

# Subjective Well-being in China: The Role of Relative Income, Gender and Location\*

M Niaz Asadullah<sup>1234</sup>  
Saizi Xiao<sup>1</sup>

1: Faculty of Economics, University of Malaya, Malaysia

2: School of Economics, University of Reading, UK

3: ESRC Centre on Skills, Knowledge and Organisational Performance, Oxford, UK.

4: IZA, University of Bonn, Germany.

**Draft prepared for presentation in the Chinese Economists Society (CES) 2015  
conference 12-14 June 2015**

**Abstract:** We use data from two rounds of Chinese General Social Survey (CGSS) to study the determinants of subjective well-being in China over the period 2005-2010 during which self-reported happiness scores show an increase across all income groups. Ordered probit regression of well-being function reveals large influence of gender, rural residency and household income. Net of control for demographic attributes, health, employment and education status, household assets, the influence of past and future income and province dummies, we find that women, urban resident and people with higher income are happier in China. More schooling and better health are positively and significantly correlated with well-being. Sub-sample analysis reveals that the rich only cares about the relative income whereas the effect of absolute income dominates in case of the poorer section. At the same time, we find significant relative income effect in determining well-being among the poor. The influence of absolute income is larger among female (rural residents) causing a happiness gap vis-à-vis males (urban residents) in the conditional (unconditional) distribution of happiness. Our results suggest that while further growth in private income and reduction in rural poverty will enhance well-being in China, policies that reduce inequality are likely to boost well-being in both rural and urban locations.

**Key words:** China, happiness, gender, income, poverty, well-being.

**JEL classification:** O12, I30, I31.

---

\* This study is the outcome of the "The China Model: Implications of the Contemporary Rise of China (MOHE High-Impact Research Grant)" project UMC/625/1/HIR/MOHE/ASH/03. Data analyzed in this paper come from the research project "Chinese General Social Survey (CGSS)" of the National Survey Research Center (NSRC), Renmin University of China. We appreciate the assistance in providing access to the data by NSRC. The views expressed herein are the authors' own. We also thank participants in the Chinese Economists Society (CES) 2015 conference for helpful comments. Corresponding author: M Niaz Asadullah, Faculty of Economics and Administration, University of Malaya. Email: [m.niaz@um.edu.my](mailto:m.niaz@um.edu.my)

## 1. Introduction

There is an ongoing debate over trends in and the determinants of hedonic well-being in China. Income matters for happiness by helping to meet basic needs as well as smooth well-being in times of economic shocks and crises (Johnson and Krueger, 2006). Yet people's perceived sense of happiness doesn't appear to have responded positively to improvements in macro-economic conditions and visible decline in income poverty. The country saw sharp decline in poverty and an unprecedented economic growth (the annual growth rate of GDP exceeding 8 percent) in the last three decades. Despite the rapid rise in real income per capita and the human development index in recent years, subjective well-being appears not to have risen (Knight and Ramani 2014). According to some studies, China has suffered a significant decrease in happiness during the last twenty years in the World Value Survey data (Easterlin et al., 2010).<sup>1</sup> Equally Song and Appleton (2008) document low levels of life satisfaction in urban China based on survey data for the year 2002. Knight, Song, and Gunatilaka (2007) argue that economic variables are relatively unimportant as determinants of happiness in China and instead emphasize on psychological and sociological factors. Together the evidence on China from the 1990s fits the 'Easterlin paradox' in that economic growth and improved physical conditions did not add to the quality-of-life; average happiness did not rise sufficiently in response to sustained macroeconomic growth.<sup>2</sup>

However Clark and Senik (2011) caution that the idea that growth will increase happiness in low-income countries cannot be rejected on the basis of the available evidence.<sup>3</sup> They argue that time-series data doesn't reflect the same relationship because cross-country time-series analyses are based on aggregate measures, which are less reliable than those at the individual level. For this reason, more analysis of subjective measures of well-being using data from low-income countries is necessary to document and build-up the international evidence on the issue.

The empirical literature on the economics of subjective well-being has grown rapidly,

---

<sup>1</sup> Wu and Li (2013) examine the subjective consequence of rising income inequality amidst the rapid economic growth in China. Based on the data from a nationally representative survey conducted in 2005, they show that, while personal income improves life satisfaction, local level income inequality has a negative effect on individuals' life satisfaction.

