Income Comparisons in Chinese Villages*

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Abstract

The well-being effect of income comparisons has most often been evaluated in the context of rich countries. We here appeal to very unusual Chinese panel data from Guizhou province, in which all households in the village are interviewed. This allows us to determine household rank in the village income distribution. We find no evidence of income comparisons to neighbours in terms of income levels, nor in terms of simple income rank in the village. However, the top and bottom of the income rank distribution seem to matter disproportionately, suggesting that it may be a mistake to treat rank as cardinal. Equally, we find no evidence of adaptation to income levels, but do suggest that there may be adaptation to income rank. Last, the fit between subjective income rank in the village and the actual rank is only imperfect, while the former is an important determinant of well-being.

Keywords: Happiness, income comparisons, adaptation, rank, China.

JEL codes: D31, D6, I3, O15

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I. Introduction

One of the mainstays of the recent resurgence of interest by economists in subjective well-being has been its relationship with income. This has in particular evolved around issues of causality (Gardner and Oswald, 2007, Pischke, 2010, Robert, 2012) and income comparisons (Easterlin, 1974, Clark *et al*., 2008). With respect to this latter topic, income comparisons can be to others who appear in the individual's reference group (social comparisons), or to oneself in the past (adaptation). The great normative interest in these two issues is their centrality to the question of whether higher incomes will make individuals happier. Were the causal relationship to run from well-being to income, or were both income and well-being to be caused by a third variable (parents' characteristics, for example), then the answer would be No. If there is adaptation, the answer is Yes, but not permanently. If there are social comparisons, then my higher income will make me happier, but reduce the well-being of all those who compare to me: at the aggregate level, higher incomes for all then may not lead to greater happiness for all (Easterlin, 1995).

The importance of this question has by now led to a considerable body of work. This research has used direct evidence on subjective well-being measures (such as job and life satisfaction, or happiness) to show that these are indeed often positively correlated with own income but negatively correlated with the income of some plausible reference group. The latter can be defined at some aggregate geographical level (for example, Luttmer, 2005, and Ferrer-i-Carbonell, 2005), by the income of other people who share some of the individual's characteristics (such as age, sex and education: see Clark and Oswald, 1996, and Senik 2004), by what the individual expected to earn (McBride, 2010), or even by the individual's partner (Clark, 1996).

The analysis of subjective well-being data is not the only way to proceed in this respect. Alternative approaches include the analysis of individual observed behaviour, experimental approaches, asking individuals to choose between hypothetical alternatives,[1] and neurological experiments. Some of these are surveyed in Clark *et al*. (2008).

Overall, although the debate continues, much of this work has concluded that well-being is at least partly relative with respect to income. The open question remaining is whether the relative income effect is small enough to ignore, or rather is prevalent enough to substantially change our policy conclusions.

It is easy to criticize any empirical work, and research on well-being is no exception in this respect. One of the serious drawbacks in this literature has been the identification of the reference group. We only very rarely know to whom individuals actually compare, and as such simply have to impose a reference group in order to carry out empirical analysis. Even when we do know to whom individuals compare (as in Senik, 2009, Clark and Senik, 2010), the income of the reference group is not adequately measured.[2]

A second sticking point is that almost all of the analysis that has been carried out to date concerns rich countries. But most people in the world do not live in rich countries. The constraint here is most likely one of data availability.

The current paper is able to overcome both of these problems. In particular, we use panel data from a number of Chinese villages. These villages are fairly isolated, so that the income of

[1] Individuals report preferences for lower absolute incomes. When they are asked to choose between situations A (your yearly income is $50,000; others earn $25,000) and B (your yearly income is $100,000; others earn $200,000), individuals have a marked preference for A over B. This taste for relative position differs by domain: in Alpizar *et al*. (2005) it is stronger for cars and housing, and weaker for vacations and insurance.

