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Working Paper

Growing into Relative Income Poverty: Urban China 1988 to 2013

IZA Discussion Papers, No. 12422

Provided in Cooperation with:

IZA – Institute of Labor Economics

Suggested Citation: Gustafsson, Björn Anders; Sai, Ding (2019) : Growing into Relative Income Poverty: Urban China 1988 to 2013, IZA Discussion Papers, No. 12422, Institute of Labor Economics (IZA), Bonn

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<https://hdl.handle.net/10419/202768>

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ISSN: 2365-9793

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ABSTRACT

Growing into Relative Income Poverty: Urban China 1988 to 2013

This paper presents several arguments for applying a relative poverty line to urban China. For example between 2002 and 2013 urban residents in China changed their assessment of how much money that is necessary. Data from the China Household Income Project indicate that while, assessed against an *absolute* poverty line, poverty among Chinese urban residents was already fairly low in 2007, increasing proportions fell under a *relative* poverty line from 1988 to 2007. Thus income growth in urban China was more rapid in the middle segments of the income distribution than at its lower segments. In 2013, at least as large fractions of the urban population as in many rich countries were deemed poor in relative terms.

We also specify and estimate logit models for 2002 and 2013 after first having divided the samples into children, adults and elderly people. We find that the risk of being relative poor in urban China both years under study was positively associated with lack of work among adult household members, a low education of the household head, living in a low-income city, the number of children, and being aged and not receiving a pension. Pensions for the aged in combination with co-residency with adult children or with other adults have kept poverty rates among the increasing number of elderly in urban China from exceeding those among adults. In contrast, relative poverty rates are somewhat higher among children than among the entire urban population.

JEL Classification: I3, I32

Keywords: urban China, poverty, subjective poverty line, children, adults, older people

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1. Introduction

This paper explores relative income poverty in urban China and how it developed between 1988 and 2013; a period of 25 years. During this period, the Chinese economy achieved record growth and the average household income increased rapidly. This period was also characterized by a transition from an economy with very high employment levels to an economy with lower levels of employment. Much of the decrease in employment levels occurred during the second half of the 1990s and a few years thereafter, as the life-long bonds between workers and State-Owned Enterprises were broken as many public enterprises laid off tens of millions of workers. Consequently, many wage earners left the workforce and others became unemployed and sought jobs. These changes are important reasons why it has become increasingly relevant to examine relative poverty among China's urban residents, despite the rapid economic growth enjoyed by the country as a whole.

While China has an official poverty line for households living in rural areas, this is not the case for households living in urban areas. In this paper, we demonstrate that the lens through which urban households are observed holds great influence over the resulting picture of the development of poverty among these households. If one employs the lens that is usually used to view people living in the developing world, then the recent history of urban poverty in China is perceived as a success story. Appleton et al. (2009) describe the situation as one of "growing out of poverty", where absolute poverty was almost erased among urban residents in China at the beginning of the new millennium.

However, China is no longer a low-income country, and increasingly larger proportions of its urban population live lives that are similar (in various respects) to the lives of people in rich

countries. We then ask: Why not apply a definition of *urban poverty* that is similar to that which is commonly used in rich countries and the Special Administrative Region of Hong Kong, i.e., a ‘relative poverty line’? Note that Ravallion and Chen (2011) and Chen and Ravallion (2013) argue that in assessing global poverty, it is appropriate to use “weakly relative poverty lines.” Their argument is supported by research results that indicate that national poverty lines are positively related to the income levels of the countries to which they are applied.

Another reason why one might apply a relative poverty line to China’s urban population is because political awareness of the increased income problems among urban residents during the 1990s forced the government introduce measures such as *Dibao* (‘social assistance’), in an effort to combat income losses among displaced workers.¹ To be effective, such measures require knowledge of who is in most need. However, we will demonstrate that the purchasing power criteria that are used in processing *Dibao* applications have become less stringent as the general income level has grown. Yet another reason why a relative poverty line should be applied to urban residents in China is because the urban population’s perception of income adequacy has changed, since most households in urban China typically consume considerably more than previously. This reason is explored in detail in Section 4, below.

This present study contributes to the literature on income poverty in urban China in a number of different ways: First, it compares estimates of respondents’ perception of income adequacy for two points in time, between which, the average income in a country rapidly increased. Second, it is the first study that examines the development of relative poverty in urban China for the entire population and it does this for a longer time period than previous studies

¹ Regarding the introduction of the *Dibao* system in China and its consequences, see, for example, Gao (2017).

of poverty in urban China. We used microdata from the China Household Income Project (CHIP) for 1988, 1995, 2002, 2007, and 2013 to study poverty among individuals living in households that have urban *hukou* ('resident permits'). These datasets cover urban resident households in many cities located in several province-level units, and comparability across the surveys is high.²

In this paper we show that taking a relative approach to defining poverty among urban residents in China can be supported by changes in urban people's perceptions of income adequacy. Further, in 2013, similarly large proportions of the urban population in urban China as in many rich countries were deemed 'poor' in relative terms. Our research reveals that most of urban China's poor residents (according to a relative approach) are Han adults, have low levels of educational attainment, and live in cities with a relatively low average household income. Relative poverty among China's urban residents is strongly linked to living in households where the adults are not employed for either part of the year or for all of the year. The low level of educational attainment of the household head, living in a low-income city, having children, and being of a pensionable age but without a pension are additional circumstances that increase the risk of relative poverty. Poverty rates among elderly urban residents are no higher than among working-age adults.

The paper proceeds as follows: The next section presents a review of the literature relevant to our research. Section 3 introduces the data and some key definitions that are used in the study. In Section 4, we investigate urban residents' assessment of income adequacy. This investigation is based on data for 2002 and 2013, two years between which urban residents' incomes had increased rapidly. We find that the assessment of how much income that is

² Following much of the literature we do not study people living in urban areas who do not hold an urban *hukou* (e.g., rural to urban migrants).

necessary has increased at the same pace as median household income. In the same section we also show that policymakers in China have increased the guidelines used when granting urban Dibao much in line with how household income has increased for the same period. Both those results motivate application of a poverty line that is relative for contemporary urban China.

In the rest of the paper we apply an approach of assessing poverty in urban China which is similar to contemporary poverty assessments applied to the European Union, OECD and the Special Administrative Zone of Hong Kong. Section 5 contrast the relative approach to poverty measurement with an absolute one in which the poverty line is updated with the consumer price index only and reports how the extent of poverty changed among urban residents between 1988 and 2013. Here we also Section 6 presents a characterisation of China's relatively poor residents in 1988, 2002 as well as in 2013. Here we also estimate functions relating the probability of being poor to household characteristics for the years 2002 and 2013. Finally, Section 7 presents a summary of the study and a discussion of the results of the study.

2. Literature review

The body of literature on how income poverty among *urban* residents in China has changed is not particularly large. The most-frequently cited studies include Fang et al. (2002), who analysed income poverty among urban residents in China for 1992 and for the 1994–1998 period, Meng et al. (2005), who studied the 1986–2000 period, and Appleton et al. (2009), who used CHIP data for 1988, 1995, 1999, and 2002. In all of these studies, the poverty line that was applied represented a constant purchasing power.

A number of previous studies applied a relative approach in defining and measuring poverty in urban China. Two studies by Wong (1995, 1997), the earliest examples of such an approach that we know of, set the poverty line at 50 percent of the median income in Guangzhou and Shanghai, respectively. Gustafsson and Wei (2000), in their analysis of CHIP data from 1988 and 1995, set the poverty line at different percentages of the median household income for China as a whole in 1988. These authors updated their definition of the poverty line in 1995 by using the consumer price index. They then reported on much lower poverty rates in urban China than in rural China. Osberg and Xu (2008) analysed CHIP data for 1995 and set the poverty line at 50 percent of the median income for 1995, thereby confirming a huge difference in poverty rates between rural China and urban China.

