

An Evaluation of Poverty Prevalence in China: New Evidence from Four Recent Surveys

Chunni ZHANG, Qi XU, Xiang ZHOU, Xiaobo ZHANG, Yu XIE

Abstract

In this paper, we calculate and compare the poverty incidence rate in China using four nationally representative surveys: the China Family Panel Studies (CFPS, 2010), the Chinese General Social Survey (CGSS, 2010), the Chinese Household Finance Survey (CHFS, 2011), and the Chinese Household Income Project (CHIP, 2007). Using both international and official domestic poverty standards, we show that poverty prevalence at the national, rural, and urban levels based on the CFPS, CGSS and CHFS are much higher than official estimation and those based on the CHIP. The study highlights the importance of using independent datasets to validate official statistics of public and policy concern in contemporary China.

An Evaluation of Poverty Prevalence in China: New Evidence from Four Recent Surveys

Since the economic reform began in 1978, China's economic growth has not only greatly improved the average standard of living in China but also been credited with lifting hundreds of millions of Chinese out of poverty. According to one report (Ravallion and Chen, 2007), the poverty rate dropped from 53% in 1981 to 8% in 2001. Because of the vast size of the Chinese population, even a seemingly low poverty rate of 8% implies that there were still more than 100 million Chinese people living in poverty, a sizable subpopulation exceeding the national population of the Philippines and falling slightly short of the total population of Mexico. Hence, China still faces an enormous task in eradicating poverty.

Poverty reduction and common prosperity are public policy goals openly pursued by the Chinese government today. However, both the formulation and the evaluation of anti-poverty policies require a precise estimate of the actual degree of poverty. Given China's large population base, an estimated error of merely a few percentage points would have far-reaching consequences: millions of people would be wrongly classified as poor or non-poor, blunting the government's targeting ability. In the absence of independent national representative surveys, most poverty estimates in current use hinge exclusively on official statistics released by the Chinese government.

Poverty estimates based on official statistics, however, are subject to critiques. First, government statistics, while useful for tracking trends, may suffer from biases due to either political interference or procedural limitations (Wu, 2007). Second, the sampling frame is not transparent. Third, until very recently the official poverty lines

were far below the international standard, casting doubt on China's record in poverty reduction (Park and Wang, 2001). Finally, strict restrictions on data access have prevented third parties from deriving or replicating official poverty estimates from raw unit-record data.

In this paper, we attempt to determine the current level of poverty prevalence in China. To obtain reliable estimates, we compare the results from four recently completed, nationally representative surveys and estimate the poverty level under a range of poverty lines derived from both international and official domestic standards. Finally, we derive our own "best" estimates of China's poverty prevalence.

In the following sections, we begin by reviewing the debate regarding the degree of poverty in China. We then describe the four surveys, the definition of poverty lines, and the poverty measure we use. Next, we report our estimates of poverty prevalence at the national, rural, and urban levels. Finally, we conclude the study and explain our findings.

Literature Review

Prior to the economic reform that began in 1978, the Chinese government ran a planned economy. Along with the economy, other social structures were strictly regulated by the state. Central to pre-reform era China was the *hukou* (household registration) system that constrained people's mobility (Wu and Treiman 2004). As a result, most Chinese lived in their birth places. By 1980, less than 20% of the population was urban. Urban Chinese enjoyed more privileges than their rural counterparts, such as medical insurance, free housing, guaranteed jobs, and retirement pensions (Wu and Treiman 2004). Such institutional policies in favor of urban residents generated a large income gap between urban and rural Chinese (Kanbur and Zhang, 2005). Within cities and rural areas, however, income inequality was relatively

low (Khan and Riskin, 2001; Xie and Hannum, 1996). In cities, although few residents were rich, most were not poor either.¹ However, about two-thirds of the rural population lived in poverty (Ravallion and Chen, 2007). Broadly speaking, at the onset of China's reform in the late 1970s, poverty in China was primarily a rural problem.

The rural household responsibility system adopted in the early 1980s granted farmers land cultivation rights and empowered them to make their own production decisions. With better aligned incentives, agricultural production and rural incomes witnessed a dramatic increase in the ensuing years. Consequently, the rural poverty rate dropped sharply from 76% in 1980 to 24% in 1986. In other words, more than 400 million people moved out of poverty in a short, six-year spell. Afterwards, however, the pace of poverty reduction slowed. By 2001, the rural poverty rate stood at 13%, still much higher than the urban poverty rate (at 0.5%).

For a long time, China's official poverty line for rural areas was only 300 yuan per person per year at the 1990 prices, or about 150 USD according to the purchasing power parity exchange rates, much lower than the widely used "\$1 a day" poverty line.² As shown in Ravallion and Chen (2007), if one were to use the low official rural poverty line, China would have eradicated urban poverty by the year 2000, a time when massive numbers of urban workers were laid off and struggling for survival amid the state-owned enterprise reform. Apparently, the low official line was not based on realistic assessments of actual poverty in China. To address this concern, some scholars have estimated Chinese poverty rates using alternative poverty lines. For example, based on a sample of 3,600 households from the National Urban Household Income and Expenditure Survey (UHIES), Fang, Zhang, and Fan (2002)

¹ In 1981, the urban poverty rate was as low as 0.82% according to the official poverty line. Even using the higher poverty line based on the cost of basic needs, the poverty incidence was only 6% (Ravallion and Chen, 2007).