[2] One possibility is to ask individuals about their reference group and then ask them how much their reference group earns (or where they stand in relation to this reference group), as in de la Garza *et al*. (2010). There is however a potential associated problem of endogeneity here, whereby individuals might imagine that others earn more because their own current level of well-being is relatively low.

others in the village is a natural yardstick for reference-group income. In addition, all households within the village are interviewed, so that we have complete information on the income distribution. This allows us to not only compare the individual to the mean income in the village, but also to calculate their exact rank in the village income distribution. As will be seen below, this is a key distinction.

The remainder of the paper is organized as follows. Section 2 considers some of the existing evidence on well-being and income comparisons in China, and Section 3 then presents our dataset. Section 4 discusses our main empirical results regarding comparisons to others within the village and comparisons to oneself in the past. Last, Section 5 concludes.

II. Existing Literature

There are at least two reasons to be interested in China. The first is that is the most populous country, accounting for over 19% of the world's population. The second, in the context of the current paper, is that is has experienced almost unprecedented levels of economic growth over the past 25 years, on the order of roughly ten percent per annum in real GDP per capita.[3] This has led to rises in real GDP per capita of an order of magnitude in the space of only one generation.

We would like to know how these movements in income have translated into well-being. What might be the Subjective Well-Being consequences of such growth? While Chinese economic performance over the past 30 years has been very impressive, a parallel can be made with the post-war experience of another Asian country: Japan. In the 1950s/early 1960s, Japan was a relatively poor country, but then experienced unprecedented growth. Between

[3] Chow and Li (2002) report an exponential rate of growth of real GDP of 9.7% between 1978 and 1998, over half of which is due to capital growth, and a third of which reflects increased productivity.

1962 and 1987 Japanese GNP per capita (in real terms) rose 3.5-fold, growing from 22 percent of the United States level in 1962 to a figure of 77 per cent in 1987. Easterlin (2005) and Sacks *et al*. (2011) have discussed the well-being impact of this growth.

Cross-country aggregate regressions of average well-being on real income per capita typically reveal a positive concave relationship: greater real GNP per capita goes hand-in-hand with higher average happiness scores. In the early 1960s, Japan had real GNP per capita somewhere between that of Cuba and Poland, and was in the middle of such a curve (see Figure 1 of Easterlin, 2005). As income rose in Japan, it might be expected that the Japanese would become substantially happier, following the cross-section concave relationship. Easterlin considers annual indices of life satisfaction which he maps to real GNP per capita over the 1958-1987 period. The time-series relationship between well-being and income in fact turns out to be essentially flat (although see Sacks *et al*., 2011, for a critical discussion of this result). Rising income within the country then did not bring rising average happiness, despite the strong positive cross-section relationship across countries. This is of course what we understand by the Easterlin paradox.

We will not be able to map out such time-series relationships here, due to a lack of sufficiently long-run data.[4] However, we can use regression analysis applied to a short panel dataset in China to see if there is any evidence of the social comparisons and adaptation which are often suggested as explanations for the Easterlin paradox.

We first know that we can reproduce the typical positive within-country cross-section relationship between well-being and income for China. Figure 1, taken from Clark and Senik

[4] Inglehart *et al*. (2008) present a series of graphs plotting average happiness (on a one to four scale) against time in different countries, based on the first four waves of the World Values Survey. That for China is negative, although not spectacularly so. Easterlin, in this volume, provides further evidence of a lack of happiness growth over time in China.

(2011), depicts the income decile-happiness gradient in China in 2007 (based on World Values Survey data). The fact that in a given society the rich are happier than the poor is a well-established and undisputed empirical finding in this literature, and here China seems to be no exception.

There have been a number of recent contributions which have considered the determinants of well-being in China, some of which have taken comparison effects into account. Appleton and Song (2008) conclude that the life satisfaction reported by urban Chinese is affected by status considerations, and Smyth and Qian (2008) analyse data from 31 Chinese cities in September 2002, finding that the log of average monthly income in the city in which the respondent lives is negatively correlated with happiness, controlling for own income. Gao and Smyth (2010) appeal to two different datasets to present some evidence that job satisfaction is negatively related to reference group income, where this latter is either average income in the firm in which the respondent works, or the predicted income of "people like me" (as in Clark and Oswald, 1996).