Saunders (2007) focused on the elderly by using data that was collected in 2000. This researcher compared relative poverty in urban China and in rich countries, defining the poverty line as 50 percent of the median or mean income of the territory investigated. Saunders concluded that relative poverty rates among the elderly were as high in urban China as they were in many European countries and, on some measures, close to the poverty rates among the elderly in the United Kingdom and the United States. Qi and Wu (2016), using data from the China Health and Nutrition Survey, 1989–2011, defined, as we do, the poverty line based on a fraction of the median income in urban China for each year studied. Qi and Wu reported on increased rates of relative poverty among children with an urban *hukou*. However, since their focus was limited to relative poverty among children they did not consider relative poverty among adults, who comprise most of China's urban population, or poverty among the urban elderly. These additional population categories are included in the present study. From our survey of previous studies on relative income poverty in urban

China, we conclude that they were narrower in scope than the present study with respect to a number of aspects, including location, population group, and the number of years covered.

However, there are several other research studies on poverty in China that are of relevance to our study. A relatively new development in the international research community is one that assumes that, when defining poverty, mere observation of household consumption or a calculation of their disposable income are not sufficient. As consequence of this assumption, several scholars have developed or/and implemented a *multidimensional* measure of poverty.³ In one sense, these studies complement the approach that we follow in the present study, where ‘poverty’ is assessed in terms of income (or consumption) only when it comes to calculating changes over time and differences between urban and rural areas. For example, it is reassuring to note that several studies that have measured multidimensional poverty in China have reached several conclusions that are similar to studies of income and consumption poverty. These conclusions include the observation that poverty is more prevalent in rural China than it is in urban China. However, in all previous studies of changes in poverty in China that used a multidimensional approach (studies that we are aware of) the criteria for being classified as ‘poor’ have not been updated in response to the growth in real median household income or mean household income.⁴

³ For an introduction to the multidimensional approach to defining and measuring poverty see, for example, Alkire et al. (2015). Several applications of this approach have been made to China. The multidimensional approach was used by Labar and Bresson (2011) for the period 1991 to 2006 and by Yu (2013), for the period 2000 to 2009. These researchers analysed the China Health and Nutrition Survey (CHNS). More recent additions to the body of literature on this area include Yang and Mukhopadhaya (2017), who analysed China Family Panel from 2010, Alkire and Fang (2018), who analysed CHNS (1989 to 2011), and Yang and Mukhopadhaya (2019), who also analysed CHNS data (2000 to 2011).

⁴ Another important insight that can be gained from this literature is the observation that households and their members who are identified as ‘multidimensionally poor’ may not necessarily be classified as ‘income poor’ and vice versa.

The incidence and severity of relative income poverty illustrates one aspect of income inequality. It indicates (i) how large a proportion of the population who receive an income that is lower than a fixed percentage of median income (in the same population and measured the same year) and (ii) the severity of poverty. Note that this approach does not regard inequality in terms of the distribution of income that exists over the median income. However, such a property is taken into account in a number of inequality indices that have been proposed, and used, in a number of empirical studies.

Studies of urban China that employ estimated inequality indices report, for example, that the Gini coefficient has steadily increased since the introduction of economic reforms in the 80s. Researchers who rely on household and expenditure data from the National Bureau of Statistics (NBS) include Wang (2008), who investigated the development of inequality from 1986 to 2000, and Cai et al. (2010), who studied income inequality and expenditure inequality from 1992 to 2003. Some researchers have used CHIP data. One example is Meng (2004), who used data from 1988, 1995, and 1999, whilst focusing on the role of increased unemployment. Other examples are Deng and Gustafsson (2013), who used data from 2002 and 2007, and Gustafsson and Ding (2017), who extended their analysis back to 1988 and 1995, and forward to 2013, thus covering the same period as in the present paper. The observed trend with respect to the Gini-coefficient, reported in Gustafsson and Ding (2017), is clearly increasing (from 23.1 percent in 1988, to 35.2 percent in 2013). However, the Gini-coefficient decreased from 33.2 percent in 1995, to 31.1 in 2002. This observation can be compared to the situation on which we report on in the present study where we note that relative poverty increased between 1995 and 2002.

Also relevant to the topic of this paper is research into how employment and unemployment rates have changed in urban China since the introduction of reform during the 80s. For example, Xue and Wei (2003) used CHIP data and reported that the unemployment rate had increased from 3 percent in 1988, to 13 percent in 1999. Applying a poverty line that was based on calorie intake, these authors reported that in 1999, seven percent of urban households were poor and that households with an unemployed member had almost four times as high a poverty rate as did households without unemployed members. For the period we here study China differed from high-income countries in having no official unemployment rate that is based on a labour force survey. However, Giles et al. (2006), using a survey of five large cities, reported that unemployment had increased from 7 percent in 1996, to 11 percent in 2002. Using CHIP data, Gustafsson and Ding (2013) reported that unemployment among urban residents had increased to 12 percent in 2002, and then declined to 8 percent in 2007, results that are consistent with what was reported from the Urban Household Survey (UHS) by Feng et al. (2017) for each year 1988 to 2009.

3. Data and assumptions

In our study of poverty among urban residents, we used CHIP data for the years of 1988, 1995, 2002, 2007, and 2013. The CHIP data we analyse came from the same twelve province-level units: Beijing, Shanxi, Liaoning, Jiangsu, Anhui, Henan, Hubei, Guangdong, Chongqing, Sichuan, Yunnan, and Gansu. The samples that were used consisted of sub-samples that were taken from the samples that the NBS uses (UHS) when they wish to obtain the official household statistics, as published in the annual *Statistical Yearbook of China*. The NBS also carried out the fieldwork.

We define ‘total household income’ by taking the NBS definition of ‘household income’ as a point of departure. This means that we include the following components in this category, namely ‘earnings’, ‘business income’, ‘capital income’, and ‘net transfers’. ‘Net transfers’ include ‘pensions’ as a positive component and ‘taxes’ as a negative component. However, unlike NBS (but following international practice), we also include ‘imputed rents of owner-occupied housing’ as a component of ‘total household income’.⁵ We also include (based on information on quantities), as income components, ‘housing subsidies’ and ‘in-kind income’, as valued by the CHIP team. These components were in 1988 fairly important to households, but have since decreased in importance.⁶

When deriving relative poverty measures, we divide the ‘total household income’ by the ‘expenditure needs of a household of a given structure’. Here we have a choice. One alternative is to use the OECD-modified scale, which is often used when relative poverty and the distribution of household income in high-income countries is analysed. This scale assigns a value of 1 to the household head, 0.5 to each additional adult member, and 0.3 to each child. However, as we will demonstrate in the next section, in the Chinese setting, it is difficult to justify lower expenditure numbers for urban children than urban adults. This consideration caused us to use an equivalence scale, according to which the expenditure needs of a household are calculated as 1.0 for a single person, increasing by 0.5 for each additional child or adult member.⁷

⁵ This component was estimated in the 2007 and 2013 CHIP surveys of urban residents by using a market rent approach. While this approach was not available in the surveys of urban residents for 1988, 1995, and 2002, in those surveys it was calculated as 8 percent of the net worth of owner-occupied housing.

⁶ When data for 2013 was collected, these components were deemed to be insignificant, so no information on the component was obtained. This is similar to what is the case when relative poverty in EU and by OECD is assessed. We did not apply a spatial price index since we are not aware that any such index covering housing expenditures is available for the entire period included in the present study.