² There was no comparable urban poverty line.

showed that if a higher poverty line of “\$ 1.5 a day” is used, which better reflects the cost of living in cities, the urban poverty rate would be much higher than the official figures. Moreover, the poverty rate based on the new poverty line exhibited an increase from 8.4% to 8.9% in 1996-1998, a period of active urban reform.

Using a larger sample of more than 12,000 households over the longer period 1986-2000, Meng, Gregory, and Wang (2005) reported poverty estimates according to province-specific lower and upper poverty lines based on different compositions of the cost of basic needs. They found that urban poverty increased in the 1990s with the urban reforms. In 2000, their expenditure-measured poverty incidence was 10.2% and 3.9% corresponding to the upper and lower poverty lines. By comparison, their income-based measures were much lower, at 4.0% (upper line) and 1.7% (lower line), respectively.

Using the Chinese Household Income Project (CHIP) surveys in 1988, 1995, 1999, and 2002, Appleton, Song and Xia (2010) documented the trend and patterns of urban poverty. Although the CHIP survey questionnaires were designed by the China Academy of Social Sciences, the sample was drawn from the China household income and expenditure surveys, a government survey, and fielded by the China National Bureau of Statistics. In essence, the CHIP surveys are merely subsamples of the government’s national surveys. Appleton, Song and Xia (2010) also found that poverty estimates based on different poverty lines yielded very different results. For instance, according to the international “\$1 a day” line (or 1,200 yuan, roughly the same as the poverty line used by Ravallion and Chen (2007)), only 0.1% of the urban population lived under poverty in 2002. Even using a higher line of “\$2 a day” per capita income (or 2,400 yuan), the urban poverty rate was still as low as 1.9%. When

the poverty line was further increased to “\$3 a day” (3,600 yuan), the poverty rate rose by three times to 7.9%.

In rural areas, the estimate of poverty incidence is also sensitive to the choice of poverty lines. For instance, based on survey data conducted annually by China’s Research Center for Rural Economy (RCRE) in three provinces (Zhejiang, Hubei, and Yunnan), Glauben et al. (2012) showed that rural poverty incidence was only 3.9% in 2000 and 1.5% in 2004 based on the national poverty line. If the international “\$1 a day” poverty line is used, the average poverty rate in the three provinces was much higher, at 18.6% and 10.0% in these two years. The results are mainly driven by the high concentration of poverty in Yunnan province. In 2004, the poverty rates based on the international line in Zhejiang, Hubei, and Yunnan provinces were 0.3%, 4.3%, and 27.5%, respectively. This suggests rural poverty was more concentrated in the western region.

Xing et al. (2009) provided supporting evidence. Using a full-coverage survey of households in three villages in a designated poverty county in Guizhou Province, one of the poorest provinces in western China, they estimated a poverty rate of 31.7% and 44.6% in 2004, respectively, depending upon whether the national poverty line or the international “\$1 a day” line is used. These two studies confirmed the existence of pockets of poverty in rural China. However, the datasets used in the two papers have a key limitation — they are not nationally representative. So it is impossible to infer the figures of national poverty based on those data sources.

In summary, past studies on poverty in China have been based primarily on official data sources, which are claimed to be nationally representative. However, poverty rates estimated from these official data sources seem to be very low, particularly in cities. Since sampling frames of official surveys are not transparent, it

is difficult to understand what contributes to the low estimates. Although a few papers have attempted to estimate poverty rates using independent surveys, their datasets are not nationally representative and thus their results are not comparable to those based on official datasets.

In this paper, we contribute to the knowledge gap by computing and comparing poverty rates using four newly available nationally representative surveys. Since three of the four surveys were independently conducted with a transparent sampling framework, the comparison sheds new light on the issue of whether or not poverty rates based on official data sources are underestimated.

Data and Method

In this study, we use the data from four recent nationally representative surveys. These surveys are all well-known large data collection projects in China, conducted by top-tier academic institutions. Among them, the CGSS and the CHIP have already conducted several waves. Their rich experience in data collection ensures the high quality of data in the most recent waves. The CFPS and the CHFS represent the burgeoning interest in panel studies in China. The questionnaires and sampling of these panel surveys were well designed. The baseline surveys are strictly carried out to set the stage for follow-up surveys. These four surveys independently provide valid data on the incomes and expenditures of Chinese households. Jointly, a comparison of poverty estimates across the four datasets constitutes a meaningful evaluation of poverty prevalence in China. The following is a brief introduction of the four surveys.

The China Family Panel Studies (hereafter CFPS) is a large-scale panel survey project conducted by the Institute of Social Science Survey at Peking University.³ The project was designed to study the long-term dynamics of social transition in

³ The website of the project can be found at <http://www.iss.edu.cn/index.php?catid=7&action=index>.

China. With the household as the target of sampling, the survey comprehensively investigates the household as a whole and all individual household members. It also collects information on the community in which the household is located. Our study uses the data from the CFPS baseline survey, which was carried out in 2010. The baseline household questionnaire collected information on households' incomes and expenditures in 2009 in detail. We sum up the household incomes from wages and salaries, agricultural production, property, and transfers. We also compute living costs, which are not enumerated in detail under "overall household consumption expenditure." The baseline survey has a nearly nationally representative sample, which interviewed 14,960 households in 25 provinces (excluding Inner Mongolia, Xinjiang, Tibet, Hainan, Ningxia, Qinghai, Hong Kong, Macau, and Taiwan), representing about 95% of the Chinese population (Xie 2012).

