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New integrated concepts and measures of income poverty and of 'common prosperity' in China

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Abstract: With incomes rising rapidly in China, measures of numbers in absolute poverty are no longer helpful for policy. A case is made for introducing a new concept and measure of relative poverty in China. Support is found from estimates of happiness functions using the 2013 national surveys of the China Household Income Project (CHIP). The Chinese government has recently introduced a new policy of promoting 'common prosperity'. The criteria for measuring progress towards the achievement of common prosperity are analysed. A case is made for integrating the concepts of relative poverty and of common prosperity, so that households can be classified as poor, commonly prosperous, or rich. That classification is made for the 2002, 2013, and 2018 CHIP surveys.

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1. Introduction

The official approach to measuring poverty in China is to set a fixed poverty line that reflects the income required to fund the necessities of life. As the Chinese economy has grown, the number of people in income poverty, measured by this criterion, has fallen rapidly. Now, the head count number is negligible in urban China and no longer an adequate basis for policy in rural China. This change has implicitly been recognised by the Chinese government and has led to the new policy objective of achieving 'common prosperity'.

The alleviation of poverty remains a central task within the new policy framework. However, poverty should not be seen as independent of the overall income distribution. It is arguable that the concept and measurement of poverty should be integrated with the concept and measurement of common prosperity. A notion of relative poverty, rather than absolute poverty, now seems to be appropriate for gauging progress towards common prosperity.

In section 2 the importance of relative income for subjective well-being is examined, both in general and in China. Section 3 discusses precedents for the use of relative income in the assessment of poverty. Section 4 contains an explanation of how poverty has been, and is, measured in China. In section 5 the new and as yet undeveloped idea of common prosperity is discussed and linked to the idea of relative poverty. Section 6 provides suggestive evidence that relative income is important for subjective well-being. In section 7, relating to urban China, we make use of the China Household Income Project (CHIP) surveys to estimate happiness functions. Section 8 does the same for rural China. Section 9 derives policy implications from this evidence. Section 10 provides estimates of the proportion of households that are poor, in common prosperity, and rich in the CHIP years 2002, 2013, and 2018. It is clear that the choice of a relative income poverty measure rather than an absolute measure makes a great difference to the evaluation of poverty and of policy against poverty. Moreover, the relative income measure can be neatly integrated with a measure of common prosperity. Section 11 concludes.

2. Relative income and well-being

The idea that relative position matters to individual wellbeing had its origins in the 18th and 19th centuries. Adam Smith (1776: 466) declared:

By necessaries I understand not only the commodities which are indispensably necessary for the support of life, but whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without.

Karl Marx (1849: 163) developed a similar idea:

Our desires and pleasures spring from society; we measure them, therefore, by society and not by the objects, which serve for their satisfaction. Because they are of a social nature they are of a relative nature.

These classical views were swept aside by the neoclassical economics of the 20th century. Mainstream microeconomic theory generally treats utility as a function of own absolute income. However, some economists have advocated models in which the income of others enters the individual's utility function (a pioneer being Easterlin, 1974). There is growing empirical support for the notion that subjective well-being depends on relative income, well reviewed by Clark et al. (2008) and by Clark and Ambrosio (2015). The lower is own income relative to that of the reference group, the greater the feeling of relative deprivation or the stronger the dissatisfaction with and the aspiration to improve income; either perception can reduce subjective well-being.

Sen (1983) acknowledged that relative income is a better guide to the concept of poverty than absolute income. This is because it is a better guide to people's absolute 'capabilities' (to be or do things of intrinsic worth) – including the capability to be part of society.

There is evidence that relative income is important for happiness (or subjective well-being) also in China, for instance Knight et al. (2009), Knight and Gunatilaka (2022). It is found that one's income relative to that of one's reference group has a powerful positive effect on happiness. Although in China the reference group appears to be more local than national, there is empirical justification for including income relative to the income distribution in a definition and evaluation of poverty

3. Precedents and possibilities

After the second world war, the reforming British government built a welfare state, including payments to poor people so as to bring them up to a minimum income level. The level was set implicitly at a certain proportion of the median household income per capita. Over the years, as the median household income per capita has risen, the poverty line – albeit given various names – has also risen. Moreover, it has been maintained at

roughly the same proportion (about 55%) of the median household income per capita. Successive British governments have implicitly accepted the value judgement that income relative to income in society is the appropriate criterion for defining and assessing poverty. The implication is that well-being depends mainly on relative income.