⁷ In a sensitivity analysis we remade Tables 4, 5 and 6 using the modified OECD-scale. It turned out that although the poverty rates are smaller, the differences are marginal. To take the example of the fraction of people falling under the 60 percent of the median poverty line in 2013 the proportion falls from 20.4 percent to 19.2 percent and the proportion children deemed as poor from 24.9 percent to 23.9 percent. Similarly do the

In a manner similar to the general practice in international comparisons of poverty in rich countries (see, e.g., OECD, 2008), we set the poverty line for urban China as ‘a proportion of the median household income per equivalent unit in the year under investigation’.⁸ Whether or not such an approach is reasonable in the Chinese context is the topic of the next section.

4. Justifications for applying a relative poverty line to urban China

The purpose of this section is to investigate if and in such case how assessments of poverty in urban China has changed during a period of rapid economic growth (from 2002 to 2013). At the end of the section we also investigate how policy makes assessments of at which income level a household is eligible for urban Dibao has changed during the same period.

Some researchers have attempted to discover what the general public perceives as ‘an adequate income’ by asking respondents.⁹ The subjective poverty line (SPL) approach requires that respondents evaluate the situation of their own households, not a hypothetical household. The Subjective Poverty Line approach should in our view not be seen as replacing a political process for a country to define a poverty line which is used for statistical reporting. Instead, it can function as an input in such a process. In a real world situation do policymakers have to consider also other circumstances than people’s perceptions of income adequacy like budget-limitations and the risk that transfers that are initiated by a poverty line can make some households work less.

coefficients for children in the poverty function reported in Table 6 reduce but are still statistically significant. To take the example of the estimates for 2013: It reduces from 0.60 to 0.52.

⁸ We thus use the same relative poverty line in all of urban China. This is in accordance with the practice of how, for example, poverty lines are defined in member countries of the European Union and when OECD assesses poverty in its various membership countries.

⁹ See, for example, Hagenaars (1986), Kaptyn, Koorman, and Willemse (1988), and Garner and Short (2003).

The attractiveness of the SPL approach lies in the fact that it is difficult for respondents to assess the living costs of households that possess attributes that are quite different from their own. One common question in this approach is the minimum income question (MIQ), which asks for the monetary amount that the respondent considers to be the minimum necessary for supporting their households (Y_{\min}). The answer to this question is, typically, positively related to the income of the household (Y) and the number of household members.

A poverty line can also be derived by using the intersection method, introduced by Goedhart et al. (1977), in which thresholds are obtained from respondents' answers and information on the characteristics of all respondents is gathered. The SPL is calculated as the level at which respondents state that their income is 'just enough'. Therefore, $Y_{\min} = Y$ given the following response function:

$$\log(Y_{\min}) = a_0 + a_1 \log(Y) + a_2 X_i \quad (1)$$

where X_i comprises variables other than income having an impact on $\log(Y_{\min})$.¹⁰

After deriving the parameters in equation (1), subjective poverty lines are calculated by assuming $\log(Y_{\min}) = \log(Y)$:

$$\log \text{SPL} = \log y^*_{\min} = (a_0 + a_2 X_i)/(1 - a_1) \quad (2)$$

¹⁰ Ravallion (2016, p. 216) notes that judgment is called for when deciding what variables to include in the X vector. Currently, this is a difficult and poorly understood issue.

The SPL is the income level that respondents say is ‘just sufficient’. Note that it is calculated from all responses. Gustafsson, Li, and Sato (2004) were the first researchers to apply this approach to China, using CHIP data for urban regions that was collected in 1999.¹¹ Here we replicate this study by estimating response functions based on data for the years of 2002 and 2013. We ask: *Does the SPL derived from respondents in 2013 represent a higher purchasing power than the SPL derived from the 2002 data?* Between these years, the ‘median income per capita’ increased by 147 percent and the ‘mean income per capita’ increased by 116 percent.

/Table 1 about here/

The estimated response functions are presented in Table 1. For each year, we show three specifications, including an increasing number of variables.¹² In all cases, the responses are positively related to the ‘log household income’ in which the respondents live. In the first specification, the coefficient is 0.56 for the 2002 sample compared with 0.45 for the 2013 sample. From the previous study, based on 1999 data, the coefficient is 0.40. The coefficients for ‘log household income’ become slightly smaller once dummies for province-level unit and ‘log mean income in the city’ are included in the estimated models. The coefficient for ‘log mean income in the city’ is positive and statistically significant in both samples. This relationship is likely due to people’s perception of income adequacy is influenced by the incomes of those living in the same city and, perhaps to a lesser extent, because living costs tend to be higher in richer cities. Not surprisingly, the responses are clearly positively related

¹¹ Others researchers who have applied this approach to China include Bishop et al. (2006), who used 1995 CHIP data for urban China, and Gustafsson and Yue (2012), who used 2002 CHIP data for rural China. In Gustafsson and Yue (2012) was the minimum income question split into two questions; one question was about ‘money needed’ and the other about ‘the amount of grain (in physical terms) needed’.

¹² Estimates which include other attributes of the households provide very similar results.

to the number of household members, while the other attributes of the respondents' households which are included in the model are much less strongly related.¹³

/Table 2 about here/

Based on estimated response functions, 'Specification 1', we computed SPL for 2002 and 2013. The results in Table 2 are for households with 1, 2, 3, 4, 5, and 6 members. A first comment that we should make here is that the purchasing power of the SPL increased rapidly between 2002 and 2013. For a household of four members, the increase was 147 percent, exactly the same as the increase in 'median household per capita income' as was calculated from our data. This result provides us with a strong justification for using a relative approach when assessing poverty in urban China.

A second comment worthy of mention is that respondents recognize economies of scale. Although the SPL increases with the number of household members, the overall SPL increase lags behind the increase in the number of household members, particularly in 2013. This is probably because food consumption, in which few economies of scale are possible, plays a considerably smaller role in overall consumption in 2013 than previously. Take the situation of a household with three adults as an example. The 2002 and 2013 responses imply an equivalence scale numbers of 1.9 and 1.7, respectively, which are relatively similar to the value of 2.0 assumed in the modified OECD scale, and clearly below the 3.0 in the per capita scale.

¹³ For both years, as in the study of 1999, the coefficient for the presence of an unemployed household member is negative, small, but statistically significant. The coefficient for having a child changes from a statistically significant negative value in 1999 and 2002, to a statistically significant positive value in 2013. A less distinct pattern in the coefficients for the presence of a household member aged 70 or more years, as well as for the presence of an unhealthy household member can be detected across the relevant years.

A third observation is that Chinese respondents, unlike what is implied in the OECD scale, do not systematically consider the expenditure needs of children to be smaller than those of adults. This difference is consistent with the fact that China lack some family policy measures existing in most rich countries. By paying child allowances, parental allowances, and providing subsidized childcare, most rich countries reduce the private costs of children. Another, and not necessarily competing explanation is that, during the relevant time period, urban Chinese parents were constrained by official family policy to have only one or, in some cases, two children. This was not the case in high income countries, where out-of-pocket child expenditures can be spread out across a larger number of children.

A fourth observation that we must share is that the SPL for urban China has higher levels than alternative poverty lines used for assessing urban poverty in China. For example, the level of the SPL is higher than the *Dibao* lines in use for urban China the same year. This gap, typically found when the SPL is derived in other countries, is likely attributable to Chinese policymakers' consideration of additional circumstances when setting the *Dibao* lines as discussed above.

We now move a supplementary justification for applying a relative poverty to contemporary China. We look at how the key criterion for determining eligibility of the income tested *Dibao* program has developed. Between 2002 and 2013, the real value of the *Dibao* line for Beijing increased by 100 percent and for Yunnan by 88 percent.¹⁴ Although these are impressive increases, they lag behind the increase in the SPL documented in Table 2.

