Short-term trends in China's income inequality and poverty: evidence from a longitudinal household survey

Yu Xie[a,*], **Xiaobo Zhang**[b], **Qi Xu**[c], and **Chunni Zhang**[d]

[a]Center for Social Research, Peking University, Beijing, China and Princeton University

[b]Peking University, Beijing, China and IFPRI

[c]School of Social and Behavioral Sciences, Nanjing University, Nanjing, China

[d]Department of Sociology, Peking University, Beijing, China

Abstract

In the past three decades, income inequality in China has increased rapidly relative to both China's own past and other countries at similar levels of economic development. Using recent longitudinal data from the China Family Panel Studies (CFPS), this article examines changes in income inequality and poverty prevalence between 2010 and 2012. Surprisingly, we find a modest decline in income inequality as measured by the Gini coefficients in the CFPS data. The urban–rural gap narrowed, with rural families enjoying faster income growth than urban families enjoyed. Income growth was greater for middle-income families than for families with either high or low incomes in 2010. By all measures, poverty was greatly reduced between 2010 and 2012. Two-thirds of families that had been poor in 2010 escaped poverty by 2012.

Keywords

income inequality; poverty; trends in China; China family panel studies

JEL codes

D31; I32; O53; N35; D63

Introduction

It is now well known that income inequality in China has increased significantly over the past three decades (Xie and Zhou 2014). Scientific knowledge of this indisputable fact did not come easily. China's National Bureau of Statistics (NBS) stopped releasing the Gini coefficient of income after it reached 0.41 in 2000 (Hvistendahl 2013). It was not until a controversial 2012 report claimed that the Gini coefficient had reached a shockingly high level of 0.61 (Hvistendahl 2013) that the NBS released the Gini coefficients for recent years

in early 2013 (Xie et al. 2013). Xie and Zhou's (2014) study concludes that the NBS probably underestimated the true level of inequality. One interesting feature of the NBS series, however, is that it shows a slightly declining trend in income inequality since 2008. As government statistics measuring the well-being of the Chinese population have often been questioned for their accuracy (Hvistendahl 2013), the downward trend that the NBS reported requires close scrutiny.

A recent study by Zhang et al. (2014) challenges the Chinese Government's official statistics on poverty prevalence. Using a variety of sources and measures, the study reports various estimates of poverty rates around 2010 that are substantially higher than those acknowledged by the Chinese Government. Has the poverty level changed since 2010, the period examined by the Zhang et al. (2014) study? In addition to macro-level trends in poverty, we would like to know the micro-level dynamics of poverty over time, because simply knowing the poverty rate as a macro-level snapshot in time is not enough: for any cross-section of a population, the poverty rate is comprised of two types of poverty: permanent (or chronic) poverty and transitory (or transient) poverty (Duclos, Araar, and Giles 2010). Over time, a family may transition out of poverty to non-poverty or vice versa.

At first glance, trends in income inequality and poverty seem to be simple descriptive facts that should be reported as government statistics. Unfortunately, this is not true for China. For a variety of complicated reasons, ranging from politics to practical difficulties and exacerbated by long-standing concealment practices on the part of the NBS, which is responsible for constructing and releasing government data for China, the accuracy of government statistics measuring the well-being of the Chinese population has been questioned (Hvistendahl 2013). To make matters worse, the NBS has never given independent researchers access to complete original micro-level datasets that would enable them to corroborate its macro-level statistics. For example, up to the present, scholars have continued a heated debate on the true level of the income Gini coefficient for China around 2010 (see Yue and Li 2013).

This article represents our research efforts to understand the recent short-term trends in income inequality and the dynamics of poverty in China. We shed new light on the two topics by utilizing data from the China Family Panel Studies (CFPS), nationally representative longitudinal data suitable for the types of analyses required to assess recent trends in income inequality and the dynamics of poverty. We capitalize on the newly available data from the CFPS between the 2010 baseline survey and the 2012 follow-up survey to examine short-term trends in both income inequality and poverty between the two survey years.

Data

This study uses data from the first two waves, 2010 and 2012, of CFPS. Conducted by the Institute of Social Science Survey (ISSS) at Peking University, the CFPS is a nationwide longitudinal survey covering a large variety of social and economic domains in contemporary China (Xie and Hu 2014; Xie, Hu, and Zhang 2014). Using multi-stage, implicit stratification and a proportion-to-population size sampling method with a rural–

urban integrated sampling frame, the survey obtained a nearly nationally representative sample from 25 provinces (excluding Xinjiang, Tibet, Qinghai, Ningxia, Hainan, Macau, Hong Kong and Taiwan), representing over 94% of the total Chinese population (Xie and Lu 2015). The 2010 baseline survey successfully interviewed, via computer-assisted personal interviews (CAPI), 14,960 families and 42,590 family members living at home. Of the baseline sample, 85.1% of families were successfully re-interviewed in the 2012 follow-up survey.

In both survey years, the CFPS contained a family questionnaire that asked a series of questions pertaining to family income, including labor and non-labor income, expenditures in different categories, and income-generating activities of all family members. In addition, the CFPS also interviewed all family members individually, with an adult questionnaire asking adult respondents about their wages and in-kind benefits. There is good evidence that the CFPS data are of high quality (Xie 2012; Xie, Hu, and Zhang 2014). The longitudinal design of the CFPS enables the study of trends in income inequality and poverty dynamics in contemporary China at the micro – that is, family –level, although at present the time span of the study is limited.

The income variable we use in this study is per capita family net income – the total net income from all sources divided by the number of family members. We measure income in five major categories: (1) agricultural and family business income; (2) wage income; (3) transfer income; (4) property income; and (5) other income, that is, private transfers and gifts. Agricultural and family business income is total income from agricultural production and profits from family-run/owned businesses. Note that agricultural production includes the value of self-consumed agricultural products through an imputation method for the 2010 data (Xie et al. 2012) and a direct measure for the 2012 data. This method creates an income measure that is comparable across different data sources but not comparable to the income measure used by Xie and Zhou (2014), which did not adjust for self-consumed agricultural products. Wage income consists of after-tax wages and salaries of individual family members employed in the agricultural or non-agricultural sector, including employer-provided bonuses and in-kind benefits. Property income includes rents of land, housing units and other assets. Transfer income is the sum of pensions, various kinds of government aids and allowances, and monetary compensation for government appropriation of land and residential relocation. Private transfers and gifts are categorized as 'other income'. While we use information provided at the family level for most sources of income, we supplement it with direct measures of wage income collected via the adult individual questionnaire.