The European Union has also adopted own income relative to income in society as the determinant of income poverty. The poverty line has been set at 60% of the median household income per capita. People whose income falls below 60% are deemed to be income-poor. The Organisation for Economic Co-operation and Development (OECD), a group of rich countries, puts the poverty line at 50% of the median income of each member country. Several middle-income economies have also adopted a relative income concept of poverty. These include Hong Kong, China's richest area, Taiwan (60% of median income per capita), South Korea (55%), and Turkey (Sicular, 2019:18-20).

We link our argument to the new policy emphasis that the Chinese government places on 'common prosperity'. **Figure 1** illustrates both. Consider two frequency distributions of household ln income per capita, both with the same median at point q and with unit area below the distribution curve. The income point p shows the income that is (say) 40% of the median, and point r the income that is above the median, by 60% of the median. Incomes above p and below r represent the people enjoying 'common prosperity'. Those below p are defined as 'the poor', and those who are above r as 'the rich'. The steeper frequency distribution shows the poor as area A and the rich as area C. The flatter distribution shows more poor people (area $A+B$) and more rich people ($C+D$). The steeper distribution is preferable, both for less poverty and for more common prosperity.

Note that this classification is different from a classification in terms of household percentiles, for instance with the poor constituting the lowest quintile of households, the commonly prosperous being quintiles 2-4, and the rich quintile 5. That approach contradicts a policy objective to raise the incomes of the lowest-income households. Rather, the policy objective should be to reduce the percentage of households with income below the chosen percentage of median household income, i.e. to increase the incomes of low-income households by moving them closer to the median.

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4. Poverty measurement in China

In discussing the measurement of poverty, it is necessary to distinguish rural and urban China. In rural China there has been, and still is, an official poverty line, whereas there is no official definition or measurement in urban China. This difference probably reflects the fact that, on any definition of absolute poverty, the vast majority of the poor are rural people.

The Chinese government has set three rural poverty lines over time. The first, in operation for many years, was set well below the World Bank's dollar a day criterion for poverty. In 2000 the Chinese government introduced a higher 'low-level' line, very near the World Bank's dollar a day line. In 2008 this level was adopted as the official poverty line. The upgrade was presumably in order to target more near-poor people for policy measures. In 2011 the government nearly doubled the official poverty line, raising it to the equivalent of 1.8 dollars a day. The higher poverty level was interpreted to reflect 'rising incomes and aspirations' (Park and Wang, 2014). By implication, the poor were becoming aware of, and made unhappy by, their declining relative income.

Figure 2, taken from Li et al, (2020), shows the proportion of poor people in rural China over the period 1980-2017 on the three official measures of the rural poverty line. In each case the poverty headcount falls dramatically. On the 2011 criterion, the proportion of poor people falls from 17.5% in 2011 to only 3% in 2017, On the previous criteria, the proportion became negligible earlier. Should government now recognise that there is little use in maintaining a rural absolute poverty line? Should it now convert to a relative rural poverty line?

There is no official poverty line in urban China. However, income thresholds are used to provide social assistance (known as *dibao*). These are cash subsidies to bring household income up to the local poverty line. However, the scheme is decentralised and benefits are often low and unevenly distributed. This poverty line varies considerably by province, being Y3384 in Yunnan and Y6960 in Beijing in 2013. Whereas the proportion of people in (these measures of) absolute poverty fell considerably over time, those in relative poverty did not. Setting the poverty line at 60% of the median income, the proportion in poverty in urban China rose from 6% in 1989 to 21% in 2013 (Gustafsson and Ding, 2013).

The introduction of the concept of relative poverty creates a political difficulty. If absolute poverty has been almost eliminated – a measure of political success - people will be confused and even disheartened by a new measure which implies that poverty remains a problem. Nevertheless, it is a problem that will need to be faced up to by China's policy-makers, as those in many other countries have done.

5.The common prosperity policy

The objective of achieving common prosperity, introduced in 2020, is a long term one, to be reached over 30 years by 2050. Its achievement is intended to involve reducing inequality not only of income but also of wealth and of access to public services. Progress towards the objective should be assessed by the rising proportion of China's population who are in common prosperity as defined and measured by the policy-makers.[1]

There appears to be no published official attempt to measure the size of the group in common prosperity in China. The National Bureau of Statistics has, however, measured the size of the 'middle income group', apparently basing its criteria and measures on the World Bank's definition of the middle-income group in developing countries ($10-100 per person per day). In fact, the NBS chose a higher base but narrower range (household income Y100,000-500,000) for 2018. Although it is unexplained, the middle income group of the NBS, like that of the World Bank, appears to be descriptive and not prescriptive.