5. The development of poverty among urban residents

¹⁴ For Beijing, see www.china.com.cn (8 July 2002) and <http://www.askel.com> (27 December 2012). For Yunnan, see www.xinhuanet.com (15 July 2002) and www.yunnan.cn (10 April 2013).

In this section, we report on the development of relative poverty among residents living in urban households from 1988 to 2013. However, first for comparison we apply some poverty lines that represent the same purchasing power each year studied. We use per capita income in this context.

/Figure 1 about here/

Figure 1 shows Cumulative Density Functions for income per capita in constant 2013 prices for urban residents in each of the years 1988, 1995, 2002, 2007, and 2013. Figure 1 also includes two vertical lines which represent the lowest and highest province-level average *Dibao* lines in use in 2013, in the provinces included in our samples. The highest is for Beijing, at 6 960 Yuan per person and year, and the lowest *Dibao* line is for Yunnan, at 3 384 Yuan per person and year. These two *Dibao* lines represent a relatively large variation.¹⁵ From the figure we can confirm that absolute poverty decreased between 1988 and 2002, the years studied by Appleton et al. (2009). Absolute poverty continued to decrease from 2002 to 2007 after which, no further reduction took place.

/Table 3 about here /

/Figure 2 about here/

However, as can be seen in Figure 1 and Table 3 , it makes a great difference for the estimated numerical value of the absolute poverty rate depending on which one of the two

¹⁵ To some extent this variation mirrors the fact that living costs are higher in urban Beijing than in urban Yunnan. However, an even more important reason for this variation is that the average living standard is considerably higher in urban Beijing than it is in urban Yunnan.

alternative *Dibao* lines is applied. If the *Dibao* line in Beijing in 2013 is used, then the vast majority of urban residents in China would have been classified as poor in 1988, while the opposite would be the case if the 2013 Yunnan *Dibao* line were applied. This is also apparent in Figure 2, which illustrates how the poverty rates computed from the two alternative *Dibao* lines develop over time. For 2007 and 2013 only (depending on the year and *Dibao* line applied), 1–4 percent of urban residents were deemed to be ‘poor’.¹⁶ For 2013, the World Bank reported a poverty rate of only 0.5 percent for urban China.¹⁷ The World Bank’s time series on poverty in urban China develops in a similar manner when we compare it to the time series based on our data and the 2013 Beijing *Dibao* line. However, the World Bank’s series indicate slightly lower poverty rates for each year.

/Figure 3 about here/

/Table 4 about here/

We now turn to the extent of relative poverty, which, according to Figure 3, shows a very clear trend up to 2007 of an increasing proportion of the population falling under a poverty line. Remember that in those cases the poverty line is set as a fraction of the median income that was observed in urban China in the same year. For example, in 1988, 6 percent of urban residents lived in a household receiving an income under 60 percent of the median income line. The corresponding proportion that had more than tripled by 2007 to 21 percent.

Table 4 presents the numerical values for the Foster–Greer–Thorbecke (FGT) poverty indices.

¹⁶ For unknown reasons, our estimates are higher than the 0.2 percent reported by Zhang et al. (2014), which was also based on 2007 CHIP data.

¹⁷ See World Bank (2017a). The World Bank poverty estimates are based on an international poverty line representing purchasing power consumption of USD 1.90 per person per day, as described by Ferreira et al. (2016). For a recent assessment of this approach see World Bank (2017b). Almås and Auglend Johnsen (2018) used the Engle curve to identify price levels and real income and report on a more moderate poverty reduction than that reported by the World Bank.

This table shows that changes in poverty between 2007 and 2013 were small and differed in direction, depending on the specific index used.

We now ask: *Are the relative poverty rates among urban residents in China in 2013 high or low in international comparison?* The 20 percent of the population that is found under the 60 percent of the median poverty line in urban China is somewhat higher than the 17 percent that Eurostat (2016) reported for EU 28 for the same year. Of the EU 28 countries, only four (Bulgaria, Greece, Rumania, and Spain) have relative poverty rates of 20 percent or higher. Another reference point is Hong Kong, where 15 percent of the residents were under the 50 percent of the median income poverty line, in 2013 (see Government of Hong Kong SAR, 2014). This is almost identical to the 14 percent that we report for urban China for the same year.

Based on the material that is reported on in this section, we conclude that, urban China has undergone a change to having very little (absolute) poverty from a developing country's perspective. However, from the perspective of how poverty is assessed in many rich countries, the development up to 2007 is in the direct opposite. While average income in urban China has grown impressively during the period studied, growth (on a percentage basis) has benefited those at the median of the income distribution more so than those at the lower part of the income distribution. The growth of relative poverty in urban China took place during years when urban China transformed from having an economy with very high employment levels to one with not as high employment.

6. Relatively poor urban residents

We now ask: *What characterizes China's relatively poor urban residents? How have their characteristics changed over the period studied?* We respond to these questions by analysing the first (1988) and the latest (2013) samples in terms of dimensions; (i) child/adult/aged, (ii) household head level of educational attainment, (iii) average household income in the city, and (iv) household head ethnicity. We also show results for the 2002 sample, which thereby enabled us to examine two sub-periods; the first, 14 years in duration, and the second, 11 years in duration. It should be noted that these poverty assessments are made at the household level. As is standard in the literature on poverty in rich countries, we assign all individuals in a household the status of being “poor” or “not poor” and use individuals as the unit of analysis.¹⁸ The results are shown in Table 5, which presents estimates based on poverty lines set at 40, 50, 60, and 70 percent of the contemporary median income. Thereafter, we report on logit models that were estimated separately for children, adults, and the elderly for 2002 and 2013.¹⁹ We specify and estimate these models primarily to investigate the extent to which poverty status is linked to lack of employment among adult household members.

/Table 5 about here/

As is well known, China's population aged during the period studied. This is evident in the proportion of children in the urban population in our sample, which decreased by one third, from 22 percent in 1988, to 13 percent in 2013. At the same time, the proportion of the

¹⁸ See for example OECD (2008) and Eurostat (2016). For a study of child poverty in urban China that has applied the same approach see Qi and Wu (2016).

¹⁹ With respect to CHIP, 2002 was the first year when employment problems in urban China were severe. 2013 was the most recent year covered by CHIP.

elderly more than doubled, from 7 to 18 percent. In all of the years presented in Table 5, children were somewhat overrepresented among the poor. The fact that the Chinese government, compared with the governments of many rich countries, allocated relatively few resources to subsidizing out-of-home childcare, parental leave, or child benefits likely contributed to this. However, as the proportion of children in the population decreased, their proportion of the relative poor also decreased, declining from about one in three in 1988, to about one in six in 2013.

Table 5 also shows that, in all of the three years that were studied, most of urban China's poor lived in households whose heads only had junior middle school education or less. Most of urban China's relative poor live in cities with relatively low average household incomes, and an overwhelming majority live in households with a Han head. Members of ethnic minority households are estimated to have had an above-average poverty rate in the 2013 sample only.

To better understand how the existence of one, or several, not-fully-employed adults in a household and poverty status are related, we specified and estimated logit models for 2002 and 2013 after first dividing the samples into children, adults (males aged 18–60 years and females aged 18–55), and elderly people. *Poverty status* is defined as 'living in a household with a total income per capita below 60 percent of the contemporary median'. The specifications are similar but not identical for the three categories. The variables that are of interest are those that capture 'not employed adults during the year in the household', 'the number of adults employed but not for the entire year', 'number of children', and 'number of elderly people without pensions'. Other explanatory variables in the models measure the

following characteristics of the household head: ‘education’, ‘ethnic status’, and ‘age’. We also include ‘average city income’ and as a control variable dummies for each province-level unit in the estimated models.