One of the key contributors to this literature has been John Knight, who has written a series of papers using Chinese data from the 2002 CHIP national household survey. Unusually, this survey included not only questions on subjective well-being but also asked direct questions about who individuals considered as their reference group. Knight *et al*. (2009) use cross-section data on 9,200 Chinese households to show that comparisons in China are essentially local, in that 70% of individuals see their village as their reference group. Further, conditional on both own and village income, those who say that their own income is much above the mean level in the village also report higher happiness scores. Knight and Gunatilaka (2010*a* and 2010*b*) also underline the importance of relative income, and the role of changing reference groups, in China.

This evidence suggestive of income comparison effects in well-being in China mirrors work on observable behaviour, which has underlined the importance of status. For example, Brown *et al*. (2011) use data from a Chinese household panel, and show that spending on banquets, funerals and gifts is consistent with status-seeking behaviour. A number of related contributions underline the importance of status in China *via* the marriage market. The sex imbalance in the Chinese marriage market makes rank very pertinent for parents who have sons, with knock-on effects on parents' labour supply (Wei and Zhang, 2010) and housing investments (Wei *et al*., 2012), for example.

We here contribute to this literature on income comparisons in China. Inspired by Knight's work, the reference group we retain is the village. The dataset that we use is eminently suitable for this purpose. First, it comes from 26 fairly remote villages, in which it is easy to argue that the income of the other villagers is indeed salient for comparison purposes. Second, all households within each village are surveyed, affording us a complete picture of the household's position in the local income distribution. The data is described in the next section.

III. Data and methods

We here appeal to data from the IFPRI (International Food Policy Research Institute) "Public Policy and Rural Poverty" Program Survey. This survey was jointly conducted by IFPRI, the China Academy of Agricultural Sciences and Guizhou University. Mainland China (excluding Hong Kong and Macau) consists of 22 provinces, five autonomous regions, and four municipalities. The IFPRI survey was carried out in Guizhou Province, which is located in China's south (see Figure 2). Guizhou is relatively undeveloped and has the lowest per capita GDP amongst Chinese provinces.

The Guizhou data is extremely useful for the analysis of income comparisons for a number of reasons. First, the dataset is panel, with waves in 2004, 2007 and 2010. Second, at each wave individuals are interviewed within households, and serious attempts are made to interview all of the households within 26 different villages in Guizhou. As such we have almost complete information on the village income distribution, and the relative remoteness of the villages from each other makes the village a natural reference group, as argued above. Last, in the 2010 wave, the head of household provided information on various measures of satisfaction, including satisfaction with income.

We therefore have satisfaction at one point in time, in 2010. As such, we cannot appeal to standard panel data techniques. We can however introduce a lagged independent variable, and consider satisfaction in 2010 as a function not only of income in 2010 but also of income in 2007. This will allow us to address the issues of both comparisons to others (in the same village) at a point in time and comparisons to oneself in the past (three years earlier).

The measurement of income in rural China is not the same as in OECD countries. Household income was constructed here as an aggregate of a number of different components. First, the individual income of all household members was calculated by summing up the wage income earned from regular job, income from an odd jobs, and self-income. These individual incomes were then added up by household to yield total household wage income. Additional earnings at the household level from *a)* agricultural produce, *b)* livestock and poultry produce and *c)* any other source of income were then added to household labour income. In the 2010 round of the survey, income from gifts received by the household, both cash and in kind, was also included in the aggregate household income. The final household income figure does not include the assets owned by the households. Household assets were similarly constructed by

summing up the values for variable, fixed, agricultural, and livestock and poultry assets at the household level

Average household income in 2010 was 16157.75 Renminbi (about 2400 US Dollars, using an exchange rate of 6.7). This income was very unequally distributed. The 2010 D9/D1 figure in the Guizhou data is 14.3, and the Gini coefficient is 0.547. By way of comparison, the highest OECD Gini coefficients are around 0.5 (found in Chile and Mexico); the figure in the US is 0.4, in France 0.29 and in Denmark 0.25.