The definitions that distinguish the three groups of households are therefore open to be explored. It is not important whether the groups are labelled low-income, middle-income, and high income or as poor, commonly prosperous, and rich. However, it is important that the middle-income/common prosperity group should carry normative implications: its growth is good for society, in line with the common prosperity policy. As the aim is to assist policy-making, and the criteria are necessarily value-laden, the final choice must be made by China's policy-makers.

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[1] Nineteenth Central Committee of the CPC (2020).

6. Relative income and aspirations

The CHIP data contain the minimum income required by the household. This might reflect the minimum income needed for subsistence but it can also reflect aspirations (Knight and Gunatilaka, 2012). In 2013 the minimum household income was 43% of actual household income in urban China and 60% in rural China. Between 2002 and 2018 the urban growth rate of household real income per capita averaged 7.0% per annum and the rural growth rate 6.5% per annum. The corresponding growth in real minimum income was 4.7% and 7.6% per annum respectively.

Why did the reported minimum income increase so rapidly? There are two possible explanations. One is that the minimum income required by the household (M) rises with its actual income (Y) because a fall would be painful to the household, reducing its happiness, i.e. there is 'loss aversion'. The other is that the minimum income required by the household increases as income in society increases because a fall in relative income reduces happiness.

To eliminate the first effect, we estimated a simple OLS equation $M = \alpha + \beta Y$ at household level. Provided that there are only two explanations, the coefficient β represents the former effect and $(1 - \beta)$ the latter. The values of $(1 - \beta)$ in 2013 were 0.82 (urban), 0.80 (rural), and 0.79 (national). The implication is that rising aspirations account for some 80% of the reported rise in income required. A direct measure of the latter effect can be derived by estimating $Y = \alpha + \beta Y + \gamma \bar{y}$ where $\bar{y}$ is the sample mean income, excluding own income, at province level. The estimates of β, all significant at the 1% level, were 0.37 (urban), 0.42 (rural), and 0.54 (national), and the values of γ were correspondingly 0.67, 1.02, and 0.55, again highly significant The implication is that, at the least, half of the increase in minimum income required is due to rising aspirations. The explanation for this increase is the rising income of others in society, which on its own represents a fall in the relative income of the household.

7. Urban China

Our objective in this section is to show that relative income is an important determinant of happiness in urban China. There are two ways of introducing relative income. One is to introduce group mean income per capita, as an indication of reference group income. The other is to introduce instead the respondent's perceived income position within the

reference group. We attempt both separately. The former can represent two influences. One is the relative income effect, and the other is the greater resources and facilities that the higher income of the group might bring. The former is hypothesised to decrease happiness and the latter to increase happiness: the outcome will depend on the relative strength of the two influences. The latter method of introducing income rank, by contrast, should measure the pure effect of relative income.

Table 1 reports results from happiness functions using the 2013 urban sample. In the top half of the table, three ln income variables are shown: household income per capita (ln y), average ln income per capita in the respondent's city (ln y_c), and ln income per capita in the respondent's province (ln y_p). The coefficient on ln y is consistently negative and significant, as expected. The coefficient on ln y_c is negative and has a magnitude even greater than that of ln y. The same is true of the coefficient on ln y_p. However, when the relative income terms are estimated together, it is the negative ln y_c that dominates. The higher the income of relevant others, the lower is happiness. The effect appears to be strongest at city level.

The bottom half of the table reports the happiness functions with the same control variables but with the household's income position in the city as the measure of relative income. Five choices were permitted: household's living standard much above, above, at, below, or much below the living standard of the village. We see that this classification makes a big difference to happiness. With the household being at the village living standard as the omitted category (0), the variation in happiness is from 0.476 (much above) to -.846 (much below), the full range thus exceeding 1.32. Whichever measure we use, we find a powerful negative relative income effect.

There is a further potential explanatory variable: the cost of living in the city. This is likely to rise with city population size. Columns 1,2 and 3 are therefore re-estimated, in columns 4, 5 and 6 , with the addition of city size. The additional coefficients in the happiness equations are indeed significantly negative. However, the test is whether the addition of city size alters the coefficients on the relative income terms. It is clear that this is not the case: relative income continues to be an important determinant of happiness in urban China.