/Table 6 about here/

The results reported in Table 6 indicate (as could be expected from the descriptive information in Table 5) that, for all six equations, there are negative and statistically significant coefficients with respect to ‘education of household head’ as well as ‘average city income’. In contrast, the coefficients for ‘ethnic minority status’ are significant only among adults. Note that these coefficients display different signs; they are negative in 2002, and positive (at the 10 percent level) in 2013. Similarly, there is no general pattern in how the ‘age of the household head’ is related to poverty status. Shifting our attention the children, we find that the ‘number of children in the household’ and poverty status is positively and statistically significantly related in all of the estimated equations. The same is the case for the ‘number of adults who are not working during the year’, and, in all but one case, this is also true for the ‘number of adults employed but not for the full year’ (the exception is the equation for the elderly in 2013). The ‘number of elderly without pensions’ is positively related to poverty status in all cases that include this variable.

7. Summary and conclusions

In this paper, we have taken a fresh look at urban poverty in China from 1988 to 2013. This constitutes a period that is longer than what has been investigated in previous studies of urban poverty in China. The study also includes years that are more recent than other studies. This is the first study (that we are aware of) that applies a *relative* poverty line in examining urban residents of all ages in urban China. We have presented several arguments that support this approach. Living standards in urban China are approaching those of rich countries; countries in which poverty is now typically assessed against a relative poverty line. We estimated a Subjective Poverty Line using data for 2013 and compared it with what was derived based on data for 2002. The results show that, between 2002 and 2013, urban residents in China rapidly changed their assessment of how much income is ‘adequate’. A further motivation for using a relative poverty line for urban China is that local governments have rapidly increased the purchasing power of the *Dibao* lines that are used when assessing claims for social assistance.

Our data indicate that, while absolute poverty among urban residents fell from 1988 and onwards and was fairly low already in 2007, relative poverty had been increasing steadily from 1988 up to 2007. Thus, during this period, the rate of income growth in urban China was more rapid at the middle segments of the income distribution than it was at its lower segments. The proportion of urban residents living in households with less than 60 percent of the contemporary median income tripled from 1988 to 2013. In 2013 it stood at 20 percent; a rate somewhat higher than the rate reported for the EU as a whole. We report on relative poverty rates for urban residents in China that are similar to those reported on for Hong Kong. But these rates are higher than in several rich countries. Consequently, it matters a great deal through which lens poverty in urban China is observed.

We have also demonstrated that if one or more adult household members are not employed at all or during parts of the year, then this increases the risk of relative poverty for children, adults, and the elderly in urban China. A household head with ‘a low level of educational attainment’, ‘living in a low-income city’, the ‘number of children’, and the ‘number of elderly people without a pension’ are all circumstances in the household that increase the risk of relative poverty in urban China. From this, it follows that policies that increase employment rates of adults and policies that increase their level of educational attainment are also policies that have potential to reduce relative poverty in urban China.

From the material presented in this study, we conclude that pensions for the elderly in combination with co-residency with adult children or with other adults have kept poverty rates among the increasing number of elderly in urban China from exceeding those among adults. In contrast, relative poverty rates are somewhat higher among children than among the entire urban population. However, as the urban Chinese population includes fewer and fewer children, children make up an ever smaller proportion of China’s urban poor. From this perspective, combating child poverty has become a more affordable task for public policy than previously. There are several family policy measures that are used in high income countries which Chinese policymakers can consider for their poverty-reducing potential. The list includes subsidising out-of-home childcare, for example. Such a subsidy would stimulate Chinese parents (i.e., mothers and / or grandmothers) to take on a job or work longer hours, thereby allowing their households to escape from poverty. Another option that the Chinese state could follow is what most governments in high income countries practise; namely pay child allowances to families with children.

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Table 1. *Estimates of response functions for 2002 and 2013 derived from urban residents.*

a. 2002

	DEPENDENT VARIABLE: SUBJECTIVE PERCEPTION OF MIQ (IN LOG TERMS)					
	Model I		Model II		Model III	
	Coefficient	<i>t</i> -value	Coefficient	<i>t</i> -value	Coefficient	<i>t</i> -value
Log of disposable household income	0.5568***	112.04	0.4170***	79.35	0.4051***	74.37
1-person household	-0.7103***	-15.71	-0.6246***	-15.54	-0.6289***	-15.71
3-person household	0.3308***	40.05	0.2478***	33.14	0.2605***	34.26
4-person household	0.5123***	49.71	0.4163***	44.44	0.4343***	45.85
5 or more-person household	0.6737***	55.35	0.5936***	53.82	0.6366***	54.42
Beijing			0.3936***	30.97	0.3876***	30.54
Shanxi			0.1514***	13.00	0.1529***	13.18
Liaoning			0.4302***	40.62	0.4250***	40.27
Anhui			0.2499***	20.23	0.2539***	20.63
Henan			0.0371***	3.25	0.0341***	3.00
Hubei			0.2903***	26.26	0.2954***	26.80
Guangdong			0.3408***	29.27	0.3498***	30.04
Chongqing			0.4100***	28.96	0.4102***	29.09
Sichuan			0.3140***	27.1	0.3127***	927.1
Yunnan			0.2103***	18.84	0.2131***	19.15
Gansu			0.1624***	12.53	0.1664***	12.88
Log of mean income in the city			0.3422***	24.23	0.3422***	24.17
Number of people:						
Aged 1–5 years					-0.0537***	-7.48
Aged 6–11 years					-0.0426***	-7.9

Aged 70 or more years					0.0059	0.95
Unemployed or laid-off					-0.0254***	-5.93
Unhealthy adult in household					-0.0511***	-5.32
Constant	4.0876 ***	87.86	2.0755***	17.15	2.1947***	18.14
Adj. R^2	0.4056		0.5306		0.5346	
F -value	2746.95		1338.99		1051.57	
N	20,122		20,122		20,122	

Note: Omitted variables are '2-person household' and 'Jiangsu Province'.

Source: Authors' estimates based on the urban sample of CHIP 2002.

b. 2013

	DEPENDENT VARIABLE: SUBJECTIVE PERCEPTION OF MIQ (IN LOG TERMS)					
	Model I		Model II		Model III	
	Coefficient	t -value	Coefficient	t -value	Coefficient	t -value
Log of disposable household income	0.4500***	69.41	0.3673***	47.85	0.3597***	46.35
1-person household	-0.4920***	-16.28	-0.4738***	-16.1	-0.4750***	-16.18
3-person household	0.2817***	24.03	0.2823***	24.48	0.2637***	22.12
4-person household	0.4458***	31.64	0.4441***	31.86	0.4181***	28.9
5 or more-person household	0.6199***	43.49	0.6129***	42.92	0.5636***	35.58
Beijing			0.2024***	11.69	0.2008***	11.63
Shanxi			0.1037***	5.6	0.1005***	5.43
Liaoning			0.2006***	9.97	0.2031***	10.13
Anhui			-0.0516**	-2.43	-0.0573***	-2.71
Henan			0.0737***	3.86	0.0713***	3.74

Hubei			0.1091 ^{***}	5.52	0.1073 ^{***}	5.44
Guangdong			0.3053 ^{***}	17.14	0.3004 ^{***}	16.89
Chongqing			0.1612 ^{***}	8.5	0.1626 ^{***}	8.61
Sichuan			0.1669 ^{***}	7.9	0.1670 ^{***}	7.91
Yunnan			0.0155	0.77	0.0193	0.95
Gansu			0.0243	1.11	0.0271	1.25
Log of mean income in the city			0.2297 ^{***}	15.45	0.2363 ^{***}	15.85
Number of people:						
Aged 1–5 years					0.0845 ^{***}	7.13
Aged 6–11 years					0.0398 ^{***}	3.87
Aged 70 or more years					−0.0219 ^{***}	−2.77
Unemployed or laid-off					−0.0442 ^{***}	−3.41
Unhealthy adult in household					−0.0476 ^{***}	−3.07
Constant	5.5890 ^{***}	82.00	3.9578 ^{***}	28.61	3.9799 ^{***}	28.8
Adj. R^2	0.263		0.3039		0.3089	
F -value	1162.75		419.02		330.38	
n	16,282		16,282		16,282	

Note: Omitted variables are ‘2-person household’ and ‘Jiangsu Province’.
Source: Authors’ estimates based on the CHIP urban sample for 2013.