<sup>2</sup> Empirical support for this also comes from the broader literature on happiness in developing countries. For instance, Easterlin and Angelescu (2009) find no significant relationship between the improvement in happiness and the long term rate of growth of GDP per capita even when analysis is restricted to 9 developing and 11 transition economies which included China.

<sup>3</sup> Clark and Senik review the international evidence on the relationship between income growth and subjective well-being in developing countries highlights two important patterns: (a) income comparisons do seem to affect subjective well-being, even in very poor countries; (b) adaptation may be more of a rich-country phenomenon.

and much is known about the determinants of happiness in China based on survey data. However it is also possible that the happiness-income relationship has changed in recent years in a way not captured by older surveys and studies.<sup>4</sup> Earlier studies on China have been at times narrow in terms of study population, for instance, focusing on some specific groups such as the elderly (Mei, 1999; Liu and Gong, 2000, 2001; Tang et al., 2006), students (He, 2000; Wang and Ding, 2003; Zheng et al., 2003; Tong, 2004; Yan et al., 2004; Zhang and Zheng, 2004; Yu et al., 2005) and urban migrants (Knight and Gunatilaka, 2007; Wang, Cheng, and Smyth, 2013)<sup>5</sup>. While studies exploring the absolute income effect galore (e.g. Song and Appleton, 2008), the number of studies that additionally test for and report relative income effects is small.<sup>6</sup> Moreover some high quality studies either focuses on urban residents (e.g. Song and Appleton (2008); Smyth and Qian (2008)) or rural areas (e.g. Knight, Song, and Gunatilaka, 2007).

There are two additional possible explanations for why findings on the relationship between income and happiness in China are mixed in the earlier studies. First, economic growth has also seen sustained rise in income inequality and falling absolute incomes at the bottom end of the income distribution in rural areas (Benjamin et al 2005). This may have reduced happiness because individuals prefer equal society i.e. inequality belongs in their well-being function.<sup>7</sup> In addition, in the absence of social mobility, the poor in China will view current inequality as a predictor of future relative poverty and hence remain dissatisfied in an unequal community. Therefore the poor may feel unhappy despite rise in their absolute income in recent years. The dissatisfaction caused by growing inequality may attenuate the positive effect of income on happiness. Indeed some early studies (e.g. Brockmann, Delhey, Welzel, and Yuan, 2009) describe happiness decline in China over the period 1990–2000 as the perceived loss of well-being among “frustrated achievers”.<sup>8</sup> At the

---

<sup>4</sup> For instance, recent cross-country evidence shows that although mean happiness has not increased significantly in high income countries, it has improved considerably in low income nations for which data are available (Veenhoven and Hagerty, 2006).

<sup>5</sup> For a review of the older studies, see Chen and Davey (2008).

<sup>6</sup> Developing country studies that confirm the roles of comparison income as a determinant of subjective well-being are Knight, Song and Gunatilaka (2009) and Knight and Gunatilaka (2010) for China, Fafchamps and Kebede (2008) for Ethiopia, **Camfield and Esposito (2014)** for and Corazzini, Esposito and Majorano (2012) for a multi-country study.

<sup>7</sup> For urban China, Smyth and Qian (2008) find that those who perceive income distribution to be unequal report lower levels of happiness.

<sup>8</sup> Similar evidence is available for two transition economies, Peru and Russia, where relative instead of absolute income differences were found to be more important as determinant of happiness (Graham and Pettinato 2002). Also see Kingdon and Knight (2007) for South Africa, Carlsson, Gupta and Johansson-Stenman (2009) for India, Ravallion and Lokshin (2010) for Malawi, Asadullah and Chaudhury (2011) for Bangladesh and Guillen-Royo (2011) for Peru. For a review of the international evidence on relative income effects on subjective well-being, see Clark, Frijters and Shields (2008).

same time, if social mobility is high, inequality (or higher income of the peers) can lead to a positive effect on subjective well-being (Graham and Felton 2009).<sup>9</sup> Second, the observed relationship between happiness and income could be driven by a “focusing illusion” (Deaton, 2008). In periods of continuous economic growth, increases in income may generate no increase in happiness.<sup>10</sup> Income may be assessed relative to others or to one’s past income (Clark, Frijters and Shields, 2008). In such settings, appropriate controls for social comparisons (e.g. relative living standard compared to others in the community as well as compared to one’s past) are important but specification of the happiness function in earlier studies vary in this respect.