There are 25 villages in the 2010 wave. Appendix Table 1 shows the number of households interviewed per village. The smallest village has 36 households interviewed, and the largest 256.

Our key dependent variable is satisfaction with income. Each head of household is asked "*Are you satisfied with your current income?*", where the replies are on five-point ordered scale from "Not Satisfied" to "Very Satisfied". Appendix Table 2 shows the distribution of the replies to this income satisfaction question. As can be seen, Guizhou villagers are not particularly satisfied with their income, and we see *a priori* only little evidence of Sen's "Happy Slaves" here. Over 40% of respondents are in the bottom satisfaction category, which is the mode, and the median response is only two on the one-to-five scale. The mean satisfaction score is only slightly over two. Given that Cummins (2003) suggests that in many cases average subjective well-being is somewhere around 75 percent of the scale maximum, this is a remarkably low figure.

There is however a certain amount of variation in this satisfaction figure, and it is this that we would like to investigate. We have two empirical questions. First, we would like to establish the relationship between own household income and income satisfaction. Second, and perhaps

more importantly, we want to see which aspects of the distribution of household income in the village matter for income satisfaction, conditional on the household's own income. The empirical results follow in the next section.

IV. Chinese comparisons

IV.1 Comparing to Neighbours: Basic Results

The first column of Table 1 shows the basic relationship between income satisfaction and a number of demographic indicators. These are all linear regressions, with clustering at the village level, estimated on the 2010 Guizhou data. Income satisfaction does indeed rise with own income. We use log income, rather than the level, here as this specification is preferred by the data (and this is the typical functional form that appears in the literature). This income effect is conditional on the level of education, and in column 1 of Table 1 there is something of a positive relationship between education and income satisfaction. Dropping education as a right-hand side variable does increase the size of the coefficient on own income here, but not very much so. We find no evidence of a sex effect (47 per cent of the household heads are women in this regression sample), nor a relationship with age. Last, given household income, income satisfaction falls with the number of children, which is arguably uncontroversial (as is often found in existing work).[5]

Column 2 of Table 1 adds the log of median village household income to the regression. The estimated coefficient on this new variable is positive and significant: conditional on the household's own income, income satisfaction is <u>higher</u> in richer villages. This finding thus runs contrary to the idea that individuals compare to their neighbours, so that they are more

[5] All of the results reported in this paper can be reproduced using a measure of equivalent income, where household income is divided by the square root of the number of individuals in the household.

satisfied when their neighbours are poorer. Research suggesting such comparisons has been found in American (Luttmer, 2005), Canadian (Helliwell and Huang, 2010), Latin American (Graham and Felton, 2006), and South African (Kingdon and Knight, 2007) data.[6]

However, not all existing research has identified such comparison effects. Clark *et al*. (2009) use Danish register information on income in small neighbourhoods (typically of a few hundred households), matched to ECHP data on satisfaction with economic conditions. They find that, conditional on own household income, respondents report higher satisfaction levels when their neighbours are richer. Altruism is one possible explanation of such a positive correlation; another is local public goods, such as infrastructure or lower crime rates, which are associated with local income levels.

Column 3 of Table 1 attempts to separate out these contrasting relative income and local public-good effects by introducing the household's normalized rank in the village income distribution. This normalized rank is calculated as the rank in the village divided by the number of households in the village: the normalized rank is just over zero for the poorest household in the village, and one for the richest household. Such measures of income rank have previously been appealed to in the context of economic satisfaction (Clark *et al*., 2009), job satisfaction (Brown *et al*., 2008), life satisfaction (Boyce *et al*., 2010) and effort at work (Clark *et al*., 2010). When rank is added to the regression (in column 3 of Table 1), the coefficient on median village household income becomes more positive (as a standard omitted-variables argument would suggest, if individuals enjoy being high rank). The estimated coefficient on rank itself is positive, but is not significant.

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[6] When we include median income in the regression, the coefficient on own income is no longer statistically significant. This might be an indication that village resources and community solidarity are predominant in the determination of household income satisfaction.