In Appendix 1, we list detailed income components for each major category by survey year. It is evident that the income components are not strictly comparable across the 2010 and 2012 waves of the CFPS. For example, income in the 2010 survey did not include student scholarships, wages from agricultural employment and internships, compensation for land appropriation and residential relocation, and profits from self-owned small businesses. The 2012 survey was more extensive in adding these measures. See Appendix 1 for a component-by-component comparison of income measures between the two waves. We take two approaches to treating the problem of measurement incomparability. First, in analyses comparing 2010 and 2012 using longitudinal data, we restrict ourselves to the 'comparable

income' measure, the sum of income components that were comparable between the two waves as highlighted in italics in Appendix 1. In some instances where the objective is to merely provide a description of a cross-section, we also use 'total income', the sum of all income components available in each survey.

A related issue is the choice of an appropriate sample with associated sample weights. The CFPS data contain regional subsamples and thus require weighting to be nationally representative (Xie and Hu 2014; Xie and Lu 2015). This is further complicated by sample attrition over time. Again, we take two approaches. First, in analyzing longitudinal data to study changes, we use the restricted sample, that is, the families that were successfully interviewed in both 2010 and 2012, with panel weights (Lu and Xie 2015). Of course, in using weights based on regional and demographic characteristics, we implicitly make use of an unverifiable assumption, often called the 'missing-at-random' assumption (Little and Rubin 2002), that the observations that were lost in the follow-up survey can be approximated by observations with similarly observed regional and demographic characteristics. Second, in situations where we merely describe descriptive statistics at a cross-section, we use the 'full sample', that is, the largest possible sample for each survey, with appropriate cross-sectional weights. Note that cross-sectional weights adjust not only for regional oversampling but also for non-responses in the baseline survey and attributions over time and are thus subject to the same missing-at-random assumption.

To measure poverty, we also use expenditure data because income data may not accurately reflect the true economic well-being of poor families. Using the CFPS data, our expenditure measure includes expenditures on food, clothing, housing, durable goods and services, medical care, transportation and communication, education and entertainment, transfer, insurance and housing mortgage. In Appendix 2, we give a detailed list of items under each major expenditure category for computing poverty status by survey year. Given small differences in expenditure questions between the two surveys, especially those most relevant for low-income families, we use only a single variable for measuring poverty.

Trends in income inequality

We begin by reporting levels of family income measured in the 2010 and 2012 CFPS surveys and compare them to official estimates provided by the NBS, both for the nation as a whole and separately for rural and urban China. The results are given in Table 1. According to CFPS data, the mean family income per capita was 9048 RMB in 2010 and 11,740 RMB in 2012, an increase of 30%. In rural China, mean family income was much lower in both years but experienced larger growth: 5878 RMB in 2010 and 9266 RMB in 2012, an increase of 58%. Conversely, mean family income was higher in urban China but experienced smaller growth: 12,453 RMB in 2010 and 14,165 in 2012, an increase of 14%.

Note that we use comparable income in Table 1, that is, family income with only components comparable between the two surveys. Because this methodology emphasizes comparability, it omits some income items. It is thus not surprising that our estimates at the national level are lower than those reported by the NBS for the same years (the first two columns in Table 1). However, the differences between our estimates and the NBS estimates

are in different directions for rural than for urban China: our estimates for rural families are much higher than those of the NBS, whereas our estimates for urban families are much lower. As a result, the urban–rural income gaps (measured in ratios) are much smaller in the CFPS data – 2.12 in 2010 and 1.53 in 2012 – than those reported by the NBS – 3.33 in 2010 and 3.13 in 2012. Xue and Gao (2012) argue that government statistics overstate urban family income and understate rural family income due to three sources of inaccuracy, all stemming from the government's statistical practices regarding rural-to-urban migrants. First, rural migrant households in cities are often missed in government surveys. Second, migrant workers who are still members of their rural families are often missed in government surveys. Third, even when migrant workers are included in government surveys, their full incomes are not. The CFPS is unusual in having achieved high response rates and also in including family members who are migrant workers (Xie and Hu 2014). It is thus plausible that the improved quality of the CFPS data may account for at least some of the large differences in urban–rural income gaps between the NBS and CFPS estimates.

The main focus of this study is on the trends from 2010 to 2012. Again, Table 1 shows that the overall trend is similar between the two data sources: 30% growth in the CFPS data, compared to 33% in the NBS data. Both data sources also agree on the urban–rural difference in trends: rural families experienced larger growth than urban families. However, the CFPS data show a much larger rural–urban difference in growth, 58% for rural families, as compared to 14% for urban families. Corresponding numbers reported by the NBS are 35% and 27%. Given that our measure of comparable income in the CFPS is truncated, we may not be able to entirely trust the CFPS estimates to measure the actual rural–urban difference in growth rates. However, the CFPS data are consistent with those of the NBS at least in terms of the directions of changes.

To examine the CFPS data more closely, we also present trends in five key components of the comparable income measured between 2010 and 2012 in Table 2, separately for the country overall (Panel A), for rural China (Panel B), and for urban China (Panel C). Evidently, wage income was the largest single component of family income. Interestingly, rural families, which in the past relied mainly on agricultural production, also drew more than half their income from wages.[1] Of course, this result is driven partly by rural-to-urban migration, since a large fraction of the rural labor force works in manufacturing and service sectors in urban areas. However, for all three populations – China overall, rural China and urban China – the importance of wage income relative to non-wage income declined slightly between 2010 and 2012. For China overall, for example, the proportion of wage income to all comparable income went down from 70% in 2010 to 60% in 2012. From 2010 to 2012, rural wage income increased by 43%, while urban wage income barely changed. Given the fact that wage income constituted the dominant share of total income, the faster growth in wage income in rural China relative to urban China was a key driver behind the drop in the urban–rural income gap.

Transfer income was the second largest source of income, both for China overall and for urban China. Its importance grew from 14% in 2010 to 17% in 2012 for China overall, and

---

[1]This conclusion remains true even if we do not restrict to comparable income. See Xie et al. (2013).

from 19% in 2010 to 24% in 2012 for urban China. Transfer income played a much smaller role in rural China, at 5–7%. Thus, it was unlikely to be a key factor contributing to the observed drop in the urban–rural income gap.