For the above reasons, the exact effect of income on hedonic well-being in China remains a contested issue in the literature. Higher income aspirations can reduce people’s utility leaving the relationship between income and happiness unchanged if following processes of adaptation and social comparison, income aspirations increase with people’s income as well as income of others in the community. Individual well-being depends on the absolute level of income and consumption as well as its value relative to one’s aspirations and income of others in the community. China’s fast-growing and increasingly unequal economy provides an ideal context to revisit the importance of absolute income as the fundamental determinant of happiness. Therefore in this paper we revisit the debate over absolute vs. relative incomes as correlates of subjective well-being using two rounds of Chinese General Social Surveys (CGSS) data spanning the period 2005-2010.<sup>11</sup>

In sum, none of the available published papers systematically investigate the role of absolute and relative income for both rural and urban China for the period 2010-2005. We fill this gap in the literature and in doing so add to the growing body of evidence on the importance of absolute and relative income in developing and transition economies.

---

<sup>9</sup> Consistent with this view, Jiang et al (2012) find that urban residents in China are happier when their incomes increase within their group’s income distribution.

<sup>10</sup> This hypothesis is consistent with the micro-level evidence from the German Socioeconomic Panel by Di Tella, Haisken–De New, and MacCulloch (2010) who regress life satisfaction on income and on several lags of income and find that life satisfaction adapts completely to income within four years; income growth provides only a temporary boost to life satisfaction.

<sup>11</sup> We are aware of a four studies that have looked into happiness issues in China using CGSS data. Wang and Xie (2014) use data from 2003, 2006 and 2008 rounds of CGSS but the authors focus on the role of sector of employment (public vs private) as a determinant of happiness. Chyi and Mao (2011) use 2005 round but focus on happiness among the elderly population. Liu, Xiong and Su (2013) use multiple-rounds of CGSS data to analyze the trends in the happiness but don’t formally examine the roles of absolute and comparison incomes. Lastly Wang, Pan and Luo (2015) use CGSS 2006 round to examine the impact of income inequality on happiness. For a recent review of the literature on China, see Knight and Ramani (2014).

Rest of the paper is organized as follows. Section 2 discusses the methodology. Section 3 describes the sample and data. Section 4 presents the main results. We conclude in section 5.

## 2. Methodology

Subjective well-being is widely considered as a satisfactory empirical approximation to individual utility in the economics literature (Oswald, 1997; Di Tella and MacCulloch, 2006; Kahneman and Krueger 2006; Blanchflower and Oswald, 2008). In keeping with existing studies in the literature, we estimate the happiness function for China in the following form:

$$W_i^* = a_1 + \ln(y_i)b_1 + P_i c_1 + Z_i d_1 + u_i \quad (i)$$

where  $\ln(y_i)$  is the log of level of per capita income of the respondent's household<sup>12</sup>,  $P_i$  a vector of personal characteristics such as age, minority ethnicity<sup>13</sup>, marital status, educational attainment and  $Z_i$  a vector of location dummies.  $W_i^*$  is a latent variable as what is observed is different categories of an ordered categorical variable. Subjective wellbeing in CGSS data is measured by using responses to the question, "In general, do you think your life is happy or not?", on a 5 point likert scale. The higher the number the happier the respondent is. Hence Eq. (1) is estimated using an ordered probit estimator since there is an inherent ordering in our measure of well-being,  $W_i$ .