The empirical results in Table 1 might be thought of as suggesting that income comparisons are primarily a rich-country phenomenon. As discussed in Clark and Senik (2011), this is a critical piece of information for development policy purposes. So far, Chinese income growth would seem to be a good thing for all concerned. There are no negative externalities from others' higher income: if anything the spillovers seem to be positive.

IV.2 Non-linear Rank Effects

It is worth mentioning one potential drawback of much of the existing literature: it has considered rank as a cardinal variable, so that moving from the 20th to the 10th percentile is just as important as going from the 70th to the 60th, or indeed from the 100th to the 90th. However, some rank movements (those at the extremes of the distribution, perhaps) might be thought of as being more important than are others. This is what we investigate in Table 2.

The first column of this table introduces a dummy variable for being in the top income decile in the village (rather than just the continuous rank variable which appeared in column 3 of Table 1). Being in the top decile in the village does indeed attract a positive significant coefficient in the income satisfaction regression. Equally, in column 2 being in the bottom 25% of the village income distribution is associated with lower income satisfaction. Both of these correlations are conditional on both the household's own income and village median income.

As we know the entire village income distribution, we can experiment with many different kinds of rank variables. Column 3 of Table 2 shows that a dummy variable for having the highest income of any household in the village attracts a positive coefficient, which is indeed larger in size that that of being in the top decile in the first two columns. However, this coefficient is not significant at standard levels (due to the large standard error, reflecting the

fact that we only have one observation on the top earner in each of the 25 different villages).[7] These conclusions as to the potentially non-linear effects of rank survive when all three of our dummy variables are introduced together in column 4 of Table 2.

IV.3 Heterogeneity

We can also investigate heterogeneity in some of these relationships, by interacting the various income variables in Table 2 with individual characteristics.[8] Some suggestive relationships ensue. In particular, immigrants to the village seem to be more sensitive to the negative effects of low rank. On the contrary, men are significantly more sensitive to high rank than are women. Last, interactions with education did not reveal anything of note with respect to the rank variables. However, these did show that the positive coefficient on median village income was found only for the lowest-educated (illiterate or did not graduate from primary school), which is consistent with local public goods being essentially redistributive, or with those at the lower end of the income distribution taking others' income in the village as a signal of their own expected future income (as in Senik, 2004).

IV.4 Habituation in Panel Data

As noted in Section 3, we here have panel data on Chinese households, who were interviewed in 2004, 2007 and 2010. As the dependent variable, income satisfaction, was only asked in 2010 we cannot estimate a panel well-being equation. However, we can introduce lagged explanatory variables into the regression. We now do so with respect to income in order to investigate potential adaptation to income: for a given level of 2010 income, does higher income in 2007 imply lower income satisfaction in 2010?

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[7] Experiments with a dummy variable for having the lowest income did not reveal any results of interest, however.

[8] These tables are not produced here, for space reasons, but are of course available on request.

The results are presented in Table 3. In column 1 of this table there is no evidence of habituation to income for this Chinese sample. On the contrary, past household income is positively associated with current income satisfaction.

Column 2 continues this exploration of the role of the past in individuals' current subjective evaluations, but now introducing past income rank, rather than past income level, into the analysis. Both current and past top decile attract positive coefficients, although neither is significant. With respect to low rank, past low rank attracts a negative and significant estimated coefficient.

It is worth noting that there is a substantial amount of income rank mobility in this dataset, so that individuals who are high (or low) ranked in 2010 were not necessarily so in 2007. In the regression sample in column 2 of Table 3 we have 147 individuals who were in the top income decile in 2010: only 44 of these (30%) were in the top income decile three years earlier. Equivalently, only 36% of the 329 individuals in the bottom 25% in 2010 were also found there in 2007. Both the high and low rank dummies are significantly correlated between 2007 and 2010, but with relatively low correlation coefficients of 0.16 and 0.19 respectively.

Finally, column 3 investigates a new kind of adaption that has not to our knowledge been investigated in the context of subjective well-being: adaptation to rank. This is carried out by interacting the current and lagged dummy variables for high rank to see if the positive well-being return of high rank today is smaller if the individual was also high rank in the past. An analogous operation is carried out with respect to low rank.