Agricultural and family business income ranked as the third most important source of income for China overall, and its importance grew over the two years, from 11% in 2010 to 16% in 2012 of total comparable income. For rural China, agricultural and family business income ranked as the second most important source of income, constituting 27% in 2010 and 30% in 2012 of total comparable income. It accounted for 35% of the increase in income during the period 2010–2012. By comparison, rising family business income contributed up to 22% of the increase in urban income. Therefore, the faster growth in family business income in rural areas has likely played a key role in reducing the urban– rural income gap.

Property income and other (i.e. private transfer) income were insignificant (5% or lower) for all three populations in both years. The small proportion of property income found in the CFPS data is also confirmed by NBS data (National Bureau of Statistics 2012), which reported that property income accounted for only 2.7% of urban family income and 2.3% of rural family income.

In Table 3, we present our key findings concerning the Gini coefficient measure for income inequality. For each year, we show the Gini coefficients for China overall, rural China and urban China. For thoroughness, we calculated and presented two sets of estimates. In the first row, the results are based on the full sample for each year with the cross-sectional weights. In the second row, the results are based on the restricted sample, that is, families that were covered in both years, and weighted by the panel weights. The results are in general agreement with the main conclusion reached in the Xie and Zhou (2014) study: the true Gini coefficient for China around 2010 was higher than the government's official estimate, at 0.48 (Xie et al. 2013). While these Gini estimates are not so high as other estimates in the literature (Xie and Zhou 2014), they are high by international standards, either at the absolute level or in comparison to Gini coefficients in other countries at similar levels of economic development (Xie et al. 2013; Xie and Zhou 2014).[2] What is particularly interesting about our results, however, is that the Gini coefficients declined between 2010 and 2012. In the first row (with the full sample), the coefficient went from 0.52 in 2010 to 0.48 in 2012 for China as a whole. In the second row (with the restricted sample), it went from 0.50 to 0.49. This represents a significant break from a sharply rising pattern since the mid-1980s (Xie and Zhou 2014).

Let us compare our Gini estimates to those reported by others for recent years in China. Figure 1 displays official Gini coefficients released recently by the NBS (Xie et al. 2013). We also present Gini estimates from the CFPS in both 2010 and 2012 and estimates from other major academic surveys, including the 2011 Chinese Household Finance Survey (CHFS), the 2010 Chinese General Social Survey (CGSS), and the 2007 Chinese Household

---

[2]Note that Xie and Zhou (2014) reported slightly higher estimates of Gini from the 2010 and 2012 CFPS data. The discrepancy mainly affects whether to adjust for self-consumed agricultural products in calculating family income (Xie et al. 2012; Xu and Zhang 2014). In the current analysis, we applied the adjustment (Appendix 1). In Xie and Zhou (2014), no adjustment is made.

Income Project (CHIP). In this comparison, the CFPS estimates are close to those of the NBS. Interestingly, both sets of estimates show a small decline in the Gini coefficient from 2010 to 2012. As we will show later, part of the reduction is attributable to a narrowing in the urban–rural gap in income between 2010 and 2012. The pattern is less clear if we limit our attention to Gini coefficients within rural and urban areas. In the second row of Table 3 (with the restricted sample), for example, the Gini coefficient increased over the two years in urban China.

Given the small observed decline in income inequality between 2010 and 2012, it is unclear whether the decline is real. At a minimum, however, there was no increase in income inequality. Zhou (2014) showed that a substantial portion of the large increase in income inequality between 1996 and 2010 is attributable to structural forces, particularly compositional forces, that is, education expansion and the shrinkage of the labor force employed by the state-owned sector. We know that these factors did not change much between 2010 and 2012. What forces could have caused the decline in inequality between 2010 and 2012?

Let us conjecture three explanations for the decline. First, rising real wages for unskilled workers is likely a key factor. As shown in Zhang, Yang, and Wang (2011), China has reached the Lewis turning point. The seemingly unlimited surplus cheap labor has been exhausted and real wages for unskilled workers have consistently appreciated more than 10% annually since 2004. As shown in Table 2, rural wages have increased much faster than urban wages, effectively narrowing the urban–rural income gap. Second, as shown in Table 1, the growth in family income was much faster in rural China than in urban China, so the differential growth rates in favor of rural China over urban China helped narrow the urban–rural income gap, a major structural factor for China's overall income inequality (Xie and Zhou 2014). Third, the income growth between 2010 and 2012 was faster for middle-income families than for those with high or low incomes. This third conjecture is supported by an analysis capitalizing on the longitudinal design of the CFPS data. The results of this analysis, growth rates in family income by income percentile in 2010 for China as a whole and then separately for rural and urban China, are shown in Figure 2.

Confirming an earlier finding, Figure 2 demonstrates that rural family income growth exceeded urban family income growth over the entire income distribution between 2010 and 2012. This result suggests a convergent trend in family income between rural and urban China, or a narrowing in the urban–rural income gap, over this period. For rural China, urban China and China as a whole the middle income range – that is, families falling between the 25th percentile and the 75th percentile in the 2010 income distribution – experienced faster growth in family income than income groups with higher incomes (i.e. above the 75th percentile) or lower incomes (below the 25th percentile). For rural China, families in the 75th percentile experienced the largest growth over the two years. For urban China, families in the 25th percentile experienced the largest growth. For China as a whole, families in the 50th percentile experienced the largest growth. By comparison, families in the high-income or low-income strata experienced lower rates of growth or no growth at all.

We make further use of the longitudinal design of the CFPS data to understand microlevel changes in a family's income standing over time. To do this, we constructed three mobility tables of income quartiles in 2010 and 2012, shown in Table 4. The layout of Table 4 is analogous to that of a social mobility table commonly analyzed in sociology. The diagonal cells indicate income immobility, or households staying in the same income quartiles between the two waves. The upper-diagonal cells indicate upward movements, and the lower-diagonal cells indicate downward movements across income quartiles. The data show strong immobility in both the poorest and the richest quartiles: for China overall, 37% of households in the bottom quartile and 52% in the top quartile remained in the same quartiles between the two waves. Income mobility is higher in rural China than in urban China. In other words, rural families are more likely than urban families to experience both upward and downward mobility. This can be explained by income structure differences between rural and urban households. Income is less stable for rural than for urban families, as the former are more likely to rely on agricultural production and family businesses (Table 2), which are susceptible to external factors such as weather and market fluctuations. Furthermore, rural families are much less likely to have access to transfer income than urban families are and thus are less protected by a social safety net (Table 2).