The Chinese General Social Survey (hereafter CGSS) is a nationwide, repeated, cross-sectional general survey project in China. The project was launched jointly by Renmin University and the Hong Kong University of Science and Technology in 2003.⁴ The latest survey, which we analyze for this study, was conducted in 2010. Since the project aims to systematically study the changing relationship between social structure and quality of life, the 2010 survey includes household financial situation as a key domain. We compute household income from a list of income sources, including wages and salaries, agricultural production, property, and transfers. We compute household expenditure from a list of expenditure items. The sample of the CGSS 2010 covers 12,000 rural and urban households in 31 provinces (excluding Hong Kong, Macau, and Taiwan). The CGSS 2010 and the CFPS 2010 are quite comparable, because both of them collected information on household financial

⁴ A comprehensive introduction of the agenda, themes, and designs of the CGSS project can be found in Bian and Li (2012).

situations in 2009 and applied the same methods in defining rural-urban communities.⁵ Most importantly, the two surveys have similar distributions of household income and expenditure (Xu and Zhang 2012, also see Figure 1-4).

The third dataset we use for this study is the baseline of the Chinese Household Finance Survey (hereafter CHFS).⁶ The CHFS is the recently launched household finance-specific project with a nationally representative sample and panel design. The project is directed by the Survey and Research Center for China Household Finance at the Southwestern University of Finance and Economics. The baseline survey was carried out in 2011. It provides information about household assets, income, expenditure and social and commercial insurance in 2010. The baseline survey covered 8,438 households, sampled from 320 communities in 80 districts/counties in 25 provinces. We include this dataset in our study not only because of its unusual detail in collecting household financial information, but also because of the amount of publicity it received. The shockingly high level of Gini index based on this survey aroused a lot of media attention and academic debate as soon as it was released (Kao 2012; *The Economist* 2012). The survey also aroused suspicion of official figures, which are believed to either hide or underestimate the worsening wealth gap in China (*Want China Times* 2013).

The final data used for this study is the 2007 Chinese Household Income Project (CHIP). The CHIP focuses on income and inequality. The project is organized by the Chinese Academy of Social Science with cooperation from the National Bureau of Statistics of China. It was initiated in 1988 and has conducted four waves of cross-sectional surveys. This study will use its most recent survey, i.e. CHIP 2007,

⁵ For the CFPS, there are no separate sampling frames for rural and urban areas. The rural/urban status of a household was post-determined in the field, judged by the interviewer, based on the location, the administrative status, and the level of socioeconomic development of the community where the household was located. This kind of post-determined rural-urban definition was also applied in CGSS 2010, although the sampling design of the CGSS split the rural and urban population.

⁶ The website of the project: <http://www.chfsdata.org/>.

which was carried out in 2008, measuring household income and expenditure in 2007. The CHIP 2007 contains 13,000 rural households and 10,000 urban households in 16 provinces, and 5,000 rural-urban migrant households in 9 provinces.⁷ However, we were given access to the data of only some of the provinces from the original sample. The data we use for analysis were 8,000 rural households from Hebei, Jiangsu, Zhejiang, Anhui, Henan, Hubei, Guangdong, Chongqing and Sichuan provinces and 5,000 urban households from Shanghai, Jiangsu, Zhejiang, Anhui, Henan, Hubei, Guangdong, Chongqing, and Sichuan provinces. Unlike the CFPS, CGSS and CHFS, which are conducted by three independent academic institutions, the CHIP outsourced its data collection to the National Bureau of Statistics of China. We will discuss the implications of independent surveys in the conclusion.

These four surveys are mostly comparable in region and time. Nevertheless, we note the varying coverage of provinces across datasets. Only the CGSS 2010 covered all the provinces in mainland China. The CFPS did not interview remote provinces with high concentrations of ethnic minorities, such as Qinghai, Ningxia, Xinjiang, Inner Mongolia, Tibet and Hainan. The CHFS covered almost the same set of provinces as the CFPS, except that it interviewed Qinghai but not Fujian. The CHIP 2007 covered the fewest provinces. The difference in sample coverage could be a source of inconsistency for the estimation of poverty prevalence across the datasets. Nevertheless, we decided not to limit the four samples to the same set of provinces, because given the great variation in economic development between different regions across China, our analysis should be grounded in a large sample including as many provinces as possible. Since the population size and the distribution of rural-urban population vary in each province, we weight the data using the actual size of

⁷ The sampling methods and data description of CHIP 2007 can be found in Luo et al. (forthcoming).

population in every province.⁸ We also weight the data using household size. The final weights for national, rural, and urban samples are calculated using the equations below:

$$W_{rural} = \frac{P_{ri}}{P_r} * \frac{S_{ij}r_{ij}}{\sum_j S_{ij}r_{ij}} \quad (1)$$

$$W_{urban} = \frac{P_{ui}}{P_u} * \frac{S_{ij}(1-r_{ij})}{\sum_j S_{ij}(1-r_{ij})} \quad (2)$$

$$W_{urban} = \frac{P_{ri}}{P_t} * \frac{S_{ij}r_{ij}}{\sum_j S_{ij}r_{ij}} + \frac{P_{ui}}{P_t} * \frac{S_{ij}(1-r_{ij})}{\sum_j S_{ij}(1-r_{ij})} \quad (3)$$

In Equations 1-3, S_{ij} denotes the number of household members in the j th household of the i th province, and r_{ij} denotes whether this household is in a rural community ($r_{ij}=1$) or in an urban community ($r_{ij}=0$). P_{ri} and P_{ui} denote respectively the size of rural population and of urban population⁹ in province i . P_r , P_u , and P_t are the sizes of rural population, urban population, and total population in all provinces in the sample.