The income variable,  $y_i$ , could be picking up the effect of other variables such as economic shocks, poor health status and influence of geography (e.g. distance from coastal areas). Therefore, we additionally control for economic shock (e.g. unemployment)<sup>14</sup> and health status of the respondent as well as a full set of location dummies. Estimate of the correlation between absolute income and happiness obtained from equation (1) can also proxy for factors such as income relative to others in the community and income relative to that in the past. The correlation between happiness and income may be the outcome of comparison of own income with one's previous incomes or the economic status of others in the community (Deaton, 2008). It is possible that, temporal increases in income will have no influence on happiness. If so, controlling for relative living standard -- compared to others in the community and/or compared to one's past economic status -- we don't expect a correlation between happiness and income. Therefore we expand equation (i) in the following

---

<sup>12</sup> Oshio, Nozaki, and Kobayashi (2013) find the association between relative income and happiness to be stronger for individual income than family income in China. However individual income is subject to greater measure bias than household income. Hence we rely on the latter in this study.

<sup>13</sup> The lifestyle and attitudes of ethnic minorities may positive affect their happiness compared to the majority, the Han group (Knight et al. 2014).

<sup>14</sup> On the role of unemployment as a determinant of happiness, see Clark and Oswald (1994).

way:

$$W_i^* = a_2 + \ln(y_i)b_2 + P_i c_2 + Z_i d_2 + E_i e_2 + e_i \quad (\text{ii})$$

where  $E_i$  a vector of relative economic position and income related expectations. The main hypothesis tested in equation (ii) relates to the importance of income. We expect absolute income to be positively linked to happiness but only until basic needs are met. For individuals with income sufficiently high to escape food insecurity and absolute poverty, additional income should not matter for happiness. To test this directly we estimate another version of equation (ii) where we additionally control for household economic status:

$$W_i^* = a_3 + \ln(y_i)b_3 + P_i c_2 + Z_i d_3 + E_i e_3 + X_i f_3 + v_i \quad (\text{iii})$$

where the vector  $X_i$  comprises of household specific asset variables such as car and house ownership.

In order to model relative income effects, we use two questions in CGSS. One question asked respondents to indicate on a scale of 1-5 to indicate own family economic status to others in the same locality. The second question is about the respondent's their perceived socio-economic position in the society 10 years ago, at present and 10 years later. We use subjective responses to both questions as measures of relative income. In addition, we consider an alternative approach using mean income of the community in the wellbeing function as a measure of relative income of "others". This is not our preferred measure of relative income since CGSS does not contain information on income of all the households in sample communities. We nonetheless discuss the findings for comparison purposes, albeit acknowledging the data limitation. Lastly we use response to a question about economic status 10 years later to control for expectations and aspirations.<sup>15</sup>

It should be noted that income is often viewed as an endogenous variable in the wellbeing equation. Unmeasured personality differences (e.g. optimism and extrovert personality) and health status may simultaneously determine happiness and income therefore confounding the estimated effect of absolute income (Helliwell and Huang, 2005). Recent research however report a significant and positive income effect on happiness even after dealing with potential endogeneity biases and the possibility of reverse causality (e.g. Powdthavee, 2009; Li, Liu, Ye, and Zhang,

---

<sup>15</sup> This approach is similar to Knight, Song, and Gunatilaka (2007) who collected used 2002 survey data to model relative income effect in terms of comparisons within the village and over time (past and expected incomes in the future).

2014).<sup>16</sup> Nonetheless we address some of these concerns in our analysis. In CGSS dataset, we have information on exposure to adverse economic shocks and health status of the respondent and these are already controlled for in equation (i). However, CGSS does not have information on personality traits of individuals. One solution to this is to instrument household income using information on household assets<sup>17</sup>. But assets may directly impact happiness independent of its contribution to household income. Therefore we include these as additional controls in equation (iii). In sum, while we don't directly address the problem of endogeneity bias in the absolute income effect, we significantly reduce scope for bias by introducing a rich set of controls in our regression model such as health status, unemployment status, relative economic position, perceived change in economic status over time and household assets.

Lastly, the ordered probit model estimates a single equation over all levels of the dependent variable under the assumption of proportional odds or parallel regression (Long and Freese, 2005). Therefore we considered an alternative procedure, generalized ordered logit model, which does not require the assumption of parallel regression to hold. When estimated, results specific to the main variables of interest – absolute and relative income measures –remained broadly unchanged in almost all equations. Therefore we don't report these and instead use ordered probit estimates throughout.