Trends in poverty

Poverty is a commonly used economic indicator that measures a family's ability to afford basic material necessities. Earlier in the article, we showed real growth of family income in China between 2010 and 2012. This income growth should have significantly reduced the incidence of poverty among low-income families, whether it increased or reduced overall income inequality. Thus, trends in poverty also merit attention in themselves. In this section, we report the results of our study of poverty trends based on the 2010–2012 CFPS data. Our analyses involve two steps. First, we compare poverty prevalences between 2010 and 2012 by treating the data as though they came from two cross-sectional surveys. Second, we track changes in poverty status at the individual family level between the two years, capitalizing on the longitudinal nature of the CFPS data.

Following the study by Zhang et al. (2014), we use Foster-Greer-Thorbecke (FGT) indices to estimate poverty prevalence. These indices are composed of three sub-indices. P_0 is the headcount ratio, which represents the proportion of the population living below the poverty line. P_1 is the income-gap ratio, which captures the total shortfall of individual incomes. P_2 is a more sensitive FGT measure, which takes into account changes in poverty magnitude due to income transfers from the poorest to the less poor. We estimate poverty indices based on both income and expenditure, given that poverty reflects inadequacies in both income and spending. For low-income families, expenditure is often more reliable than income as a measure of a family's true economic condition, as such families may not report income accurately and/or consume a large share of self-produced agricultural products.

The poverty indicator is a binary measure, whereas income and expenditure are continuous. The latter is converted into the former by means of a threshold or poverty line. Hence, the estimation of poverty prevalence depends heavily on the choice of the poverty threshold. If the threshold is too low, the resulting poverty rate is likely to be low, even though a large

proportion of families are still poor. In some sense, a poverty line is always arbitrary. To overcome this difficulty, we adopted multiple poverty lines for estimation. First, we used US $1.25-per-day and US$1.5-per-day lines for rural and urban families in China as well as China overall. We converted US$1.25-per-day and US$1.5-per-day thresholds to amounts of RMB based on 1985 purchasing power parity. We inflated the 1985 prices to the current prices in 2010 and 2012 using province-level consumer price indexes from 1985 to 2010, separately for rural and urban areas. In addition, we estimated rural poverty prevalence using a 2300 RMB line, which is the national poverty line that was recently released by the Chinese Government. Since there is no single national line for urban areas, we also used province-specific 'minimum living' standards as thresholds in estimating urban poverty prevalence.

The first panel of Table 5 presents the estimates of poverty prevalence for China as a whole. The expenditure-based estimates show a less severe level of poverty than the income-based estimates. This means that a poor household can find various ways to acquire living necessities. In 2010, depending on whether income or expenditure was used (with expenditure yielding a lower poverty rate), 9–13% of all families in China lived below the US$1.25-per-day line, and 14–17% lived below the US$1.5-per-day line. The poverty rates sharply declined between 2010 and 2012 by 3–4 percentage points. The proportion of families living below the US$1.25-per-day line declined to 6–11%, and the corresponding number for the US$1.5-per-day line declined to 9–13%. Regardless of which poverty line or source (income or expenditure) was used, the 2010–2012 trend in the CFPS data is clear: there was a large reduction in poverty: the headcount rate decreased by 3% using the US$1.25-per-day line and more than 4% using the US$1.5-per-day line.

Let us now look at poverty prevalence for rural and urban China separately. The second panel of Table 5 presents poverty estimates for rural China. The estimates were based on three poverty lines: US$1.25 per day, US$1.5 per day and 2300 RMB. Using the US$1.25-per-day line, we find 14–19%, depending on whether expenditure or income is used, of the rural population living below the US$1.25-per-day line in 2010. In 2012, the estimates went down to 7–12%. Similar trends are found if we switch to the US$1.5-per-day line or the 2300 yuan line. Regardless of measure or source used, the decline in poverty rate was very large, by 7–9 percentage points.

The third panel of Table 5 reports urban poverty estimates based on the US$1.25-per-day line, the US$1.5-per-day line and the minimum living standard. As expected, poverty prevalence in urban China was much lower than in rural China. The urban poverty prevalence rate was 5–8% for the US$1.25-per-day line, 8–11% for the US$1.25-per-day line and 8–10% for the minimum living standard, again depending on whether expenditure (for low estimates) or income (for high estimates) was used. With two exceptions (when income was used with the US$1.25 line and minimum living standard), poverty in urban China declined between 2010 and 2012. The decline in expenditure-based estimates is more dramatic than in income-based estimates, although the two estimates were very close in 2010.

Note that poverty estimates based on the CFPS data are much higher than the official estimates (Zhang et al. 2014). However, what matters most for this study is the large reduction of poverty prevalence in China between 2010 and 2012. This reduction was most pronounced in rural China. Based on the above estimates and population size reported by the Census, 5.0–9.7 million members of the rural population and 2.4–7.6 million members of the urban population are still living below poverty lines.

The decline in the poverty rate at the macro level does not inform us as to whether individual families were poor earlier, stayed in poverty, became poor or moved out of poverty over time. We refer poverty mobility to temporal changes in poverty status at the micro level, including moving out of poverty, staying in poverty and newly falling into poverty. If we measure poverty also by poverty severity, families staying in poverty can be further divided into those getting better, those getting worse and those in persistent poverty. Of course, macro-level trends can always be seen as aggregations of microlevel trends, such that changes in poverty prevalence at the macro level result from microlevel poverty mobility flows. Furthermore, analysis of poverty mobility provides us with information concerning whether and to what extent poverty in a given society is temporary or long lasting.

The longitudinal nature of the CFPS allows us to study poverty mobility, as we know the poverty statuses of a representative sample of the same families in both 2010 and 2012. Although we could do this using either income or expenditure, in the results presented below, for the sake of brevity, we used only income. Results using the expenditure measure were similar. We ascertained a family's poverty status according to family income and the poverty lines and classified families into three categories: severe poverty (income < US $1.25-per-day line), moderate poverty (income US1.25-per-day line but < US$1.5-per-day line) and non-poverty (income US$1.5-per-day line). We did this for both 2010 and 2012, restricting our analytical sample to families that were successfully interviewed in both waves, that is, the restricted sample. We then examined the distribution of poverty status in 2012 by the 2010 poverty status.