We also note that the four surveys were conducted in different years. The CFPS and CGSS were conducted in 2010, while the CHIP was conducted in 2008 and the CHFS in 2011. Changes in poverty prevalence over the years could weaken the comparability of data from different years. To make the CHIP more comparable to the CFPS and CGSS, we adjust its income and expenditure data based on income growth rates between 2007 and 2009.¹⁰ For the CHFS, we use its original data but inflate the poverty line in 2009 to the 2010 level or directly adopt poverty lines from 2010.

We measure poverty by absolute poverty lines. To be thorough, we adopt multiple definitions of the poverty line. The threshold of U.S.\$1.0 per day is a widely used

⁸ The data of national, rural and urban population sizes are from Census 2010 (Population Census Office 2012).

⁹ We define urban population as residents in cities, not including residents in townships.

¹⁰ We calculate the household income growth rates based on rural and urban household incomes in 2007, 2008, and 2009. Data are from Tables 10-5 and 10-18 in the *China Statistical Yearbook 2010* and Tables 9-5 and 9-18 in the *China Statistical Yearbook 2009*.

poverty line initiated by the World Bank. Considering the higher living cost in urban and developed areas, however, a higher poverty line, U.S.\$1.5 per day, in such areas is more comparable to U.S.\$1.0 per day in the rural and less developed areas (Fang, Zhang and Fan 2002). Therefore, we use both thresholds of U.S.\$1.0 and U.S.\$1.5 per day to compute the poverty lines for each province in 2009 and 2010. Since the thresholds are measured in U.S. dollars in 1985, we convert them to RMB using 1985 purchasing power parity and inflate them to 2009 and 2010 levels by rural and urban province-specific CPIs.¹¹ In addition, we use the official poverty lines so as to compare our results with official statistics. For rural areas, the Chinese government has a well-defined national poverty line. The first official rural poverty line was developed in 1986, defining rural residents with per capita net incomes below 206 *yuan* as absolutely poor. The second is a low-income standard of 865 *yuan* enacted in 2000. In 2008, the government amended the poverty line for the third time, unifying the absolute poverty standard and low income standard, setting per capita net income below 1,067 *yuan* as the poverty standard. This standard was further raised to 1,196 *yuan* in 2009 and 1,274 *yuan* in 2010 to reflect the change in CPI. In 2011, the government raised the poverty line again to 2,300 *yuan*. To be thorough, we use the official rural poverty lines of 1,196 *yuan* in 2009, 1,274 *yuan* in 2010, and the new poverty threshold of 2,300 *yuan* for the estimation of rural poverty prevalence. For urban areas, there is no nationwide official poverty standard. Instead, we use urban minimum living standards in 2009 and 2010 at the provincial level as the official definition of urban poverty. The urban minimum living standards are usually drawn up at the city/county level, while the Ministry of Civil Affairs released the urban minimum living standard aggregated at the provincial level for each season. We

¹¹ CPI data are collected from the *China Statistical Yearbook* over years.

combined the standards for the four seasons to obtain the yearly urban minimum living standard for each province.

In this paper, we use Foster-Greer-Thorbecke indices based on household net income and household expenditure to compute our poverty measures.

Foster-Greer-Thorbecke indices are composed of three components. The first is the headcount ratio, denoted by P_0 , which indicates the share of population living below the poverty line. The second is the income-gap ratio (P_1), which takes the total shortfall of individual income into account. The third is a more sensitive FGT measure (P_2), which captures changes of poverty magnitude due to income transfer from the poorest to the less poor (Foster, Greer, and Thorbecke 1984). The

Foster-Greer-Thorbecke indices can be generalized into a single equation. In Eq.4, x denotes per capita net income or per capita expenditure, and z denotes the poverty line.

When α equals 0, 1, and 2, the index becomes P_0 , P_1 , and P_2 .

$$P_\alpha = \int_0^z \left[\frac{z-x}{z} \right]^\alpha f(x) dx \quad (4)$$

Results

National Poverty Prevalence Level

Table 1 presents the national poverty prevalence level using the thresholds of U.S.\$1.0 per day and U.S.\$1.5 per day. The upper panel of Table 1 shows the poverty prevalence level computed from net household income per capita. Among the four surveys, the poverty levels based on the CHIP are the lowest, with poverty incidences of 3.3 % below the poverty line of U.S.\$1.0 per day and of 9.2% below the poverty line of U.S.\$1.5 per day. By contrast, the CHFS provides the highest estimates of poverty prevalence: Using the U.S.\$1.0 per-day line, about one third of the national population are poor; using the U.S.\$1.5 per-day line, more than 40% of the national

population are poor. The CGSS and CFPS produce similar results. The poverty incidences are 10.8% in the CFPS and 12.5% in the CGSS under U.S.\$1.0 a day, and 18.7% in the CFPS and 22.2% in the CGSS under U.S. \$1.5 a day.

When we estimate poverty prevalence levels based on household expenditure per capita, the results from the CFPS, CGSS and CHFS are close, while the estimates from the CHIP are still very low. As shown in the lower panel of Table 1, the poverty incidence based on the CHIP is only 1.6 % under U.S.\$1.0 a day and 7.6 % under U.S.\$1.5 a day. These estimates are much lower than those from CFPS, CGSS and CHFS, which suggest that 9% of the national population lives under the U.S.\$1.0 per-day line and 19% lives under the U.S.\$1.5 per-day line.