Table 2. *Subjective poverty lines based on respondents' answers in 2002 and 2013;*

a. Amounts

NUMBER OF HOUSEHOLD MEMBERS/YEAR	1	2	3	4	5	6
2002, in 2002 prices RMB	6396	12,039	16,513	19,963	23,172	29,965
2002, in 2013 prices (CPI = 1.35) RMB	8635	16,253	22,293	26,950	31,282	40,453
2013, in 2013 prices RMB	24,450	41,884	55,770	66,559	76,076	83,921
Increase, 2002 to 2013, Percent	183	158	150	147	143	107

Source: Estimates of Specification I, as reported in Table 1.

b. Equivalence scales implied in the subjective poverty lines reported above.

NUMBER OF HOUSEHOLD MEMBERS/YEAR	1	2	3	4	5	6
2002 scale	1	1.88	2.58	3.12	3.62	4.06
Increment	1	0.88	0.70	0.54	0.50	0.44
2013 scale	1	1.71	2.34	2.78	3.17	3.49
Increment	1	0.71	0.57	0.44	0.39	0.32

Source: Part 'a' of this table.

Table 3. *Absolute poverty rates for urban residents, 1988, 1995, 2002, 2007, and 2013; percent.*

	FGT(0)	FGT(1)	FGT(2)
Poverty line is set at 3384 Yuan per person per year, which corresponds to the 2013 Yunnan <i>Dibao</i> line.			
1988	8.03	1.39	0.43
1995	7.97	1.90	0.74
2002	3.00	0.61	0.20
2007	0.25	0.03	0.01
2013	1.16	0.64	0.51
Poverty line is set at 6960 Yuan per person per year, which corresponds to the 2013 Beijing <i>Dibao</i> line.			
1988	73.75	21.92	8.57
1995	50.95	15.54	6.32
2002	26.44	7.10	2.80
2007	5.31	1.13	0.37
2013	3.91	1.54	0.94

Note: The income from the 1988, 1995, 2002, and 2007 samples all use CPI expressed in 2013 prices.

Source: Authors' estimates based on the CHIP urban samples for 1988, 1995, 2002, 2007, and 2013.

Table 4. *Relative poverty rates for urban China, 2002 and 2013; percent.*

	FGT(0), POVERTY RATE	FGT(1)	FGT(2)
Poverty line is 40% of median equivalence scale income			
1988	0.736	0.174	0.103
1995	3.812	0.883	0.363
2002	5.019	1.076	0.358
2007	8.275	1.948	0.696
2013	8.008	2.754	1.530
Poverty line is 50% of median equivalence scale income			
1988	2.665	0.446	0.170
1995	7.974	1.845	0.716
2002	10.698	2.418	0.846
2007	14.793	3.813	1.476
2013	14.022	4.411	2.626
Poverty line is 60% of median equivalence scale income			
1988	6.419	1.090	0.344
1995	14.003	3.343	1.283
2002	18.071	4.412	1.624
2007	21.374	6.195	2.557
2013	20.444	6.225	3.683
Poverty line is 70% of median equivalence scale income			
1988	13.160	2.304	0.693
1995	22.640	5.448	2.101
2002	26.469	6.940	2.696
2007	28.496	8.875	3.880
2013	27.692	9.022	4.447

Note: In this analysis, 'household income' is divided by the equivalence scale, which takes a value of 1 for the first person and 0.5 for each additional person.

Median equivalent income were (in current prices) in 1988 is 2 548 Yuan; in 1995 is 7 027 Yuan; in 2002 is 11 197 Yuan; in 2007 15 405 Yuan; and in 2013 is 22273 Yuan. For definition of equivalent income see Section 3 of the paper.

Source: Authors' estimates based on the CHIP urban samples for 1988, 1995, 2002, 2007, and 2013.

Table 5. *Relative poverty rates and the composition of the relative poor among urban residents in China, 1988, 2002 and 2013.*

Children/adults/elderly

	PROPORTION OF ALL PEOPLE LIVING IN URBAN CHINA IN THE YEAR IN QUESTION	RATES UNDER THE FOLLOWING PERCENT OF CONTEMPORARY MEDIAN				COMPOSITION OF ALL POOR PEOPLE, PERCENT			
		40	50	60	70	40	50	60	70
Children									
1988	22.33	1.13	3.89	9.10	16.32	34.93	32.86	31.81	30.74
2002	14.56	6.80	14.21	22.67	32.32	19.78	19.38	18.30	17.76
2013	12.63	9.72	17.63	24.88	32.46	15.43	15.97	15.45	14.87
Adults									
1988	70.52	0.56	2.21	5.37	10.24	54.59	59.05	59.28	60.90
2002	74.76	4.77	10.28	17.58	25.82	71.16	71.80	72.71	72.71
2013	69.65	7.90	13.82	20.21	27.35	69.00	68.91	69.01	68.93
Elderly									
1988	6.82	1.11	3.14	8.35	14.53	10.48	8.10	8.91	8.36
2002	10.68	4.25	8.83	15.20	23.66	9.06	8.81	8.99	9.52
2013	17.72	7.23	12.03	18.05	25.50	15.58	15.11	15.54	16.20

Level of educational attainment of household head

	PROPORTION OF ALL PEOPLE LIVING IN URBAN CHINA IN THE YEAR IN QUESTION	RATES UNDER THE FOLLOWING PERCENTS OF CONTEMPORARY MEDIAN INCOME				COMPOSITION OF ALL POOR PEOPLE, PERCENT			
		40	50	60	70	40	50	60	70
Low									
1988	52.86	1.11	3.68	8.59	14.69	80.79	73.53	71.36	65.26
2002	36.58	9.27	17.92	28.40	39.68	67.55	61.31	57.49	54.70
2013	46.32	12.49	21.26	30.43	39.96	72.46	70.37	69.04	66.89
Medium									
1988	30.22	0.42	1.84	4.90	10.63	17.47	21.06	23.29	26.99
2002	36.88	4.08	9.28	16.37	24.37	29.99	31.99	33.42	33.88
2013	28.11	5.98	11.60	17.35	24.89	21.07	23.31	23.90	25.29
High									
1988	16.92	0.08	0.85	2.01	5.45	1.75	5.42	5.35	7.75
2002	26.54	0.46	2.70	6.19	11.42	2.46	6.69	9.10	11.42
2013	25.57	2.02	3.45	5.64	8.46	6.47	6.31	7.06	7.82

Note: 'Low education' is defined as junior high school and below, 'medium education' as senior high school, and 'high education' as college and above. When the poverty associated with each different education level is analysed, observations which lack information about education are deleted.

