1993 line for inflation in the US (\$44.25 per month). However, as noted above, this gives a poverty line that is well above that found in the poorest countries (due to some combination of a failure of the PPP principle to hold and non-comparabilities of the two sets of PPPs). So we also give results for a 2005 poverty line of \$38 per month, as proposed by Ravallion et al. (2008), which is the mean poverty line for the poorest 15 countries (based on Figure 2), and \$60.83 per month (\$2 a day) which is about the median (\$60.81) of 75 countries' national poverty lines used by Ravallion et al. (2008). The "adjusted" estimates assume that the urban price level facing the poor is 37% higher than in rural areas. Figure 12.3 plots the estimated poverty rates over time using both the \$32.74/month (\$1.08/day) line based on the

1993 PPP and the \$38/month (\$1.25/day) line, with and without our correction for the sampling bias in the 2005 ICP price data.

**Figure 12.3. China's poverty rate over time using 1993 and 2005 PPPs with and without correction for sampling bias in the ICP**



**Table 12.1. Consumption poverty rates for China 1981-2005**

	2005 PPP						
	1993 PPP Z=\$1.08	Without adjustment for lower rural prices			With adjustment for lower rural prices (poverty line in urban prices)		
		Z=\$1.25	Z=\$1.45	Z=\$2.00	Z=\$1.25	Z=\$1.45	Z=\$2.00
% living below poverty line							
1981	63.8	87.4	92.0	98.2	83.8	89.8	97.8
1984	41.0	78.1	84.4	95.0	69.1	78.6	92.8
1987	28.7	67.7	74.6	87.8	53.8	64.6	83.5
1990	33.0	71.8	77.4	87.9	60.7	69.9	84.9
1993	28.4	67.3	72.9	82.7	54.7	64.4	79.4
1996	17.4	52.3	59.9	73.4	37.1	46.8	65.9
1999	17.8	49.1	55.9	68.4	35.7	44.3	61.5
2002	13.8	40.1	46.3	58.4	27.8	34.9	50.5
2004	9.9	33.9	40.0	52.2	22.1	28.4	43.3
2005	5.5	26.4	32.9	46.7	15.6	20.9	35.7

Note: Poverty line in \$s per person per day.

As expected, there is a marked upward revision to the estimated poverty count for China, though the marked decline over time in the poverty rate remains evident. Indeed, the new PPP suggests an even larger absolute reduction in the poverty rate since 1981. Using our corrections for sampling bias in the ICP data for China, and our new international poverty line of \$1.25 a day in 2005 prices, the poverty rate fell by 68 percentage points over 1981-2005, as compared to 58 points using our previous “\$1 a day” line based on the 1993 PPP.

So far we have focused on consumption poverty, which has been our preferred approach to global poverty measurement in past work. However, given that discussions of poverty in China have typically focused on income poverty, we also present results for this measure in Table 12.2. The first column includes an update of the income poverty series we estimated in Ravallion and Chen (2007). The rest of the table corresponds to Table 12.1.

**Table 12.2. Income poverty rates for China 1981-2005**

National poverty lines*	1993 PPP Z=\$1.08	2005 PPP						
		Without adjustment for lower rural prices			With adjustment for lower rural prices (poverty line in urban prices)			
		Z=\$1.25	Z=\$1.45	Z=\$2.00	Z=\$1.25	Z=\$1.45	Z=\$2.00	
% living below poverty line								
1981	52.8	62.3	85.3	89.8	97.1	81.6	87.5	96.7
1984	24.1	25.6	70.5	78.5	91.8	54.6	67.4	87.5
1987	16.8	21.5	63.0	70.2	83.5	45.7	57.2	78.0
1990	22.2	23.0	61.8	68.6	81.2	46.0	56.3	75.3
1993	20.0	21.0	55.0	62.2	74.9	39.9	49.0	67.4
1996	9.8	10.4	38.4	46.6	63.7	23.9	31.7	50.9
1999	7.6	8.0	30.2	37.6	54.0	17.8	24.2	41.0
2002	7.3	7.6	25.1	31.4	45.8	15.3	20.0	33.5
2004	5.3	5.8	20.0	25.5	39.0	11.8	15.6	27.0
2005	5.2	5.4	17.3	22.0	34.9	10.4	13.5	23.4

Note: From Ravallion and Chen (2007). Poverty line in \$s per person per day. Urban population shares used here are at the end of year from China's Statistical Yearbooks (NBS, 1982-2006).

Table 12.3 gives our estimates of the number of poor, comparing the old 1993 international poverty line and the new one. We give results for both consumption and income. Comparing 2005 with 1981, there were 635 million fewer people with household consumption per person below our new 2005 poverty line, as compared to 566 million fewer poor using the old 1993 line. Comparing the old and new “\$1 a day” international poverty lines, we find that an extra 133 million people in China live in poverty in 2005. Using income instead, the difference drops to 64 million.

**Table 12.3. Numbers of poor in millions**

	Consumption poverty		Income poverty	
	1993 PPP Z=\$1.08	2005 PPP Z=\$1.25 (adjusted for lower rural prices)	1993 PPP Z=\$1.08	2005 PPP Z=\$1.25 (adjusted for lower rural prices)
1981	638.0	838.9	623.4	816.2
1984	428.0	720.9	267.2	569.9
1987	314.0	587.9	235.0	499.1
1990	377.5	693.7	263.0	526.2
1993	336.1	648.3	248.9	472.9
1996	212.5	454.2	127.3	292.4
1999	223.5	448.9	100.6	224.0
2002	177.2	357.3	97.6	196.6
2004	128.6	286.8	75.4	153.7
2005	71.6	204.3	70.6	135.4

Note: Population figures used here are at the end of year from China's Statistical Yearbooks (NBS, 1982-2006). Poverty line in \$s per person per day.