Rural Poverty Prevalence Level

Next, we investigate rural poverty prevalence based on U.S.\$1.0 per day, U.S.\$1.5 per day, and officially defined rural poverty lines. We use two versions of official rural poverty lines: 1,196 *yuan* per capita in 2009 prices is the previous threshold, and 2,300 *yuan* per capita is the newest one.

Figures 1 and 2 plot the normal density curves of household net income per capita and household expenditure per capita for rural households of the four surveys. In the figures, we use vertical straight lines to represent different poverty lines. We can see that 1,196 *yuan* is the lowest poverty line, and U.S.\$1.0 per day is the second lowest. The newly defined official line of 2,300 *yuan* is higher and close to the U.S.\$1.5 per-day line. According to Figure 1, the distributions of household income of the CFPS and CGSS are similar to each other. The income of the CHIP has the highest mean and the least dispersion. By contrast, the CHFS has the lowest mean income and the highest income inequality. The distribution of household expenditure in Figure 2

exhibits a similar distribution of expenditure in the CFPS and CGSS, while the CHIP and CHFS are higher in mean expenditure.

Table 2 presents the estimates of P_0 , P_1 , and P_2 for the rural population based on different poverty lines. According to the results from household net income per capita, the CHIP presents the lowest level of poverty prevalence: only 2% to 13% of rural residents live below the poverty lines. Again, the CHFS shows the highest poverty prevalence level, with about one third of rural residents living below the lower poverty lines and almost half of rural residents living below the higher poverty lines. The estimates from the CFPS and CGSS are modest and close: about 9% of rural residents live below the official line of 1,196 *yuan*, 12%-16% below the U.S.\$1.0 per-day line, 19%-26% below the official line of 2,300 *yuan*, and 21%-28% below the U.S.\$1.5 per-day line.

If we look at the expenditure-based estimates, except for the CHIP showing a very low level of poverty prevalence, the CGSS, CFPS, and CHFS produce fairly consistent estimates. The rural poverty incidence is about 4% to 8% based on the 1,196 *yuan* line, about 9% to 13% based on the U.S.\$1.0 per-day line, 18% to 23% based on the 2,300 *yuan* line, and 20%-26% based on the U.S.\$1.5 per-day line.

In sum, the estimates of rural poverty prevalence from expenditure data are lower than those from income data. If we trust what the majority of estimates indicate, we conclude that around 10% of the rural population would be considered poor based on the lower poverty lines, and nearly a quarter of the rural population would be considered poor based on the higher poverty lines.

Urban Poverty Prevalence Level

We now turn to estimate the urban poverty prevalence level. The poverty lines for urban residents include U.S.\$1.0 per day, U.S.\$1.5 per day, and the urban minimum living standard.

Figures 3 and 4 plot the distribution of household net income per capita and expenditure per capita for urban households in the four surveys. The vertical straight lines in the figures represent poverty lines of U.S.\$1.0 per day, U.S.\$1.5 per day, and urban minimum living standard.¹² We can see that the urban minimum living standard is very close to the U.S.\$1.5 per-day line. Among the four surveys, the CGSS and CFPS exhibit similar income distributions, while the CHIP shows the highest mean income and lowest dispersion and the CHFS shows the lowest mean income and highest dispersion. For the distribution of expenditure, the CGSS and CFPS also resemble one another. The CHFS has a slightly higher mean expenditure and the CHIP has the highest mean.

Table 3 presents the estimates of urban poverty prevalence under different poverty lines. We look first at the upper panel of the table, which presents income-based estimates. The panel shows that the poverty prevalence based on the CHIP is very low, the poverty incidence being lower than 0.3%, regardless of the poverty line being used. The CHFS presents the highest level of urban poverty prevalence: about one fifth of urban residents are counted as poor under the U.S.\$1.0 per-day line, and more than a quarter of urban residents are counted as poor under the U.S.\$1.5 per-day line or the urban minimum living standard. Again, the CFPS and CGSS produce modest and similar estimates: about 4% of the urban population falls

¹² The urban minimum living standard varies across cities. Here, we take the average of the urban minimum living standard aggregated at the provincial level.

below the U.S.\$1.0 per-day line, and 9% below the U.S.\$1.5 per-day line and the urban minimum living standard.

We next look at the urban poverty level from the expenditure data shown in the lower panel of Table 3. The urban poverty prevalence estimated from the CHIP is extremely low. Virtually all the urban population live above the U.S.\$1.0 per-day line, and only around 0.3% live under the U.S.\$1.5 per-day line or the urban minimum living standard. By contrast, the CGSS, CFPS, and CHFS show urban poverty to be more prevalent. The expenditure-based estimates from the CGSS and CHFS are quite close, while the estimates from the CFPS are slightly higher: the poverty incidence is from 2% to 4% based on the U.S.\$1.0 per-day line; the poverty incidence is from 6% to 9% based on the U.S.\$1.5 per-day line; the poverty incidence is from 8% to 9% for the CGSS and CHFS and 11% for the CFPS based on the urban minimum living standard.

By comparing the results between Tables 2 and 3, we clearly see that poverty prevalence in urban areas is much lower than that in rural areas. In urban areas, as the majority of estimates reflect, 4% of the population has income and expenditure below the U.S.\$1.0 per-day line, and around 9% of the population falls below the U.S.\$1.5 per-day line or the urban minimum living standard.