### **3. Data and Sample Description**

Data used in this study comes from one of recent nationally representative surveys, namely the Chinese General Social Survey (CGSS), a well-known large data collection project in China<sup>18</sup>. CGSS 2010 covers 11783 households (38.71% of them from rural area) in 31 provinces (excluding Hong Kong, Macau and Taiwan) while

---

<sup>16</sup> As a matter of fact, Powdthavee (2009) instrumenting for income and allowing for unobserved heterogeneity leads to a much bigger estimated income effect compared to the estimate in the naive specification. Furthermore, using data on restricted windfall income as a substitute for household income. Ambrey and Fleming (2014) find no evidence against the exogeneity of windfall income and that the causal effect of income on life satisfaction is substantially higher when restricted windfall income is used.

<sup>17</sup> Another strategy is to use information on communist party membership (CCP) since it is a strong predictor of income in China (Appleton et al 2009). However evidence also indicates that CCP is a strong determinant of happiness in China (e.g. Knight et al 2009) and hence is not a valid excluded instrument. We additionally experimented with parental party membership. Multiple instruments (i.e. father and mother's party membership) allowed a formal test of instrument validity in a two-stage least square model. However, once again, party membership turned out to be correlated with the error term - the null of Sargan-Hansen test of over-identifying restrictions was rejected.

<sup>18</sup> The CGSS is a nationwide, repeated, cross-sectional general survey which was launched by Renmin University and Hong Kong University of Science and Technology since 2003 jointly.

the 2005 round includes 10372 respondents from 28 provinces (compare to 2010 round, three provinces: Xizang, Qinghai and Ningxia are not included in 2005 round), 41.21% of whom are from rural area. Our research is based on data from 2005 and 2010 rounds.

Table 1 reports mean happiness scores by income quintiles. Two patterns are noteworthy. First, in 2010, the reported score is 3.77, significantly up from 3.41 in 2005. Compared to older studies, the overall level of happiness in CGSS data is high (e.g. see Song and Appleton 2008). Second, there's a clear monotonic increase in happiness score across income quintiles for all sub-samples, rural, urban, male and female, and the difference between 2010 and 2005 was always statistically significant<sup>19</sup>. This is important considering the fact that the period of 2005-2010 saw further progress in poverty reduction (headcount poverty reduced from 15.8% in 2005 to 9.2% in 2010) while inequality remained high (with a gini of 0.42)<sup>20</sup>.

**[Table 1 about here]**

**[Table 2 about here]**

Table 2 shows the complete distribution of sample respondents by level of happiness and income quintiles. The proportion of respondents opting for the highest two of five possible levels of subjective well-being is 72 % and the proportion reporting the lowest two only 10%. However, there is considerable variation across the quintiles of income per capita: whereas 57% in the lowest quintile report happiness in the range of 4-5 points, the figure for the highest quintile is 85%. When the categories of happiness are converted into cardinal values (ranging from a score of 5 for "very happy" down to 0 for not happy at all), the mean score (3.77 for the sample as a whole) rises monotonically from 3.44 in the lowest to 4.04 in the highest income quintile. Therefore, whilst there is a positive correlation between income and life happiness, there is much more to subjective well-being than what is explained by absolute household income.

**[Table 3 about here]**

**[Table 4 about here]**

Respondents in CGSS survey were asked to report their current living standard in terms of position in the society as well as 10 years ago. In addition, respondents were asked to report their perceived status over the next 10 years. All three questions employed a 10-point response scale. We use responses to these questions to construct indicator variables capturing perceived change w.r.to the past as well as expected

---

<sup>19</sup> This has been verified using two-tailed t-tests; differences in mean scores were significant at 1% level.

<sup>20</sup> Figures are from the World Development Indicators (WDI) data base of the World Bank.



change w.r.to the future<sup>21</sup>. Table 3 cross-tabulates this data with happiness score. **Table 3** presents data on the percentage of respondents by level of happiness and by comparison of family economic status with local average level.

**Table 4** shows a skewed distribution around the average status with the majority 41% regarding their living standard as being below average and only 9% above. The proportion reporting happiness in the range of 4-5 points rises monotonically with relative living standard, from 40% in the lowest category to 76% in the highest. (In CGSS 2005, the figures are 23% and 80% respectively.) The mean happiness score also rises monotonically, from 4.78 to 7.32. It is evident that the feeling of relative deprivation by comparison with others in their locality affects well-being of respondents in our sample. On the other hand, the proportion reported happiness in the range of 1-2 points falls from 35% to 3% as we move from the lowest to the highest comparison category.