8.Rural China

In **Table 2** we report an exercise very similar to that in Table 1, again using both measures of relative income, shown in the top and bottom halves of the table. The differences are that we can now estimate group mean income per capita at village, county, and province levels, and that income position of the household is available at the village level and of the village is available at the county level. The same set of control variables is included in the equations.

The group mean income per capita variables in the top part of the table have coefficients that are almost entirely positive, small, and not statistically significant. There is a good reason for this result. In rural China, communities are expected to provide much of their own funds for their facilities and resources, particularly at the village level. The community income effect thus neutralises the relative income effect on happiness.

By contrast the pure effect of relative income, shown in the bottom half of Table 2, is negative and statistically so. The range, from 0.824 to -0.816, exceeds1.72. It is more powerful at the village level than at the county level (where the range is still large and significant but is smaller a1.15), probably because the Chinese village has a strong sense of community and much local interaction.

9.Policy Implications

Our evidence that the income of the reference group reduces happiness was related to sub-groups: cities and provinces in urban areas and villages and counties in rural areas. Yet the argument of this paper is that relative income is relevant for China as a whole or for its urban and rural sectors. In fact, it was not possible to distinguish relative income and absolute income using the full samples as the reference groups. We simply have to assume that relative income at the national, urban or rural level is also influential. It is likely that limited information makes the effect of the sub-group more powerful than that of the group as a whole. However, this is no doubt true of other countries as well, although information flows are likely to be broader in more developed countries than in China.

The estimates of the happiness functions in sections 6 and 7 confirm that the income of the reference group reduces happiness. The theoretical case for including relative income instead of absolute income as the measure of poverty can be based on this evidence and

a value judgement that happiness matters. However, it can instead or as well be based on a judgement that a narrower income distribution is socially more valuable.

10.Measures of relative poverty and of common prosperity, 2002 – 2018

In this section we make proposals for consideration. We introduce a concept and measure of relative poverty, based on income relative to the median income, and integrate it with a concept and measure of common prosperity, again based on income relative to the median income. An advantage of the proposal is that, once the policy-makers have made the normative judgements that define the two dividing lines, changes in the sizes of the poor and the commonly prosperous groups can be measured objectively by the change in the shape of the frequency distribution of income.

Two rules are observed in this proposal. One that there should be three categories (poor, commonly prosperous, and rich), not five, so that all parts of the frequency distribution of incomes are subject to policy influence. The other is that the commonly prosperous are measured symmetrically below and above the median income.

We identify the poor as those with income per capita below the income (X) that is a certain proportion of the median income per capita (M) [where $X<M$]. Similarly, we can define the rich as having an income per capita (Y) above a certain proportion of M [where $Y>M$]. People whose income per capita lies in the range between X and Y can be defined as the commonly prosperous. The percentage of households in each category is estimated in this section.

Rather than use the national median incomes, we derive the cut-off points for urban China from the urban medians and the those for rural China from the rural medians. There are two reasons. One is the great difference in the urban and rural medians. For instance, in 2013 the urban/rural ratio of median incomes was 3.15 (Table 3). For policy purposes, it is relevant to measure the extent of poverty among urban, and among rural, people. Second, when asked about their reference groups, only 7.7% of urban respondents reported that their main reference group was rural or countrywide, and only 3.0% of rural respondents reported that their main reference group was urban or countrywide. (Knight and Gunatilaka, 2022: table 3). Few households make comparisons across the

rural-urban divide; the great majority perceive their economic status within their urban, or their rural, environment.

If the national median were used as the yardstick, that would decrease the proportion of urban households classified as relatively poor and increase the proportion relatively rich; and conversely for rural households. For instance, using the national median income (Y13,964) and the 40% cut-off, in 2013 in urban China the proportion of the poor falls by 5.9 percentage points to 3.0%, and that of households in common prosperity by 25.2 percentage points to 39.7%. Correspondingly, for rural China the proportion of the poor rises by 18.3 percentage points to 32.1%, and that of the commonly prosperous hardly at all, by 0.2 percentage points to 60.0%.

9.1 Using CHIP, 2002-2018

Table 3 provides the basic data on which our allocation of households among the three categories - poor, rich, and commonly prosperous - is based. Expressed in real terms, it shows the median values over time and by area, and the dividing lines (below 40% of the median, above 160% of the median, and between 40% and 160% of the median; also below 60% of the median, above 140% of the median, and between 60% and 140% of the median. Note that the value in real terms distinguishing the poor and the commonly prosperous rise sharply over time, and that it is far higher in urban than in rural China. The upper cut-off point has the same features: rising rapidly over time, and urban much higher than rural values. The rural-urban divide is an important feature of China's income distribution. It suggests the need to examine rural and urban China separately.