Conclusion

We have examined the current poverty prevalence level in China using four nationally representative samples. Results from income data in the CFPS and CGSS and expenditure data in the CFPS, CGSS, and CHFS are remarkably consistent regardless of poverty definitions used. The poverty prevalence level estimated from these three datasets is much larger than that estimated based on the CHIP data and reported in official statistics. The national poverty rate in 2009 is about 10%-13% using the

U.S.\$1.0 per-day poverty threshold and 20% using the U.S. \$1.5 per-day poverty threshold. Poverty in rural areas is much more severe than in urban areas. Around 10% of the rural population live below the lower poverty line using either the U.S. \$1.0 poverty threshold or the 2009 government rural poverty line. The prevalence of poverty in rural China is as high as 23% when the U.S. \$1.5 per-day poverty threshold or the 2011 new government rural poverty threshold is used. In urban areas, the prevalence of poverty is 4% if measured with the U.S. \$1.0 per-day threshold, and 9% if measured with the U.S.\$1.5 per-day threshold or the urban minimum living standard.

Based on the above figures, we infer that about 92 to 213 million rural people and 16 to 36 million urban people live below the poverty line in China. This estimate for the number of the rural poor is much larger than the official estimates released earlier, stating that 35 million rural people in 2009 lived below the 1,196 *yuan* line (National Bureau of Statistics of China 2010) and 128 million rural people in 2010 fell below the new government rural poverty threshold (Chinese Academy of Science 2012). As regards the number of urban poor, the Chinese Academy of Social Science reported that around 50 million people, amounting to 8% of the population in cities and towns, did not meet the urban living standard by the end of 2009 (Pan and Wei 2011). This number of urban poor seems larger than our estimates, but readers must note that the researchers included towns as a part of urban areas while we define only cities as urban. If we revise the base by including people in towns, the estimated size of the urban population living below the minimum living standard increases to 60 million.

Our findings shed light on the debate over the degree of poverty in China. The official statistics and surveys have reported extremely low poverty rates, much lower

than those reported in other countries with similar levels of economic development and lower than people's perceptions. We have found that China's current poverty prevalence is higher than the official estimates (e.g. NBSC, CHIP, and CASS). The underestimation of poverty prevalence by official surveys is not merely a matter of where the poverty line is drawn, but also relates to the data on which estimates are based. The possible bias could come from poor households being underrepresented in the sample, or from exaggerated reports of income and expenditure by poor households. Since the data collection process in official surveys lacks transparency, the source of bias remains unclear.

We also notice the extremely high estimate of poverty prevalence based on income data in the CHFS. It estimates that one third to one half of the rural population fall below the poverty line and one fifth of the urban population live below the U.S.\$1.0 line, more than one fourth below the U.S.\$1.5 line and the urban minimum living standard. We believe this overestimation to be caused by the income distribution of the data, which shows an extremely high level of inequality. Nevertheless, the expenditure-based estimates from the CHFS are consistent with those from the CFPS and CGSS.

The findings of this study highlight the importance of cross-source validation for evaluating poverty prevalence in China. Multiple data sources with multiple definitions of poverty produce a more comprehensive understanding of poverty prevalence in today's China. The inconsistency of results between independent academic surveys (CGSS, CFPS, and CHFS) and official data (NBSC and CHIP) is worth notice. It suggests that the existence of independent surveys may help the NBSC improve their data quality and provide more accurate measures of poverty prevalence.

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Table 1: Poverty for China as a Whole Using U.S. \$1 and \$1.5 per Day Thresholds

	Based on household net income per capita					
	U.S.\$1 per day			U.S.\$1.5 per day		
	P0	P1	P2	P0	P1	P2
CHIP	3.26	1.37	2.64	9.24	2.91	2.34
CGSS	12.53	5.15	3.07	22.21	9.23	5.42
CFPS	10.82	4.70	2.82	18.69	8.06	4.84
CHFS	32.03	19.52	15.36	41.65	25.48	19.48
	Based on household expenditure per capita					
	U.S.\$1 per day			U.S.\$1.5 per day		
	P0	P1	P2	P0	P1	P2
CHIP	1.64	0.30	0.09	7.55	1.57	0.53
CGSS	9.76	3.69	2.04	20.24	7.39	3.99
CFPS	8.77	2.61	1.16	18.22	6.15	2.97
CHFS	9.49	3.23	1.65	19.51	6.94	3.58