## Conclusions

A careful scrutiny of the new PPP for China does not suggest that its implications for the extent of poverty in that country (by international standards) are anywhere near as dramatic as some casual observers have suggested. On *a priori* grounds, it was plain that the 300 million count for the increase in the number of China's poor was a gross exaggeration because it ignored the (documented) fact that the 2005 ICP price survey is not representative of the cost-of-living in rural China, where prices (particularly for the goods such as food for which the poor have a high budget share) are appreciably lower than in urban areas. Instead of an extra 300 million people deemed to be poor by the standards of what "poverty" means in low-income countries, our

calculations suggest the figure is closer to 130 million for consumption poverty and about half that figure for income poverty.

Of course, there can be no denying that this is a large upward adjustment in our assessment of China's poverty. Given that China had never agreed to participate in the International Comparison Program prior to 2005, it is possibly not too surprising that the prior estimates of China's PPP rate from non-ICP sources were so far off the mark. This reaffirms the importance of global participation in the ICP.

However, even if we had not done any of the calculations reported in this paper, it should have been obvious enough that the new PPP rate alone cannot entail the sort of downward revision to China's rate of progress against poverty over time that some observers have claimed. That is because the real growth rates are unaffected by the change in the PPP, and it is China's high growth rates that have driven poverty reduction. Given that the same growth rate can have different implications for the change in the poverty count depending on the initial level of poverty, one may well find an even greater progress. That is indeed what we find when we re-estimate China's poverty measures over time by our new international poverty line.

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<sup>1</sup> More precisely, the previous PPPs were derived using a bilateral comparison of 1986 prices between the United States and China as documented in Ruoen and Kai (1995).

<sup>2</sup> Blades (2007) speculates on the reasons why China has been reticent to participate in the ICP.

<sup>3</sup> For example, the Bretton Woods Project (a NGO) claims that the new PPPs "...undermine the much-trumpeted claims that globalization has reduced the number of people living in extreme poverty" (<http://www.brettonwoodsproject.org/art-560008>). Also see the similar comments in Pogge (2007).

<sup>4</sup> For the 2005 round the ICP global office has been housed in the World Bank; the Asian Development Bank was the Asia regional office.

<sup>5</sup> As was argued in Ravallion et al. (1991) and reiterated in subsequent papers, the weights attached to different commodities in the conventional PPP rate may not be appropriate for the poor. An effort is underway to address these concerns in the future. Preliminary results reported in Deaton and Dupriez (2007) do not suggest that the re-weighting needed to derive a "PPP for the poor" will make an appreciable change to the aggregate consumption PPP.

<sup>6</sup> The method is described in World Bank (2007, p.68) and in greater detail in Dikhanov (2005).

<sup>7</sup> Re-weighting the data can only be used to correct for sampling bias as long as the sample spans the range of values found in the population; in other words, there must be adequate common support to believe that re-weighting is feasible.

<sup>8</sup> NBS had never claimed that the data for the 11 cities was representative of China as a whole, and had made that clear to the ICP authorities. The preliminary report of the 2005 ICP notes the possibility of bias due to incomplete coverage of rural areas (World Bank, 2007, p.12, p.68),

<sup>9</sup> For further discussion see Ravallion and Chen (2007). The methods closely follow those in Chen and Ravallion (1996). Note that these are not the current official poverty lines for China.

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<sup>10</sup> Without the latter condition, the rural food bundles were deemed to be nutritionally inadequate (in terms of protein and other nutrients) while the urban bundles were considered to be preferable. The condition was binding on both urban and rural bundles.

<sup>11</sup> Note that these numbers imply a 41% urban-rural differential in 2002; allowing for the different inflation rates in urban and rural areas gives a differential of 37% in 2005.

<sup>12</sup> In the light of these observations, we clearly do not accept the claim by Reddy and Pogge (2002) and Wade (2004) that we lowered the real value of the poverty line in Chen and Ravallion (2001) (as compared to Ravallion et al., 1991) because its real value in the US had fallen. This would only be correct if the principle of purchasing power parity holds and the PPP methods are comparable over time. Neither condition holds, either in the switch from 1985 to 1993 PPPs or the switch from 1993 to 2005. For further discussion see Ravallion (2008b).

<sup>13</sup> The only prior update was done by Ravallion (1998), who included a number of new observations for Africa (which was clearly under-represented in the Ravallion et al., 1991, data set). The results were reasonably similar to the earlier study.

<sup>14</sup> We use a Locally Weighted Scatter Plot Smoothing, also known as LOWESS. Figure 2 gives the default bandwidth in the STATA program for LOWESS. Ravallion et al. (2008) discuss sensitivity to the choice of smoothing parameter.

<sup>15</sup> Note that Ravallion et al. (2008) also argue in favor of a slightly higher line, \$1.25 a day, which is the mean of a reference group of the poorest 15 countries. This raises the level of poverty in China slightly, but does not change our main conclusions.

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