We produce **Table 4**, showing the proportions of poor, rich and commonly prosperous households in urban China, rural China, and (weighted) national China. There are two definitions, depending on the choice of the policy-maker. The poor are in the lowest segment of the frequency distribution (below 40% of household median income (per capita); or below 60% of median income). The rich are defined correspondingly as those in the highest segment of the frequency distribution (above 160%, or above 140%, of median income). The moderately prosperous occupy the middle segment (with income between 40 and 160%, or between 60 and 140% of median income,

The objective is to measure the percentages of the poor, the rich, and the moderately prosperous in urban, rural and national China, and their changes over time. Has relative

poverty increased over the period 2002-2018? Table 3 shows that the results are generally insensitive to the choice of classification into poor, rich, and commonly prosperous. Consider the <40%, >160%, and 40% to 160% division. Whether we look at urban, rural, or national China, the proportion of the population who are poor increased, from 11.6% to 16.3% in the national case. By contrast, the proportion of the population who are rich remained constant, at about 30%, nationwide. Whereas on absolute measures of poverty, the poor are heavily concentrated in rural areas, our relative measure shows that poverty is 6.9% in urban China and 12.3% in rural China. The proportion of people who are commonly prosperous fell slightly in urban China (from 75.0% to 69.7%) between 2002 and 2018, also in rural China (from 69.5% to 63.0%), and again nationally (from 58.8% to 53.7%.

Using the 60% to 140% category, the proportion of poor people was higher is each area and in each year. In 2018 the proportion was now 29.0% (16.8% in 2002). Whereas the proportion of rich people rose in both urban and rural areas, it was effectively constant in China as a whole. The commonly prosperous group fell over the 16 years by 3% points (from 39.1% to 36.3%).

Prices are generally lower in rural than in urban areas of China. This exaggerates the income differences between indexes based on the estimates of the two areas. We have corrected for this to achieve purchasing power parity by using (updated) indexes created by Brandt and Holz (2006). The results are shown under the heading National, price-corrected. The correction reduces the proportion of poor households and of rich households, but by less than 3% points in each case, and raises the proportion of commonly prosperous households, by about 5% points.

To summarise Table 3: according to both classifications, between 2002 and 2018 the proportion of the poor rose, that of the rich also rose (in all but one case), and that of the commonly prosperous fell. However, there was a contrast between 2002-2013 and 2013-2018. Whereas these adverse trends were marked in the former period, there was a small improvement in the latter period. Perhaps China has turned a corner.

The growth of common prosperity might be interpreted to involve not only a rise in the proportion of households having income close to median income but also a rise in the (real) value of median income. The median income rose dramatically by Y20,205, from

Y9,875 to Y30,080, between 2002 and 2018 in urban China, and by Y7,055 , from Y3,580 to Y10,635 in rural China (Table 3). It is possible to incorporate the effect of median income in the measure of common prosperity. Ideally, this should be done by means of a subjectively determined formula that would provide an automatic measure of common prosperity over time, and so obviate the need periodically to make specific subjective adjustments.

Simply by way of illustration, assume that the rise of median income (m) in rural China was valued by the policy-makers as the equivalent of a fall in the percentage (p) of m that is used to determine the cut-off point, from 60 to 40%. The implicit rural formula is therefore $\delta p = - 0.029\delta m$. Table 4 shows that the proportion of the rural sample in poverty would fall from 25.1 to 12.3 percentage points, and the proportion in common prosperity would rise from 43.4 to 64.0 percentage points. In this way, it would be possible to measure progress towards common prosperity over time.

9.2   Using NBS Annual National Household Surveys

It is now government policy to expand the proportion of households in common prosperity. This objective can be achieved by reducing the proportion of households in relative poverty and in relative wealth. It would be desirable for the National Bureau of Statistics, in its *Annual Statistical Yearbooks,* to report the proportions of households in its national household surveys that are poor, moderately prosperous, and rich. The *Yearbooks* contain tables of frequency distributions of income for urban and for rural China but they are inadequate for this purpose Our proposed classification would require the NBS to publish the classification using microdata or to allow researchers to do so using those data.

11.Conclusions

Several main conclusions emerge from the analysis.