In sum, the discussion in this section suggests that non-income correlates of well-being and relative economic position are likely to be relevant for households in a developing income country like China. Overall, we intend to answer the following questions: (i) Is the effect of absolute dominated by that of relative income? (ii) How does relative income effect vary across income levels? (iii) Is income effect dominated by concerns for attaining basic needs of the households? We explore these formally in the next section.

## 4. Main Results

### 4.1. Full sample analysis

Table 5 reports estimates of the happiness function for CGSS 2010 and 2005 data. The first column presents estimates of well-being function obtained from a parsimonious model (equation 1) where we only control for the respondent's age, age-squared, gender, marital status, educational attainment and household per capita income. The following column includes control for health and unemployment status. Column 3 expands the well-being function by including measures of comparison and aspiration incomes. Specification reported in column 4 adds control for household assets (house area, number of homes and owning a car) as proxies for basic needs.

[Table 5 about here]

---

<sup>21</sup> The exact question in CGSS 2010 is as follows: "In our society, some groups remain at the top class while some groups are at the bottom level. In the following ladder, '10' presents the highest class while '1' suggests the lowest one. (a). Which class are you in currently? (b). Which class were you in ten years ago? (c) Which class will you be ten years later? 10 represents the highest class while 1 the lowest one." In CGSS 2005 data, comparison is w.r.to status 3 years ago.

Age effects are estimated by a quadratic form in age; in all cases there is a general U-shaped pattern between age and happiness which is consistent with the international literature (e.g. see Helliwell, 2006).<sup>22</sup> Women systematically report being happier than men. This result compares favorably with evidence for high income countries<sup>23</sup>. Consistent with other Asian country studies (e.g. Tsou and LIU, 2001), marital status also influences happiness. This can be attributed to the fact that compared with unmarried people, married people can enjoy a family life and thus they have higher happiness scores. Happiness is also higher for the more educated. Once again, all these findings are consistent with the existing literature (see Blanchflower, 2008; Clark and Senik, 2011).

Among other things, we find that ethnicity matters for happiness. Members of the minority communities are significantly happier. However this effect prevails only in the parsimonious specification (models 1 and 2) in 2010 data. Controlling for comparison income returns an insignificant coefficient on the minority dummy. This pattern is stronger in CGSS data for 2005 where minority dummy always enters the happiness function as a positive and significant determinant irrespective of the specification of the underlying regression model. This can be attributed to the fact that the positive lifestyle and their greater inherent capacity for happiness of ethnic minority Chinese much of which is derived from personal relationships instead of materialism (Knight, Shi, and Chang, 2014). Overall the results indicate that despite growing economic inequality, social development in China remains reasonably inclusive so that even after controlling for absolute income gap between minority and majority groups, the former are happier than the latter. When the income gap is fully controlled for in 2010 data (i.e. model 4 in Table 5), the minority dummy becomes insignificant so that the minority group is at least as happy as the Han group.

Our main correlate of interest however is per capita household income. Column 1 in Table 5 confirms that higher incomes represent a gain to the happiness of individuals. In looking at the correlation between income and happiness, it is possible that income is standing in for something else, such as relative income and income relative to past income, or for other variables correlated with income such as economic shock and poor health status. Therefore, it is unsurprising that the size of the income coefficient is significantly reduced when relative economic position is controlled for in our model

---

<sup>22</sup> The pattern is less pronounced in case of developed countries. Using panel data from Germany, the UK and Australia, Frijters and Beaton (2012) report a weaker U-shaped relationship for the 20–60 age range.

<sup>23</sup> Clark and Senik (2011) report lower level of happiness among men compared to women in Europe. Similar gender gap was also noted in the US during the 1970s. However Stevenson and Wolfers (2009) report declining subjective well-being among US women, both absolutely and relative to men, even though the lives of women in the United States have improved over the past three decades in terms of material well-being.