Both of these interactions attract statistically significant estimated coefficients. The results suggest that being in the top decile in 2010 only has a well-being impact for those who were not in the top decile in 2007 (the sum of 0.310, 0.215 and -0.457 is statistically zero). Equally,

those who both are now and were in 2007 in the bottom quarter of the village income distribution report levels of income satisfaction that are *ceteris paribus* equivalent to those of individuals who were out of the bottom quarter in both years (-0.204 - 0.411 + 0.448 = 0, statistically). As such, although we cannot identify any adaptation to income levels, we do find evidence that is consistent with adaptation to rank in the village income distribution.

IV.5 Subjective Income Rank

Last, the Guizhou data includes direct information on the individual's subjective evaluation of their income rank in 2010. Individuals are asked "*Within your village what socioeconomic level does your family's income place you?*", with responses on a five-point scale from "*Much below average*" to "*Much higher than average*". The distribution of answers appears in Appendix Table 3. Less than ten percent of respondents consider themselves to be above average.

Combining the top two responses into one category, subjective income rank predicts income satisfaction, even when we control for both the household's own income and for the household's income rank. The results here appear in Table 4. The omitted income rank category is "*Much below average*".

What Chinese villagers perceive as their income rank is therefore something partly different from their objective position in the village income distribution. Reassuringly, subjective income rank and our objective calculation of the normalized income rank in the village are correlated. The average normalized income rank of those who report their position as "*Higher than average*" is 0.57 (i.e. they are on average at the 57th percentile); that of those who say "*Below average*" is 0.49 and that for individuals who say their income is "*Much below average*" is 0.39. However, the fact that subjective rank remains important even controlling

for the objective rank in the village suggests that something else is at play. In particular, changing reference standards may explain why fewer than ten percent of villagers see their income as above average. The identification of the relationship between such objective and subjective measures likely represents an important task for future work.

V. Conclusions

Despite the intrinsic interest in the drivers of well-being, and the possibility that comparisons (of income, or something else) matter, there are still significant gaps in our understanding. In particular, despite the fantastic growth in the literature over the past 15 years or so, we still know far less about the developing world than we do about OECD countries.

This paper has considered income comparisons in China, using a novel panel dataset in which all households in a number of Chinese villages in Guizhou province are interviewed. This allows us to see whether individual well-being is affected by the income of others in the same village.

Our first set of results suggest only little role for income comparisons. Individuals are more satisfied with their income when their neighbours are richer, rather than the other way around. Our complete information on the village income distribution allows us to pick out the household's exact position, so that we can consider the household's percentile position, rather than just a measure of centrality of others' incomes, such as the mean. However, the normalized measure of the household's rank in the village income distribution has no significant impact on income satisfaction (controlling for own income and village median income).

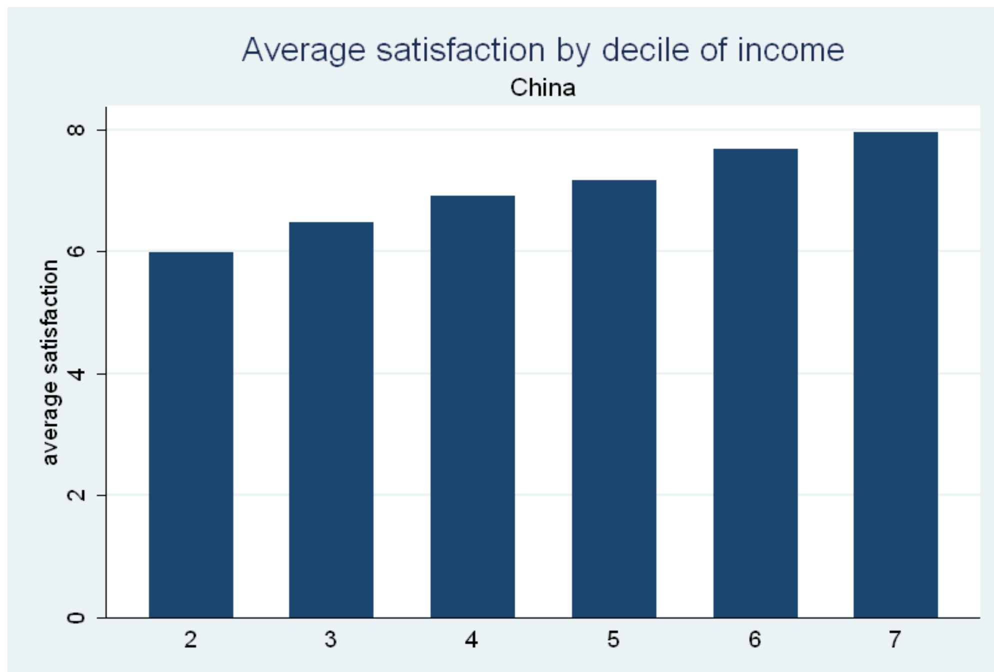
We do find evidence of income comparisons when we treat rank non-linearly. In particular, it seems that having low (bottom 25%) or high (top 10%) income rank does matter for satisfaction (suggesting that moving through the middle of the income distribution actually does not make that much of a well-being difference).