Income relative to the reference group is an important determinant of happiness in China, as it is elsewhere. However, in rural China, use of the conventional method of introducing relative income (mean income per capita of the reference group) is misleading because the group mean also serves as a proxy for access to local resources and facilities.

There are good theoretical and empirical grounds for using a measure of relative poverty to evaluate the well-being of those with little income. There is a case to publish measures of the proportion of China's households in relative poverty (urban, rural, and national) as a guide to policy. Measures of absolute poverty might be retained but only to identify remaining small pockets of extremely low incomes.

These relative poverty estimates can be integrated with the reporting of the proportion of households enjoying common prosperity and the proportion who are relatively rich. Our measures indicate a sharp rise in the incidence of relative poverty over the period 2002-2018, particularly in urban areas, and a rise in the incidence of being relatively rich. The incidence of relative poverty was lower in urban than in rural China but they were now not far apart The proportion of the population in common prosperity fell over the sixteen years 2002-2018 in both urban and rural areas but rose a little over the years 2013-2018. It will be important to find out whether this recent rise continues, in line with policy objectives.

It is not important whether we label the three household income categories as low-income, middle-income, and high-income, or as poor, commonly prosperous, and rich. However, it is important that the middle-income category should have normative implications, in line with the common prosperity policy. An increase in the proportion of households in this category is deemed to be good for society. It is also important that the growth of this group over time can be measured objectively. This is best done if the policy-makers, having decided on the range covering either side of the median income that defines middle-income/common prosperity, can then measure its growth according to the increase in median income and the change in the shape of the frequency distribution of income.

It is arguable that the Chinese leadership is much concerned to maintain social stability and that it pursues policies to secure that objective. It is also arguable that the commonly prosperous, whose income is close to the median, are on average happier, and socially less discontented, than the poor, and that the rich are a source of unhappiness, and of social discontent, for the poor and commonly prosperous. A policy of expanding the proportion of households which are commonly prosperous thus reduces income inequality, improves happiness, and helps to maintain social stability. This is a plausible explanation of the common prosperity policy

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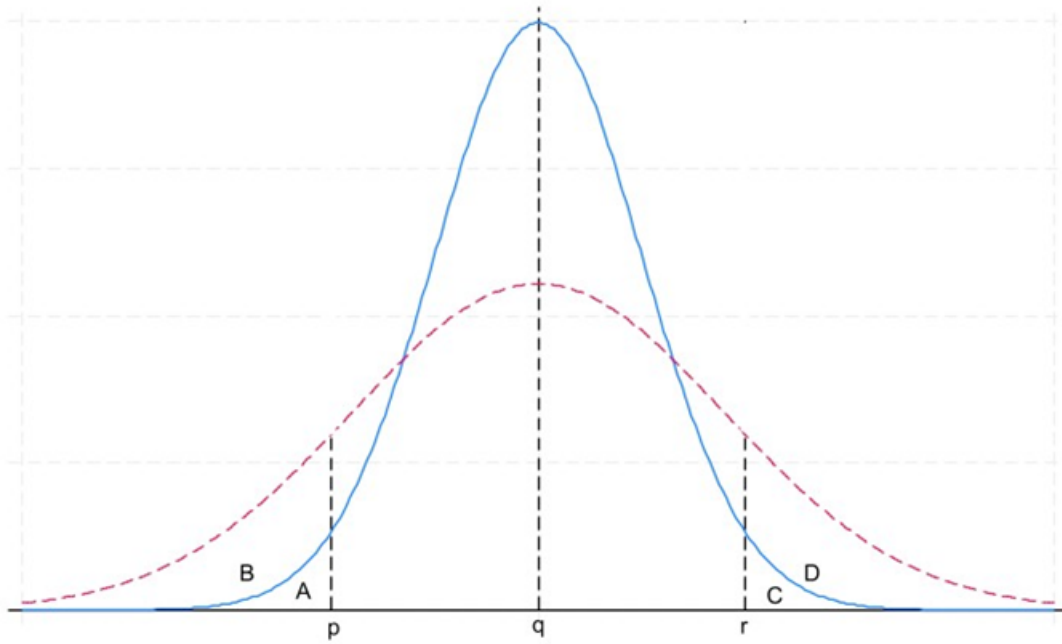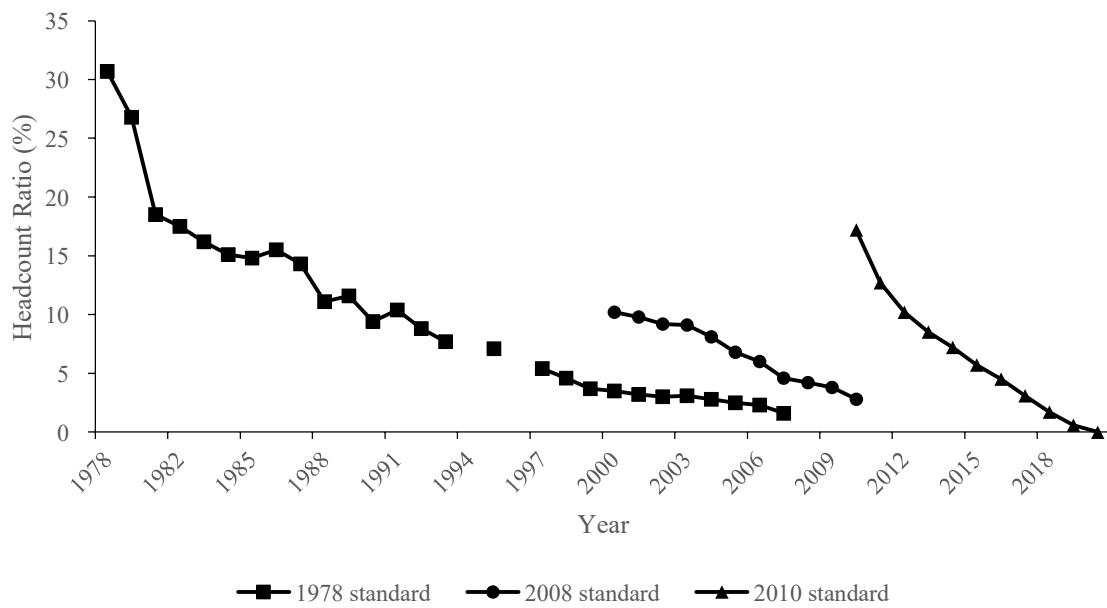
Figure 1. Frequency distributions of ln income p.c.