Figure 3a displays the poverty mobility for rural China between 2010 and 2012. Among the severely poor in 2010, by 2012 73% of households had escaped poverty, 6% had improved their economic situation by moving from severe poverty to moderate poverty and 21% had stayed in severe poverty. Among the moderately poor, 80% had escaped poverty, 2% had stayed in moderate poverty and 18% had experienced a worsening status in moving from moderate to extreme poverty. Of non-poor families in 2010, 86% had remained non-poor, while 14% had fallen into poverty.

In Figure 3b, we show results for urban China, which were similar to those in rural China except for showing a much smaller chance of transitioning from non-poverty to poverty over the two years. Among families who were severely poor in 2010, by 2012 72% had moved out of poverty, 4% had experienced a small improvement in moving from severe to moderate poverty and 25% had stayed in extreme poverty. Among the moderately poor, 80% had escaped poverty, 7% had stayed in moderate poverty and 13% had become poorer – falling into extreme poverty. Of non-poor families in 2010, 92% had remained non-poor in 2012, and thus only 8% had fallen into some form of poverty.

In sum, our analysis of poverty mobility clearly shows not only a significant reduction in poverty from 2010 to 2012 but also the transient nature of poverty in contemporary China. For China as a whole, and separately for rural and urban China, the vast majority of families who were poor in 2010 were able to move out of poverty by 2012. Poverty is not a permanent feature. Rather, for most families, poverty is a temporary state that may result from transitory shocks such as weather conditions, market fluctuations, health conditions and other factors. If families absorb such shocks, they are able to move out of poverty quickly. Of course, this finding is not new, as the same pattern has been identified in many other countries. However, to our knowledge, this is the first such finding that has been documented systematically, with nationally representative data, for China.

Conclusion

Using recent longitudinal data from the CFPS, this article examines changes in income inequality and poverty prevalence between 2010 and 2012. After a relatively long period of steady and sharp increases in income inequality from the mid-1980s, there is some evidence that income inequality in China began a moderate decline, or at least stopped increasing, around 2010. Three main forces may have contributed to this new trend. First, real wages have grown more rapidly for unskilled workers in rural areas than for their urban counterparts, greatly reducing the urban–rural income gap. Second, rural families enjoyed faster growth in terms of agricultural and family business income than urban families enjoyed. Third, income growth was greater for middle-income families than for families with either high or low incomes in 2010. By all measures, poverty was significantly reduced between 2010 and 2012. Moreover, we found substantial poverty mobility in China, indicating that the majority of poor families in China are transiently poor. Two-thirds of families that had been poor in 2010 had escaped poverty by 2012.

We urge our readers, however, to exercise caution in interpreting the results we report in this article. One obvious problem is that the panel data we analyzed are of short duration, having been collected only in 2010 and 2012. Thus, the trends we examined in the period are too short-term to really be called trends. However, with time, it will be possible and informative to confirm the tentative conclusion reached in our article that income inequality in China has begun a moderate decline. Given that China's income inequality had been steadily increasing from the mid-1980s until 2010 (Kanbur and Zhang 2005; Xie and Zhou 2014), this surprising reversal of the overall trend, if genuine, would certainly generate a new wave of scholarly interest in its social causes and consequences.

Empirical research on income and poverty is often controversial, in large part because it is very difficult to measure family income accurately, especially for a complicated and changing society such as contemporary China (Yue and Li 2013). Like other studies of this kind, our research suffers from measurement problems. As we discussed earlier, CFPS income measures are not strictly comparable between 2010 and 2012. We attempted to make the components included in our analysis as comparable as possible. However, our analysis was limited because we excluded some sources of income for reasons of incomparability. Furthermore, all income measures potentially suffer from measurement errors. Such measurement errors could erroneously be taken as mobility. In addition, most of our analysis

excluded observations that were lost due to panel attribution, which was accounted for through panel weights under the assumption of missing-at-random. We do not expect the missing-at-random assumption to hold true because the participants that were lost in the 2012 follow-up survey should differ systematically from those who were successfully followed up in that the former were more vulnerable to various risk factors, such as health problems and unemployment, which are commonly associated with a poor family's economic condition. This could have led to a bias in favor of our conclusion; that is, large mobility out of poverty. Fortunately, more independent surveys similar to the CFPS have been in operation for a while, and the 2014 wave of CFPS survey will be available soon. These new datasets will enable researchers to conduct similar studies on trends in income inequality and poverty in China up to a more recent period (Hvistendahl 2013; Xie and Zhou 2014). Results reported in this article should be reassessed. We welcome more research on this topic using alternative sources of data and alternative definitions of income in the future.

Acknowledgments

References

Duclos Jean-YvesAraar AbdelkrimGiles John. Chronic and Transient Poverty: Measurement and Estimation, with Evidence from China. Journal of Development Economics. 2010; 91(2):266–277.

Hvistendahl Mara. The Numbers Game. Science. 2013; 340(6136):1037–1039. [PubMed: 23723216]

Kanbur RaviZhang Xiaobo. Fifty Years of Regional Inequality in China: A Journey through Central Planning, Reform, and Openness. Review of Development Economics. 2005; 9(1):87–106.

Little Roderick J, Rubin Donald B. Statistical Analysis with Missing Data. 2. Hoboken, NJ: John Wiley & Sons; 2002.

Lu PingXie Yu. CFPS Technical Report CFPS-32. Institute for Social Science Survey, Peking University; 2015. Weighting Adjustments for the 2012 Survey. http://www.isss.edu.cn/cfps/wd/ [Accessed August 9, 2015]

National Bureau of Statistics (NBS). China Statistical Yearbook 2010 [in Chinese]. Beijing: China Statistics Press; 2010.

National Bureau of Statistics (NBS). China Statistical Yearbook 2012 [in Chinese]. Beijing: China Statistics Press; 2012.

Xie Yu. China Family Panel Studies User's Manual [in Chinese]. Institute of Social Science Survey; 2012. http://www.isss.edu.cn/cfps/wd/jsbg/2010jsbg/ [Accessed December 19, 2014]

Xie YuHu Jingwei. An Introduction to the China Family Panel Studies (CFPS). Chinese Sociological Review. 2014; 47(1):3–29.

Xie YuHu JingweiZhang Chunni. The China Family Panel Studies: Design and Practice' [in Chinese]. Chinese Journal of Sociology. 2014; 34(2):1–32.