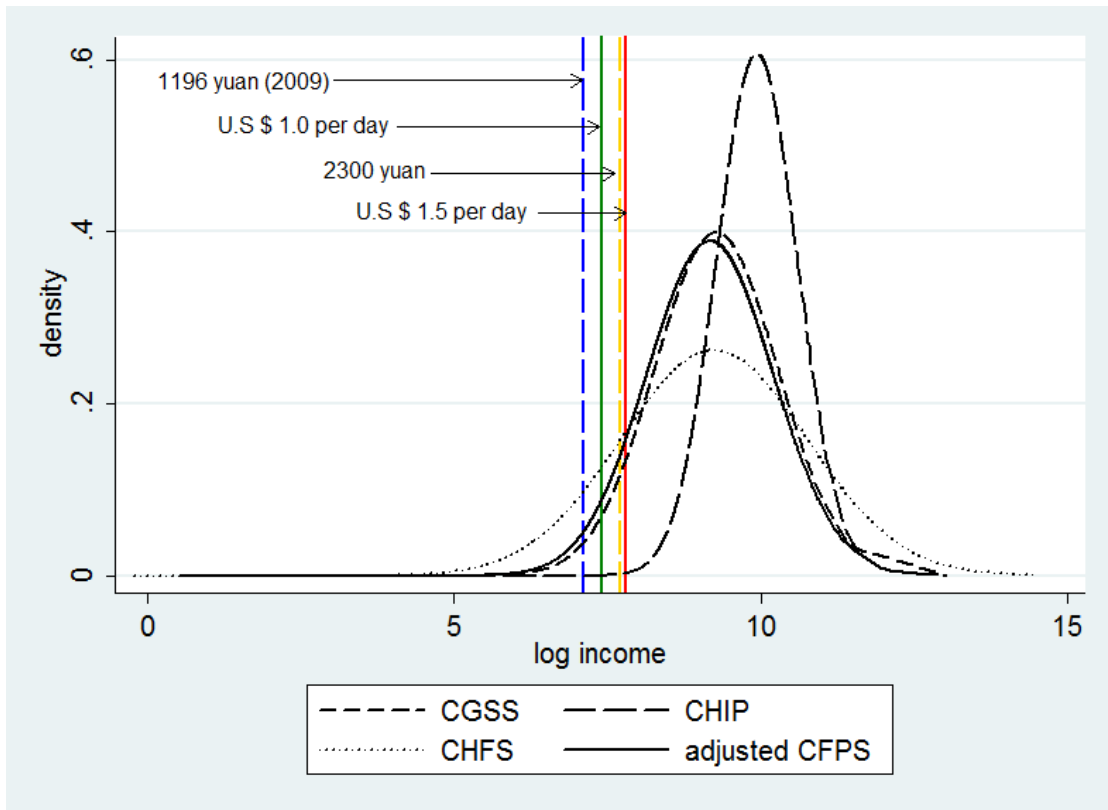
Table 2: Rural Poverty Using U.S.\$1 per Day, U.S.\$1.5 per Day, National Rural Poverty Line at the Survey Year and New Rural Poverty Line

	Based on household net income per capita											
	U.S.\$1 per day			U.S.\$1.5 per day			Rural poverty line in 09/10			New poverty line (2300yuan)		
	P0	P1	P2	P0	P1	P2	P0	P1	P2	P0	P1	P2
CHIP	4.66	1.94	3.77	13.20	4.14	3.33	2.44	1.47	5.10	11.98	3.81	3.20
CGSS	16.49	6.77	4.00	28.69	12.08	7.09	9.81	4.19	2.53	25.85	10.98	6.37
CFPS	12.10	5.29	3.18	20.81	9.01	5.43	8.15	3.42	2.00	18.67	8.14	4.88
CHFS	36.85	21.32	16.24	48.24	28.57	21.27	29.45	17.48	13.76	45.46	26.66	19.89
	Based on household expenditure per capita											
	U.S.\$1 per day			U.S.\$1.5 per day			Rural poverty line in 09/10			New poverty line (2300yuan)		
	P0	P1	P2	P0	P1	P2	P0	P1	P2	P0	P1	P2
CHIP	2.37	0.43	0.13	10.74	2.24	0.75	0.68	0.13	0.04	9.77	1.98	0.65
CGSS	12.60	4.51	2.29	25.95	9.34	4.88	6.88	2.28	1.12	22.83	8.10	4.13
CFPS	9.61	2.87	1.27	19.86	6.74	3.26	4.49	1.25	0.54	17.53	5.85	2.76
CHFS	12.68	4.36	2.23	25.27	9.21	4.80	7.73	2.61	1.37	21.57	7.80	4.10

Table 3: Urban Poverty Using U.S.\$1 per day, U.S.\$1.5 per day, and Urban Minimum Living Standard

	Based on household net income per capita								
	U.S.\$1 per day			U.S.\$1.5 per day			Urban minimum living standard		
	P	P	P	P	P	P	P	P	P
	0	1	2	0	1	2	0	1	2
CHIP	0.10	0.08	0.08	0.26	0.12	0.09	0.26	0.12	0.09
CGSS	4.25	1.76	1.12	8.67	3.28	1.90	9.24	3.50	2.00
CFPS	3.99	1.56	0.93	7.33	2.96	1.68	8.35	3.38	1.91
CHFS	20.93	15.38	13.34	26.48	18.36	15.36	26.49	18.78	15.92
	Based on household expenditure per capita								
	U.S.\$1 per day			U.S.\$1.5 per day			Urban minimum living standard		
	P0	P1	P2	P0	P1	P2	P0	P1	P2
CHIP	0.00	0.00	0.00	0.33	0.05	0.01	0.34	0.07	0.02
CGSS	3.81	1.97	1.53	8.30	3.33	2.14	9.00	3.51	2.24
CFPS	4.27	1.22	0.55	9.43	3.02	1.42	11.20	3.95	1.99
CHFS	2.14	0.64	0.32	6.25	1.74	0.79	7.84	2.44	1.15

Figure 1: The Distribution of Household Net Income per Capita (Rural)



Note: the four vertical straight lines represent the poverty lines of 2009, U.S.\$1.0, new poverty threshold, and U.S.\$1.5.