Income level of the city (individuals in all categories)

	PROPORTION OF ALL PEOPLE LIVING IN URBAN CHINA IN THE YEAR IN QUESTION	RATES UNDER THE FOLLOWING PERCENTS OF CONTEMPORARY MEDIAN INCOME				COMPOSITION OF ALL POOR PEOPLE, PERCENT			
		40	50	60	70	40	50	60	70
Low									
1988	34.40	1.84	6.18	14.43	25.48	85.90	79.81	77.35	73.57
2002	33.89	10.58	20.72	32.82	45.25	71.39	65.64	61.55	57.78
2013	33.42	20.33	33.67	46.02	58.39	84.95	80.29	75.22	70.41
Middle									
1988	32.55	0.22	1.24	3.50	7.24	9.83	15.11	17.75	19.78
2002	33.17	2.90	7.72	13.93	22.35	19.17	23.94	25.56	27.93
2013	33.27	2.93	6.59	11.80	19.09	12.26	15.93	19.54	23.32
High									
1988	33.04	0.10	0.41	0.95	2.40	4.27	5.08	4.90	6.65
2002	32.95	1.44	3.38	7.07	11.50	9.44	10.42	12.89	14.28
2013	33.31	0.68	1.61	3.26	5.29	2.78	3.78	5.24	6.27

Note: 'Per capita household income of the city' is divided into three groups, i.e., 'low', 'medium', and 'high'.

Ethnicity of household head (Individuals of all categories)

	PROPORTION OF ALL PEOPLE LIVING IN URBAN CHINA IN THE YEAR IN QUESTION	RATES UNDER THE FOLLOWING PERCENTS OF CONTEMPORARY MEDIAN INCOME				COMPOSITION OF ALL POOR PEOPLE, PERCENT			
		40	50	60	70	40	50	60	70
Majority									
1988	96.45	0.66	2.46	6.07	11.19	95.97	97.25	97.18	97.22
2002	95.61	4.99	10.61	18.06	26.53	94.97	94.98	95.74	95.84
2013	95.30	7.69	13.68	19.93	27.08	91.55	92.96	92.89	93.19
Minority									
1988	3.55	0.76	1.89	4.79	8.69	4.03	2.75	2.82	2.78
2002	4.39	5.76	12.20	17.51	25.08	5.03	5.02	4.26	4.16
2013	4.70	14.08	20.99	30.92	40.08	8.45	7.04	7.11	6.81
Total population									
1988	100	0.74	2.67	6.42	11.92	100	100	100	100
2002	100	5.03	10.68	18.07	26.47	100	100	100	100
2013	100	8.01	14.02	20.44	27.69	100	100	100	100

Source: Authors' estimates based on the CHIP urban samples for 1988, 1995, 2002, 2007, and 2013.

Table 6. *Estimates of poverty functions*

a. Children

	2002	2013
Level of educational attainment of household head	−0.1859 *** (0.0176)	−0.1028 *** (0.0221)
Income level of the city (logarithm)	−3.0653 *** (0.3085)	−3.4070 *** (0.2029)
Ethnic minority household head	−0.0650 (0.2617)	0.1046 (0.2760)
Number of children in household	1.3078 *** (0.1755)	0.6007 *** (0.1254)
Number of not employed adults in household	0.9761 *** (0.0869)	0.532 *** (0.0883)
Number of adults employed, but not for the full year	1.1487 *** (0.1435)	0.4349 *** (0.1416)
Age of household head (years)	−0.0161 *** (0.0054)	0.0011 (0.0060)
Eleven dummy variables for province-level units included		
Constant	28.2067 *** (2.8516)	34.3356 *** (2.1430)
Pseudo R^2	0.2499	0.3604
N	2938	2254

Note: An ‘unemployed adult’ is defined as a person of working age (i.e., 16–60 years) who is not employed; ‘not working for the full year’ is defined as a person of working age who worked for fewer than 10 months in a year. ‘Low education’ is defined as completing junior high school education and below, ‘medium education’ is defined as completing senior high school, and ‘high education’ is defined as completing college and above. When the poverty associated with different levels of educational attainment is analysed, observations with missing information about level of educational attainment are deleted. The omitted province is Beijing.

Source: Authors’ estimates based on the CHIP urban sample.

b. Adults

	2002	2013
Level of educational attainment of household head	-0.1864 ^{***} (0.0079)	-0.1163 ^{***} (0.0105)
Income level of the city (logarithm)	-3.6267 ^{***} (0.1362)	-3.3804 ^{***} (0.0947)
Ethnic minority household head	-0.3169 ^{***} (0.1231)	0.2183 [*] (0.1310)
Number of children in household	0.9905 ^{***} (0.0508)	0.4684 ^{***} (0.0481)
Number of non worker adults in household	1.0286 ^{***} (0.0319)	0.5301 ^{***} (0.0358)
Number of adults employed, but not for the full year	1.0116 ^{***} (0.0632)	0.2567 ^{***} (0.0632)
Number of elderly with a pension in household	0.1623 [*] (0.0868)	0.0387 (0.0252)
Number of elderly without a pension in household	0.9644 ^{***} (0.1083)	0.1292 ^{***} (0.0393)
Age of household head	-0.0194 ^{***} (0.0032)	-0.0032 (0.0034)
Eleven dummies for province-level unit included		
Constant	34.4687 ^{***} (1.3408)	34.1127 ^{***} (1.0265)
Pseudo R^2	0.2669	0.3423
N	15315	11553

Note: An 'not employed adult' is defined as a person of working age (i.e., 16–60 years) who is not employed; 'not working for the full year' is defined as a person of working age who worked for fewer than 10 months in a year. 'Low education' is defined as completing junior high school education and below, 'medium education' is defined as completing senior high school, and 'high education' is defined as completing college and above.

When the poverty associated with different levels of educational attainment is analysed, observations with missing information about level of educational attainment are deleted. The omitted province is Beijing.

Source: Authors' estimates based on the CHIP urban sample.