Xie YuLu Ping. The Sampling Design of the China Family Panel Studies (CFPS). Chinese Journal of Sociology. 2015 Forthcoming.

Xie YuZhang ChunniHuang GuoyingXu QiXu Hongwei. CFPS Technical Report CFPS-14. Institute for Social Science Survey, Peking University; 2012. Adjustment for Rural Family Income in the 2010 Survey of the China Family Panel Study. http://www.isss.edu.cn/cfps/wd/ [Accessed August 9, 2015]

Yu XieZhang XiaoboXu QiZhang Chunni. Income Distribution' [in Chinese]. In: Xie Y, Zhang X, Li J, Yu X, Ren Q, editorsChina Family Panel Studies 2013. Beijing: Peking University Press; 2013. 27–53.

Xie YuZhou Xiang. Income Inequality in Today's China. Proceedings of the National Academy of Sciences. 2014; 111(19):6928–6933.

Xu QiZhang Chunni. CFPS Technical Report CFPS-27. Institute for Social Science Survey, Peking University; 2014. Family Income Adjustment in the 2012 Survey of the China Family Panel Study. http://www.isss.edu.cn/cfps/wd/ [Accessed August 8, 2015]

Xue JinjunGao Wenshu. How Large Is the Urban–Rural Income Gap in China. Paper presented at China and the World Economy Conference; March 16; Seattle: University of Washington; 2012.

Yue XimingLi Shi. [Accessed October 2, 2014] How to Approach Gini Coefficient Differences [in Chinese]. 2013. http://www.ciidbnu.org/news/201302/20130207203015706.html

Zhang ChunniXu QiZhou XiangZhang XiaoboXie Yu. Are Poverty Rates Underestimated in China? New Evidence from Four Recent Surveys. China Economic Review. 2014; 31:410–425.

Zhang XiaoboYang JinWang Shenglin. China Has Reached the Lewis Turning Point. China Economic Review. 2011; 22(4):542–554.

Zhou Xiang. Increasing Returns to Education, Changing Labor Force Structure, and the Rise of Earnings Inequality in Urban China, 1996–2010. Social Forces. 2014; 93(2):429–455.

Appendix 1. Detailed income items in 2010 CFPS and 2012 CFPS

Items	2010	2012
1. Agricultural and family business income		
1.1 *Income from sale of agricultural products*	Yes	Yes
1.2 *Value of self-consumed agricultural products*	Imputed	Yes
1.3 Income from family-owned enterprises	Yes	Yes
1.4 Income from self-employed businesses	No	Yes
2. Wage income		
2.1 Wages from agricultural employment	No	Yes
2.2 *Wages from non-agricultural employment (bonuses and other monetary compensation included)*	Yes	Yes
2.3 *Migrant remittances*	Yes	Imputed
2.4 *Monetary value of in-kind benefits for employees*	Yes	Yes
2.5 Wages from internships	No	Yes
3.Transfer income		
3.1 *Pension*	Yes	Yes
3.2 *Governmental transfers*	Yes	Yes
Allowances for families with income below minimum living standard	Yes	Yes
Allowances for returning farmland to forest	Unspecified	Yes
Agricultural allowances	Unspecified	Yes
Allowances for 'five guarantees' family	Unspecified	Yes
Allowances for very poor family	Unspecified	Yes
Worker compensation	Unspecified	Yes
Aid to disaster victims (in-kind aid included)	Unspecified	Yes
Other governmental transfers	Yes	Yes
3.3 Donations and Compensations	No	Yes
Donations (money and in-kind)	No	Yes

Items	2010	2012
Compensation for land use	No	Yes
Compensation for residential relocation	No	Yes
3.4 Scholarships and schooling grants	No	Yes
4. Property income		
4.1 *Rents of housing*	Yes	Yes
Rents of house/apartment currently occupied by family	Unspecified	Yes
Rents of other housing units	Unspecified	Yes
4.2 *Rents of land*	Yes	Yes
Rents of own land allocated by collectives	Unspecified	Yes
Rents of land rented from others	Unspecified	Yes
4.3 *Rents of family assets*	Yes	Yes
4.4 *Rents of other means of production*	Yes	Yes
4.5 Income from selling family assets	Yes	No
5. Other income		
5.1 *Private transfers and gifts*	Yes	Yes

Note: Italicized items were included in the construction of the 'comparable income' measure.

Appendix 2. Detailed expenditure items in 2010 CFPS and 2012 CFPS

	2010	2012
1. Food		
1.1 Payments for food	Yes	Yes
1.2 Monetary value of self-consumed agricultural products	Imputed	Yes
2. *Clothing*	Yes	Yes
3. Housing		
3.1 Rents for housing	Yes	Yes
3.2 Water and electricity	Yes	Yes
3.3 Gas and fuel	Yes	Yes
3.4 Heating	Yes	Yes
3.5 Property fees	Yes	Yes
4. Durable goods and services		
4.1 Automobile purchases	No	Yes
4.2 Automobile debt payments	Yes	No
4.3 Vehicles (automobiles excluded) and repair expenses	Unspecified	Yes
4.4 Electric appliances for work	Yes	Yes
4.5 Furniture, household appliances and other durable goods	Yes	Yes
5. Medical care		
5.1 Medical payments	Yes	Yes
5.2 Health and fitness	Yes	Yes
5.3 Cosmetics	No	Yes
5.4 Daily consumer goods	Yes	Yes

	2010	2012
6. Transportation and communication		
6.1 Local transportation	Yes	Yes
6.2 Communication	Yes	Yes
7. Education and entertainment		
7.1 Education	Yes	Yes
7.2 Entertainment	Yes	Yes
7.3 Tourism	No	Yes
8. Transfer expenditures		
8.1 Transfers to elderly parents	Yes	Yes
8.2 Donations	Yes	Yes
8.3 Expenditures on weddings or funerals	Yes	No
8.4 Gifts and cash gifts to others	Yes	Yes
8.5 Taxes and fees	No	Yes
9. Insurance expenditures		
9.1 Commercial insurance	Yes	Yes
9.2 Social security insurance	No	Imputed
10. Housing mortgages	Yes	Imputed
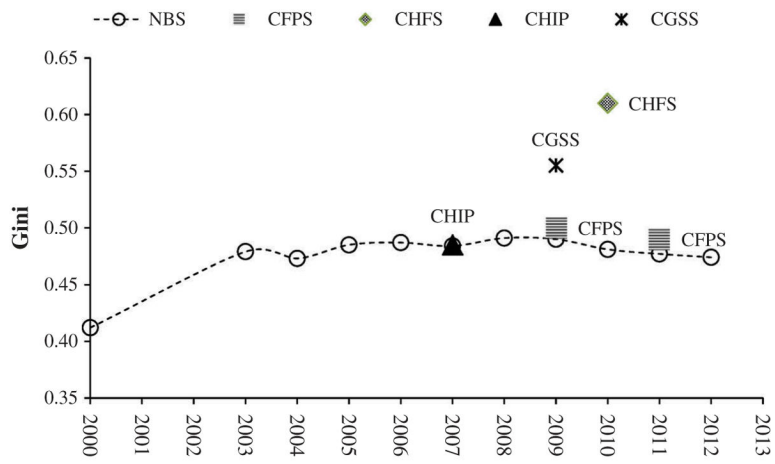
Figure 1.