We also consider adaptation, and find no evidence of adaptation to income levels. However, the data does suggest that there is adaptation to income rank, so that currently being top-ranked matters less for well-being when the household was also top-ranked in the previous wave of the survey.

Last, subjective income rank is correlated with actual income rank, but not perfectly so. As the former is an important driver of well-being it would seem useful to understand why individuals do not perfectly perceive their position in the village income distribution.

Overall, these results provide some additional evidence that income comparisons take place, even in relatively poor countries. Our findings that in China these comparisons (both to others and over time) seem to operate via income rank rather than income level are we think new. In addition, we believe that there is much more to be said about the possible non-linear effects of rank. We here suggest that the bottom quarter and the top 10% matter more than just a simple continuous measure of the household's rank in the village income distribution. In this case the analysis of well-being arguably needs to pay more attention to the two ends of the income distribution, perhaps both in level and rank terms, rather than settling for simple measures of centrality.

Figure 1. Income and Happiness in a Chinese cross-section.



Source: WVS. China, 2007. Reproduced from Clark and Senik (2011).

Note: We group together the three deciles (7, 8, 9) which were only rarely reported in the Chinese sample. We have dropped the two extreme deciles.

Figure 2. Map of China showing Guizhou province.

Source: Wikipedia.

Table 1. Income Satisfaction: Own and Village Income

Log Household Income	0.071	0.057	-0.033
	(0.018)***	(0.040)	(0.080)
Male	-0.006	-0.001	-0.001
	(0.043)	(0.025)	(0.026)
Age	-0.002	-0.002	-0.002
	(0.007)	(0.005)	(0.005)
Age-Squared/1000	0.050	0.051	0.048
	(0.065)	(0.054)	(0.053)
Married	0.004	0.002	0.002
	(0.059)	(0.066)	(0.065)
Did not graduate from primary school	0.103	0.093	0.098
	(0.062)*	(0.069)	(0.069)
Primary School Graduate	0.206	0.199	0.200
	(0.080)**	(0.097)*	(0.096)**
Did not graduate from junior high	0.138	0.121	0.126
	(0.077)*	(0.106)	(0.106)
Junior high graduate or above	0.125	0.097	0.099
	(0.072)*	(0.082)	(0.082)
No. of children	-0.040	-0.039	-0.042
	(0.016)**	(0.034)	(0.033)
Log Median Village Household Income		0.233	0.300
		(0.120)*	(0.136)**
Village Normalised Income Rank			0.368
			(0.365)
Constant	1.329	-0.657	-0.639
	(0.217)***	(0.898)	(0.904)
Observations	2802	2802	2802
R-squared	0.01	0.02	0.02

Notes: Robust standard errors in parentheses;
* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 2. Income Satisfaction: Non-Linear Rank Effects