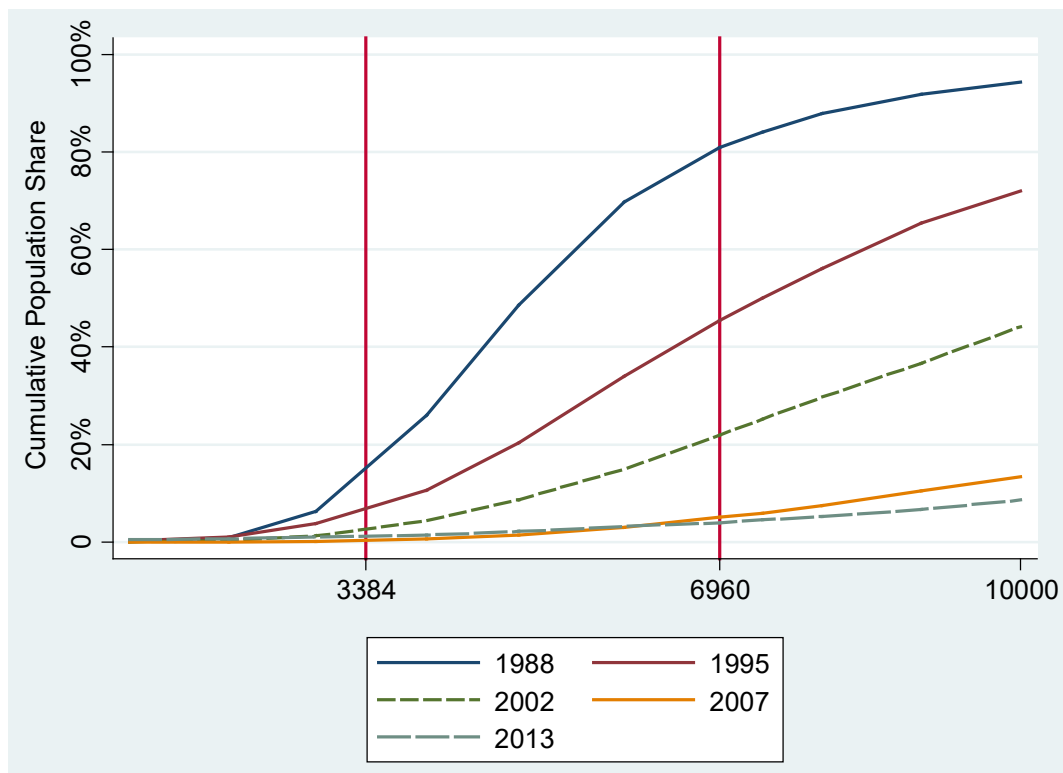
c. **Elderly**

	2002	2013
Level of educational attainment of household head	-0.1378*** (0.0194)	-0.1139*** (0.0310)
Income level of the city (logarithm)	-4.7959*** (0.4344)	-3.0202*** (0.2630)
Dummy for ethnic minority household head	-0.2791 (0.3768)	-0.5527 (0.5191)
Number of children in household	1.1036*** (0.1426)	0.6972*** (0.1807)
Number of not employed unemployed adults in household	1.4188*** (0.1436)	0.7533*** (0.1579)
Number of adults employed, but not for the full year	1.0243*** (0.2955)	0.3964 (0.3170)
Dummy for the elderly without pension in household	1.0830*** (0.1612)	0.9621*** (0.3608)
Dummy for adult in the household	-0.1495 (0.0945)	0.0561 (0.3065)
Eleven provinces dummies added		
Constant	42.9086*** (4.0491)	28.7455*** (2.7265)
Pseudo R^2	0.3190	0.3565
N	2186	2668

Note: An ‘not employed adult’ is defined as a person of working age (i.e., 16–60 years) who is not employed; ‘not working for the full year’ is defined as a person of working age who worked for fewer than 10 months in a year. ‘Low education’ is defined as completing junior high school education and below, ‘medium education’ is defined as completing senior high school, and ‘high education’ is defined as completing college and above. When the poverty associated with different levels of educational attainment is analysed, observations with missing information about level of educational attainment are deleted. The omitted province is Beijing.

Source: Authors’ estimates based on the CHIP urban sample.

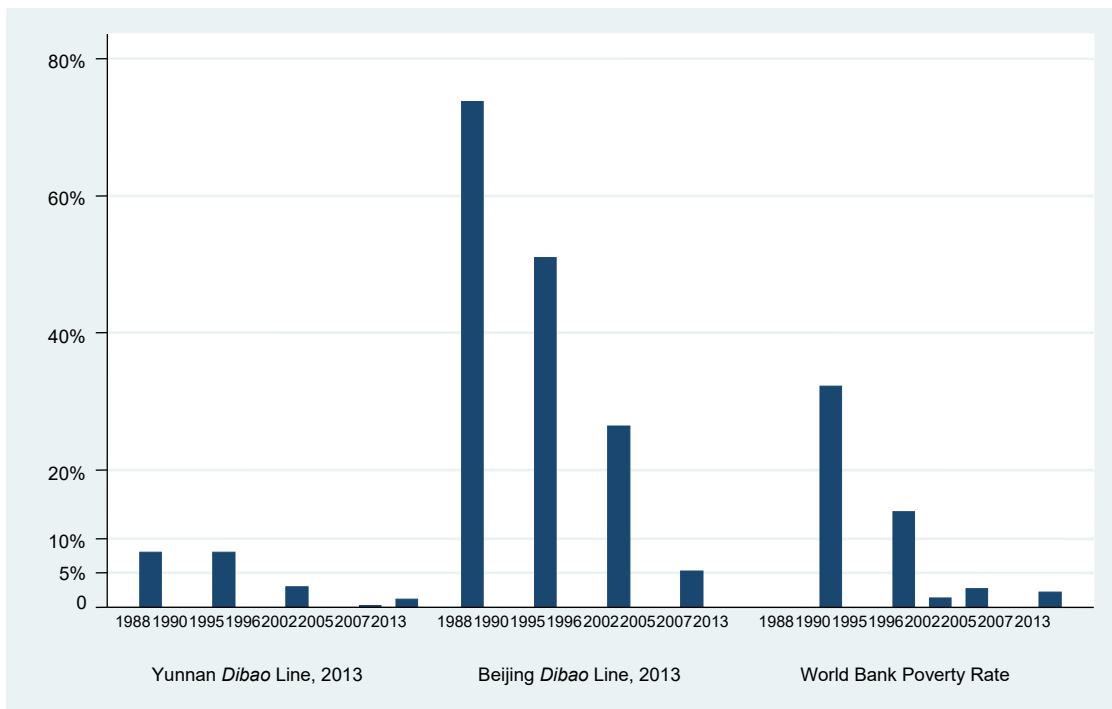
Figure 1. Cumulative density functions for urban residents for the years 1988, 1995, 2002, 2007, and 2013; per capita income in 2013 consumer prices.



Note: 3 384 Yuan was the *Dibao* line of Yunnan in use in 2013, 6 960 was the *Dibao* line of Beijing.

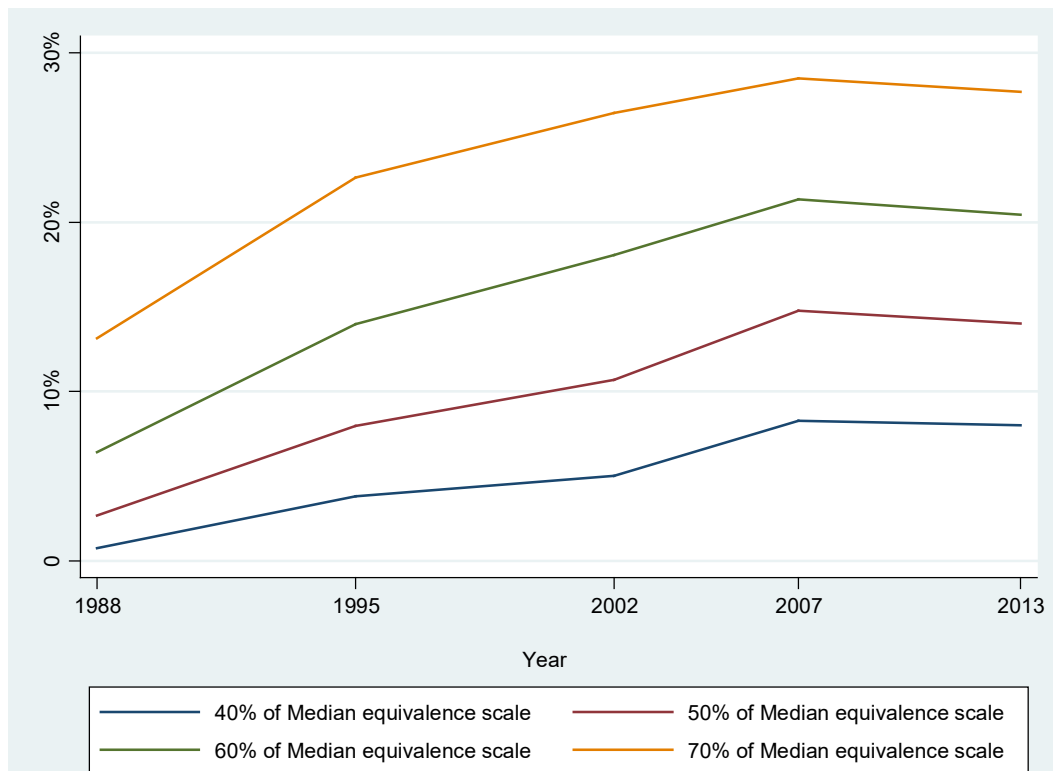
Source: Authors' estimates based on CHIP.

Figure 2. *The development of the absolute poverty rate in China according to various definitions of the poverty line.*



Source: Authors' estimates based on CHIP data and World Bank (2017) data.

Figure 3. *Relative poverty rates among urban residents in urban China for the years 1988, 1995, 2002, 2007, and 2013.*



Source: Table 3