Comparison of estimated Gini coefficients from different sources between 2000 and 2012.

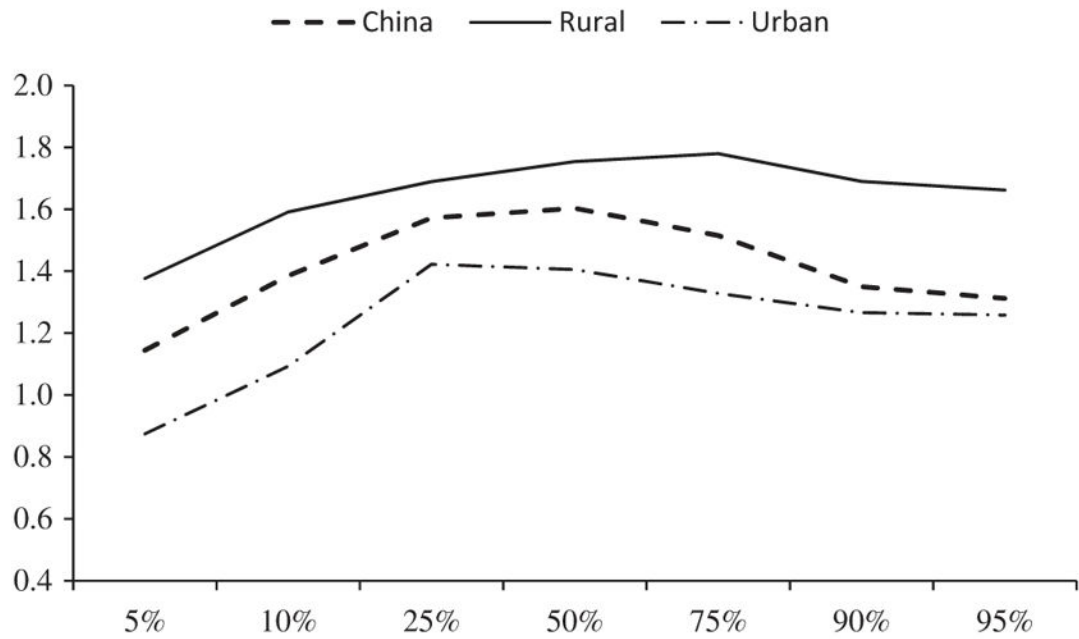Note: Gini coefficients from the CFPS data are reported in Table 3, row 2.

Figure 2.
Ratio in comparable family income per person between 2012 and 2010 by income percentile in 2010, overall and separately for rural and urban families.
Note: Analysis was based on the restricted sample; that is, families that were covered in both years, with panel weights.

Figure 3a

Figure 3b

Figure 3.

Figure 3a. Changes in poverty status among rural households in CFPS.

Note: Analysis was conducted on the restricted CFPS sample (families that were covered in both years), with panel weights. The poverty measure was derived from comparable family income per capita.
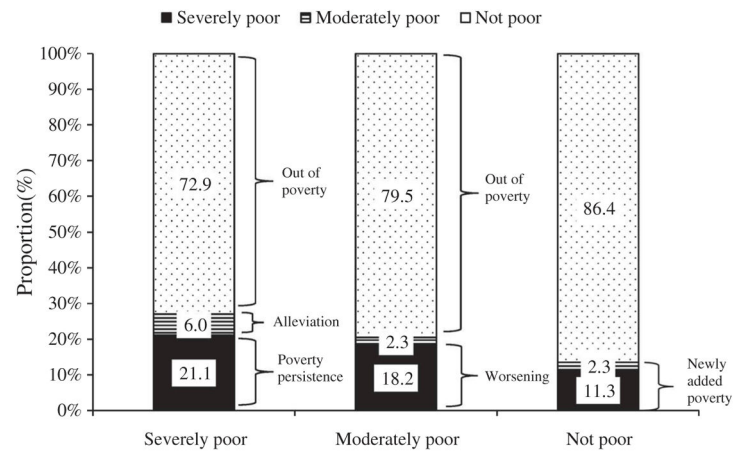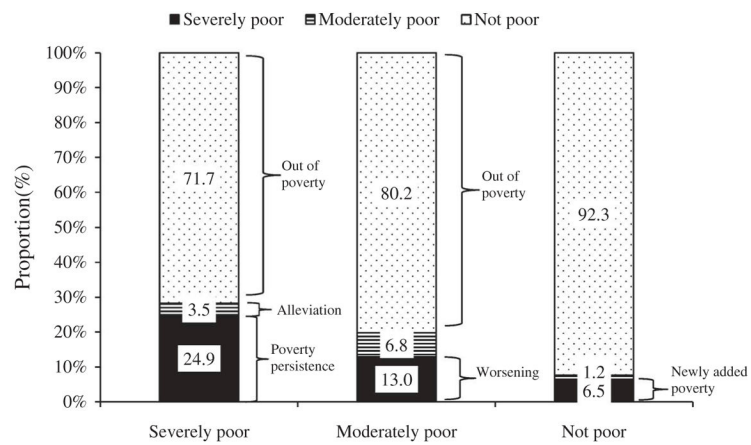
Figure 3b. The change in poverty status among urban households in CFPS.

Note: Analysis was conducted on the restricted CFPS sample (families that were covered in both years), with panel weights. The poverty measure was derived from comparable family income per capita.

Table 1

Growth of comparable family income per capita between 2010 and 2012, by rural/urban status and data source.