Log Household Income	0.033	-0.040	0.051	-0.044
	(0.042)	(0.061)	(0.040)	(0.060)
Log Median Village Household Income	0.250	0.307	0.236	0.310
	(0.121)**	(0.136)**	(0.119)*	(0.135)**
Top 10% Village Normalised Income Rank	0.155	0.238		0.220
	(0.082)*	(0.101)**		(0.105)**
Top Income Rank in Village			0.372	0.342
			(0.269)	(0.292)
Bottom 25% Village Normalised Income Rank		-0.216		-0.222
		(0.122)*		(0.121)*
Constant	-0.625	-0.423	-0.635	-0.401
	(0.897)	(0.877)	(0.900)	(0.880)
Observations	2802	2802	2802	2802
R-squared	0.02	0.02	0.02	0.02

Notes: Robust standard errors in parentheses;
* significant at 10%; ** significant at 5%; *** significant at 1%;
All regressions include the other control variables in Table 1.

Table 3. Income Satisfaction and Adaptation

Log Household Income	-0.013	0.004	-0.002
	(0.076)	(0.079)	(0.080)
Log Median Village Household Income	0.108	0.208	0.204
	(0.137)	(0.167)	(0.167)
Top 10% Village Normalised Income Rank	0.191	0.189	0.310
	(0.126)	(0.126)	(0.165)*
Bottom 25% Village Normalised Income Rank	-0.089	-0.064	-0.204
	(0.144)	(0.144)	(0.168)
Lagged Log Household Income	0.217		
	(0.045)***		
Lagged Top 10% Village Normalised Income Rank		0.130	0.215
		(0.171)	(0.170)
Lagged Bottom 25% Village Normalised Income Rank		-0.272	-0.411
		(0.094)***	(0.116)***
Top 10% Village Normalised Income Rank Both Now and Past			-0.457
			(0.256)*
Bottom 25% Village Normalised Income Rank Both Now and Past			0.448
			(0.188)**
Constant	-0.676	0.250	0.327
	(1.217)	(1.225)	(1.222)
Observations	1456	1456	1456
R-squared	0.05	0.04	0.04

Notes: Robust standard errors in parentheses;
* significant at 10%; ** significant at 5%; *** significant at 1%;
All regressions include the other control variables in Table 1.

Table 4. Income Satisfaction and Subjective Income Rank

Log Household Income	-0.051
	(0.060)
Subjective Rank "*Higher than average*"	0.862
	(0.218)***
Subjective Rank "*Average*"	0.517
	(0.135)***
Subjective Rank "*Below average*"	0.087
	(0.146)
Log Median Village Household Income	0.260
	(0.136)*
Top 10% Village Normalised Income Rank	0.150
	(0.108)
Bottom 25% Village Normalised Income Rank	-0.187
	(0.115)
Constant	-0.165
	(0.892)
Observations	2794
R-squared	0.08

Notes: Robust standard errors in parentheses;
* significant at 10%; ** significant at 5%; *** significant at 1%;
All regressions include the other control variables in Table 1.

Appendix Table 1.
Number of Households Interviewed per Village, 2010 Guizhou Data

No. of Households	Percentage
36	1.1
40	1.3
45	1.4
48	1.5
56	1.8
61	1.9
63	2.0
72	2.3
86	2.7
89	2.8
102	3.2
112	3.6
123	3.9
125	4.0
129	4.1
147	4.7
161	5.1
167	5.3
168	5.3
184	5.8
213	6.8
218	6.9
221	7.0
230	7.3
256	8.1

Appendix Table 2. The Distribution of Income Satisfaction

	Frequency	*Percentage*
Not satisfied	1,295	42.1
Not too satisfied	896	29.2
Average	481	15.7
Rather satisfied	374	12.2
Very satisfied	28	0.9
Total	**3,074**	**100.0**

Appendix Table 3. The Distribution of Subjective Income Rank

Within your village what socioeconomic level does your family's income place you?

	Frequency	*Percentage*
Much higher than average	9	0.3
Higher than average	261	8.4
Average	1,335	42.9
Below average	1,088	35.0
Much below average	420	13.5
Total	**3,113**	**100.0**

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