Figure 2: The Distribution of Household Expenditure per Capita (Rural)

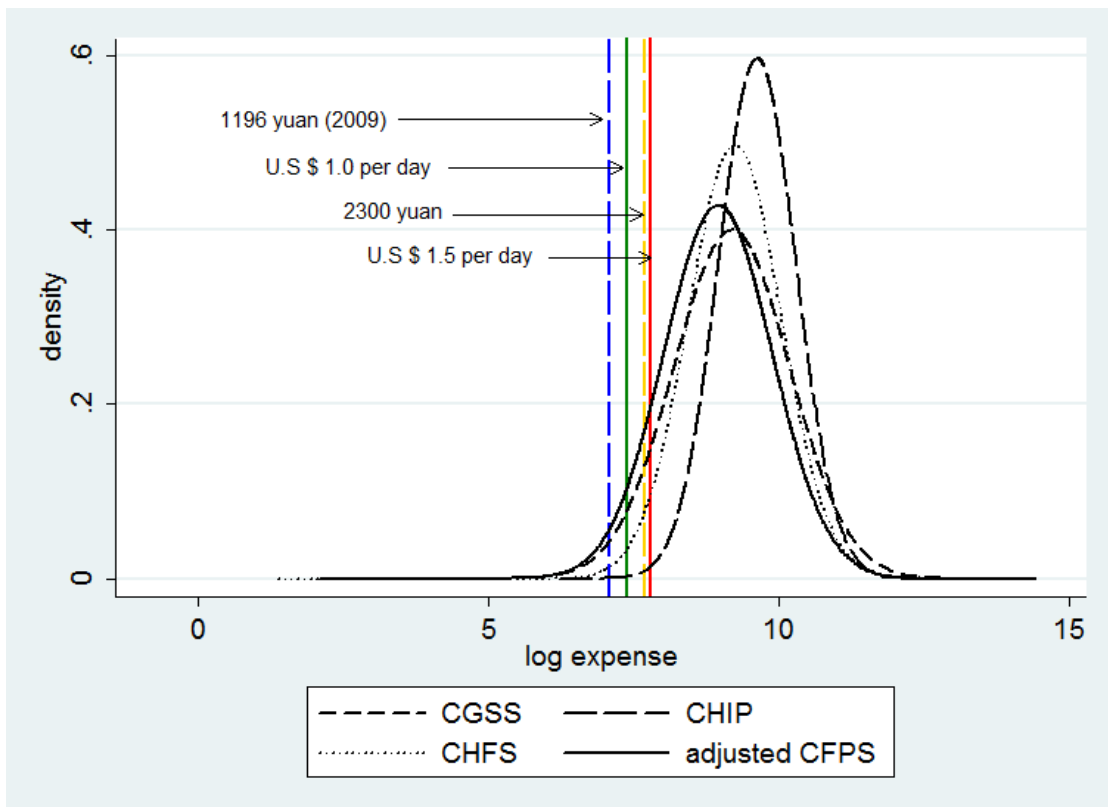
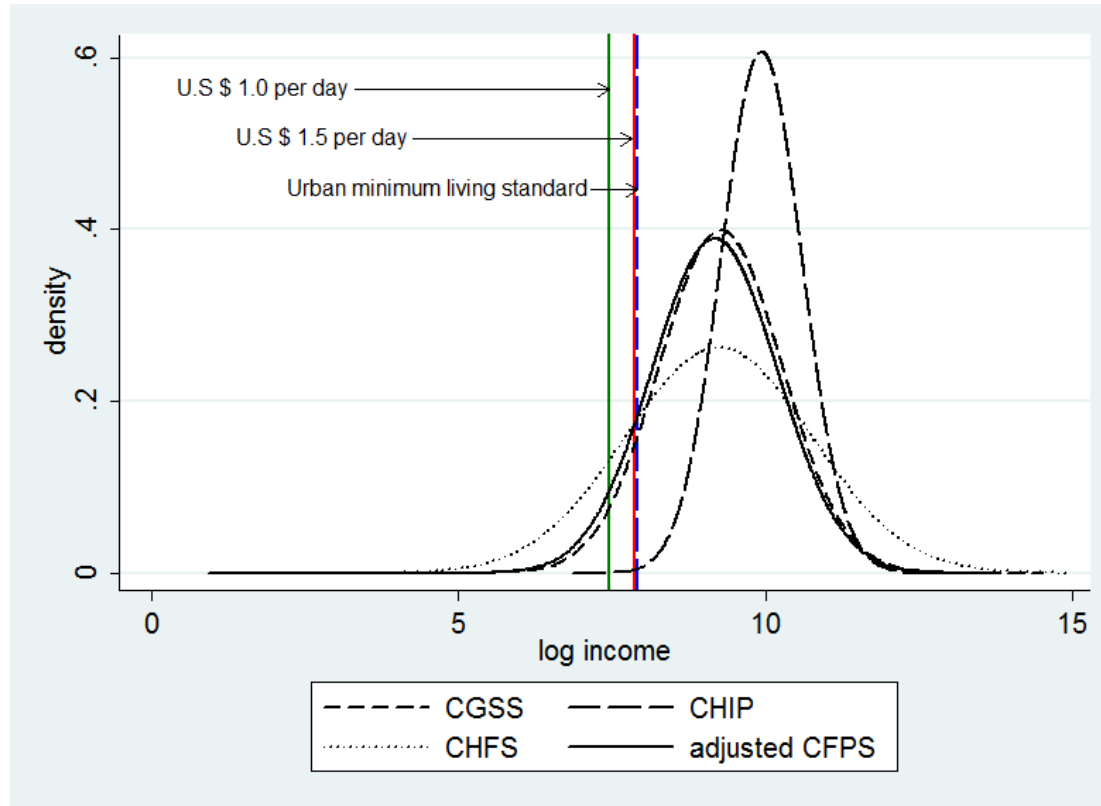


Figure 3: The Distribution of Household Net Income per Capita (Urban)



Note: the four vertical straight lines represent the poverty lines of U.S.\$1.0, U.S.\$1.5, and urban minimum living standard.

Figure 4 The distribution of household expenditure per capita (urban)