Figure 2. Headcount ratio in rural China based on different official poverty standards (1978-2020)

Table 1. Happiness functions reporting relative income terms, urban China, 2013

	(1)	(2)	(3)	(4)	(5)	(6)
Ln y	0.170***	0.138***	0.169***	0.169***	0.141***	0.169***
	(0.020)	(0.018)	(0.020)	(0.020)	(0.018)	(0.020)
Ln y_c	-0.217***		-0.203***	-0.188***		-0.184***
	(0.037)		(0.041)	(0.038)		(0.042)
Ln y_p		-0.186***	-0.047		-0.131**	-0.015
		(0.055)	(0.062)		(0.057)	(0.063)
Ln *citypop*				-0.046***	-0.056***	-0.046***
				(0.014)	(0.014)	(0.015)
Observations	6,192	6,192	6,192	6,192	6,192	6,192
R-squared	0.035	0.031	0.035	0.037	0.034	0.037
Household relative to city living standard:						
Ln y	0.048***			0.053***		
	(0.017)			(0.017)		
Much above	0.478***			0.469***		
	(0.091)			(0.091)		
Above	0.258***			0.255***		
	(0.026)			(0.026)		
Below	-0.387***			-0.384***		
	(0.025)			(0.026)		
Much below	-0.869***			-0.864***		
	(0.059)			(0.059)		
Ln *citypop*				-0.042***		
				(0.014)		
Observations	5,843			5,843		
R-squared	0.146			0.147		

Notes: Rural *hukou* migrants with more than six months' residence in the urban area are included in the urban sample but are excluded from our analyses of urban households. Dependent variable: happiness score, *H* (not at all happy = 0, not happy = 1, so-so =2, happy =3, very happy =4), y = household income per capita, y_c= mean household income in the city $\bar{y}_p$- mean household income per capita in the province. Other

conditioning variables are included in the equation but not reported: age, age squared, education in years, male, minority, household wealth per capita, logarithmic of city population (ln *citypop*, ten thousand), constant term. Models 1-3 exclude the city population while models 4-6 include it. We run the regressions at household level.