	China Yearbook			CFPS		
	2010	2012	Ratio	2010	2012	Ratio
Overall	10,965	14,582	1.33	9048	11,740	1.30
Rural	5153	6977	1.35	5878	9266	1.58
Urban	17,175	21,810	1.27	12,453	14,165	1.14

Note: Unit: current-year RMB. CFPS numbers refer to comparable income, restricted to income components comparable between 2010 and 2012 surveys (Appendix 1). All samples are used with cross-sectional weights. Numbers for overall China (the first row) in the first three columns were computed from rural averages and urban averages (the second and third rows) by applying the proportion of the urban population, 0.48 in 2010 and 0.51 in 2012, all reported in China Yearbook National Bureau of Statistics (National Bureau of Statistics 2010, 2012). Source: National Bureau of Statistics (2010 Statistics (2012), 2010 CFPS and 2012 CFPS.

Table 2

Components of comparable family income per capita in 2010 CFPS and 2012 CFPS and their growth rates.

	2010		2012		Growth rate
	Amount	%	Amount	%	
Panel A (Overall)					
Net family income per capita	9008	100.0	11,688	100.0	1.30
Agricultural income	1020	11.3	1818	15.6	1.78
Wage income	6281	69.7	7036	60.2	1.12
Property income	137	1.5	291	2.5	2.12
Transfer income	1298	14.4	2018	17.3	1.55
Other income	271	3.0	524	4.5	1.93
Panel B (Rural)					
Net family income per capita	5953	100.0	9261	100.0	1.56
Agricultural income	1592	26.7	2750	29.7	1.73
Wage income	3804	63.9	5443	58.8	1.43
Property income	30	0.5	107	1.2	3.60
Transfer income	290	4.9	601	6.5	2.07
Other income	236	4.0	361	3.9	1.53
Panel C (Urban)					
Net family income per capita	11,973	100.0	14,043	100.0	1.17
Agricultural income	465	3.9	915	6.5	1.97
Wage income	8686	72.5	8583	61.1	0.99
Property income	241	2.0	468	3.3	1.95
Transfer income	2277	19.0	3394	24.2	1.49
Other income	305	2.5	683	4.9	2.24

Note: Unit: current-year RMB. Analysis was based on the restricted sample, that is, families that were covered in both years, with panel weights applied. Income analyzed is comparable income, with only income components comparable between the two surveys.

Table 3

Gini coefficients of family income in 2010 CFPS and 2012 CFPS by rural/urban status.

	China overall		Rural		Urban	
	2010	**2012**	**2010**	**2012**	**2010**	**2012**
Full sample, all income, with cross-sectional weights	0.52	0.48	0.48	0.45	0.50	0.48
Restricted sample, comparable income, with panel weights	0.50	0.49	0.45	0.44	0.48	0.51

Note: Numbers in the first row were based on the full samples, weighted by cross-sectional weights, with the income measure being all family income per capita and weighted by family size. Numbers in the second row were based on the restricted sample (families that were covered in both years), weighted by panel weights, with the income measure being comparable family income per capita and weighted by family size. Families that were involved in non-agricultural business in 2010 were also removed from the analysis because income from self-employed business was not comparable between the two waves.

Table 4

Mobility across comparable income quartiles between 2010 and 2012 by rural/urban status.

2010 income group		2012 income group				Total (sample size)
		0~25%	**25~50%**	**50~75%**	**75~100%**	
Overall	0~25%	**36.7**	29.6	21.4	12.4	100.0 (2690)
	25~50%	26.1	**30.4**	28.3	15.3	100.0 (2444)
	50~75%	16.4	26.5	**30.5**	26.6	100.0 (2402)
	75~100%	10.6	14.4	22.8	**52.3**	100.0 (2991)
Rural	0~25%	**35.4**	28.8	20.1	15.7	100.0 (1478)
	25~50%	25.1	**28.2**	26.2	20.5	100.0 (1480)
	50~75%	19.1	25.0	**27.8**	28.1	100.0 (1367)
	75~100%	14.3	19.7	24.4	**41.7**	100.0 (1438)
Urban	0~25%	**38.3**	31.7	20.8	9.2	100.0 (1079)
	25~50%	23.5	**32.8**	30.0	13.7	100.0 (1027)
	50~75%	15.9	24.6	**32.7**	26.8	100.0 (1177)
	75~100%	7.1	11.7	24.7	**56.6**	100.0 (1481)

Note: Analysis was based on the restricted CFPS sample (families that were covered in both years), with panel weights, and with the income measure being comparable family income per capita and weighted by family size. Families that were involved in non-agricultural business in 2010 were removed. Sample size is unweighted.

Table 5

Poverty for China overall, rural poverty and urban poverty using different poverty lines.

China as a whole

Data source	US$1.25 per day			US$1.5 per day		
	P_0	P_1	P_2	P_0	P_1	P_2
2010 CFPS						
All income	13.2	5.4	3.2	17.4	7.0	4.2
Expenditure	9.5	3.4	1.7	13.6	4.7	2.4
2012 CFPS						
All income	10.8	4.9	3.3	13.0	6.0	4.0
Expenditure	6.2	1.6	0.7	8.8	2.5	1.1

Rural areas	US$1.25 per day			US$1.5 per day			2300 RMB		
	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2
2010 CFPS									
All income	19.3	8.0	4.7	23.8	10.2	6.1	22.9	9.8	5.8
Expenditure	14.1	4.9	2.5	19.3	6.9	3.5	18.7	6.5	3.3
2012 CFPS									
All income	12.2	5.9	3.9	15.0	7.2	4.7	13.4	6.6	4.4
Expenditure	7.7	2.3	1.0	11.3	3.5	1.6	9.3	2.8	1.3

Urban areas	US$1.25 per day			US$1.5 per day			Minimum-living line		
	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2
2010 CFPS									
All income	7.7	3.1	1.9	11.4	4.1	2.4	9.6	3.8	2.3
Expenditure	5.4	2.0	1.1	8.3	2.8	1.5	7.5	2.6	1.4
2012 CFPS									
All income	8.5	4.1	2.8	10.2	5.0	3.3	12.1	5.9	3.9
Expenditure	3.8	1.0	0.4	5.7	1.7	0.7	8.1	2.5	1.1

Notes: Analysis was based on the full samples, weighted by cross-sectional weights and family size. Poverty measures were derived from all family income or expenditure per capita.