Table 2. Happiness functions reporting relative income coefficients, rural China, 2013

	(1)	(2)	(3)	(4)
Ln y	0.068***	0.070***	0.074***	0.068***
	(0.012)	(0.012)	(0.011)	(0.012)
Ln y_v	0.049**			0.075
	(0.023)			(0.072)
Ln y_{co}		0.045*		-0.047
		(0.024)		(0.074)
Ln y_p			0.082**	0.063
			(0.037)	(0.041)
Observations	9,801	9,801	9,801	9,801
R-squared	0.029	0.029	0.029	0.029
Household relative to village living standard:		*Village relative to county living standard:*		
Ln y	0.032***		0.052***	
	(0.011)		(0.011)	
Much above	0.843***		0.681***	
	(0.080)		(0.095)	
Above	0.301***		0.227***	
	(0.020)		(0.023)	
Below	-0.454***		-0.290***	
	(0.021)		(0.021)	
Much below	-0.926***		-0.523***	
	(0.049)		(0.049)	
Observations	9,322		9,109	
R-squared	0.167		0.091	

Notes: Dependent variable: happiness score, H (not at all happy = 0, not happy = 1, so-so =2, happy =3, very happy =4), y = household income per capita, mean household income per capita in the village= y_v = mean household income per capita in the county = y_{co} mean household income per capita in the province =y_p . Conditioning variables are included in the equation but not reported: age, age squared, education in years, male, minority, household wealth per capita, constant term. In the lower part of this table, model 1 includes the independent variable household relative to village living standard while model 3 includes village relative to county living standard. We run the regressions at household level.

Table 3. Median and cut-off points in real terms, in urban, rural, and national China, 2002, 2013, and 2018

		Median value	Poor line value	Rich line value
Of median		=100% of median	=40% of median	=160% of median
Urban	2002	9875	3950	15800
	2013	24952	9981	39923
	2018	30080	12032	48128
Rural	2002	3580	1432	5728
	2013	7924	3170	12678
	2018	10635	4254	17015
National	2002	4958	1983	7933
	2013	13964	5586	22343
	2018	19555	7822	31288
Of median		=100% of median	=60% of median	=140% of median
Urban	2002	9875	5925	13825
	2013	24952	14971	34933
	2018	30080	18048	42112
Rural	2002	3580	2148	5012
	2013	7924	4754	11093
	2018	10635	6381	14888
National	2002	4958	2975	6941
	2013	13964	8379	19550
	2018	19555	11733	27377

Source: CHIP surveys, 2002, 2013, and 2018. Notes: Two definitions of income poverty are reported: households having income below 40%, or 60%, of the median income. The corresponding definitions of wealthy households are those having income above 160%, or 140%, of the median income. The percentage of households in common prosperity are those between the rich and the poor. All the numbers are reflated to the year 2018 and are weighted. We use urban median, rural median, national median separately, so the cut-off points are not the same for each sample.

Table 4. The percentage of households which are poor, commonly prosperous, and rich, urban, rural and national China, 2002, 2013, and 2018

	poor	Commonly prosperous	Rich

Of median		<=40% of median	40% to 160% of median	>=160% of median
Urban	2002	6.0	75.0	19.0
	2013	8.9	69.9	21.2
	2018	8.9	67.7	23.3
Rural	2002	7.4	69.5	23.1
	2013	13.8	59.8	26.4
	2018	12.3	63.0	24.8
National	2002	11.6	58.8	29.6
	2013	18.4	50.4	31.2
	2018	16.8	53.7	29.4
National	2002	10.5	64.6	24.9
price-corrected	2013	16.7	55.3	28.1
	2018	14.8	58.5	26.8
Of median		<=60% of median	60% to 140% of median	>=140% of median
Urban	2002	19.2	54.4	26.3
	2013	21.3	50.1	28.7
	2018	21.9	47.8	30.3
Rural	2002	20.5	49.7	29.7
	2013	25.8	41.6	32.7
	2018	25.1	43.4	31.5
National	2002	25.9	39.1	35.0
	2013	31.0	32.2	36.7
	2018	29.0	36.2	34.8
National/	2002	23.6	44.9	31.5
price-corrected	2013	28.7	37.0	34.4
	2018	26.9	40.2	32.9

Source: CHIP surveys, 2002, 2013, and 2018. Notes: Two definitions of income poverty are reported: households having income below 40%, or 60%, of the median income. The corresponding definitions of wealthy households are those having income above 160%, or 140%, of the median income. The percentage of households in common prosperity are those between the rich and the poor. We use urban median, rural median, national median separately, so the cut-off points are not the same for each sample. We correct the national numbers to achieve purchasing power parity by using (updated) indexes created by Brandt and Holz (2006).