(i.e. when moving from model 1 to model 5).<sup>24</sup>

Both health and unemployment status have a significant coefficient in model 2. But their inclusion doesn't wash out the absolute income effect. The coefficient on the income variable falls significantly in column 3 where the non-economic variables -- measures of relative and aspiration incomes -- enter the happiness equations with large coefficients.<sup>25</sup> However even after controlling for relative and aspiration income effects, the influence of absolute income persists in Table 5. This implies that the estimated income-happiness relationship in CGSS data is not simply offset by the negative influence of aspiration income on subjective well-being. Across models 3-5, the coefficient on household income remains stable. All of these 3 models include a measure of health and unemployment status. In column 5, we add three measures of basic needs constructed using information on conditions of the house and car ownership<sup>26</sup>. This however doesn't explain the observed influence of absolute income as the coefficient size on the income variable doesn't change significantly between columns 4 and 5.

#### 4.2 Sub-sample analysis

Results presented in Table 5 highlight two puzzles. Whilst there is a clear location disadvantage in China (i.e. urban residents are happier), this is not the case in the regression analysis. The coefficient on the rural dummy is insignificant in models 1 and 2 in 2010 data. Second, there's a clear gender advantage in the estimated happiness function (i.e. women are significantly happier than men) even though in the raw happiness scores, no such gap is present.

Much of the inequality in China is a rural-urban phenomenon. Moreover, rural location can proxy for isolation from growth centres and lower subjective assessments of well-being.<sup>27</sup> If inequality affects happiness more in urban areas, its impact in the overall sample may be less pronounced. Equally there may be gender differentiated response to income and relative incomes. In addition, having wealthier neighbors lowers reported happiness even after controlling for own income. But this may affect men and urban residents more than women and rural residents respectively. Therefore we report estimates of happiness function separately for rural and urban sub-samples. Similar estimates are reported by gender in **Table 6**.

A number of findings are noteworthy. The absolute income effect is much larger

---

<sup>24</sup> Using cross-sectional data from the first two rounds of the European Social Survey, Caporale et al. (2009) find similar evidence -- the positive and statistically significant relationship between income and happiness is weakened by reference income.

<sup>25</sup> This is consistent with Knight and Ramani (2012) who note that subjective well-being is raised by actual income but lowered by aspiration income.

<sup>26</sup> For a similar approach, see Kingdon and Knight (2006).

<sup>27</sup> For developing country evidence on isolation and happiness, see Fafchamps and Shilpi (2009).

across all sub-samples -- rural, urban, men and women – in 2005 compared to 2010 data. But irrespective of which round of CGSS data we look at, income effect is bigger in rural areas. This is consistent with the fact higher poverty in rural areas and hence greater importance of income in determining happiness. On the other hand, comparison (relative) income effect is much larger in urban areas in 2010 data. Turning to gender-specific samples, income effect is much bigger among women compared to men for whom relative income is more important in 2010 data. This gender differentiated income effect may explain why women are happier when gender gap in income is accounted for.

**[Table 6 about here]**

We further explore how the importance of relative income highlighted in Table 5 varies with absolute income -- we examine whether relative income affects subjective well-being differently among the poor and better-off households. To this end, households are split in two groups: the bottom 25% and top 25% income quartiles. This is equivalent to the conventional approach of interacting the income quintiles with the regressors.

**[Table 7 about here]**

Estimates of happiness function specific to the two sub-samples are reported in **Table 7**. Absolute income always exerts a significant, positive influence on happiness score in the parsimonious model (i.e. model 1) among the poor. On the other hand, among the richest households, income doesn't matter for happiness suggesting that there is a threshold level above which income has no further effect on happiness.

The absolute income effect remains high and significant only for the poorest households in 2010 data when we consider much detailed regression specifications (i.e. models 2-4) which account for other factors such as relative income, income relative to past income, economic shock, poor health status, trust (institutional as well as social) and province dummies. The influence of income relative to past income as well as others in the locality remains significant and positive for all income groups. Accounting for these additional factors reduces the coefficient on absolute income variable for poorer households in 2010 and 2005 data. But in both cases, the coefficient remains significant. However the coefficient on the income variable also remains significant in the detailed specification among the richest households in 2005 data though the coefficient size is much bigger in case of the bottom poorest households. This once again confirms the changing pattern of happiness in China

where relative instead of absolute income matters most among the richest.<sup>28</sup>

**[Table 8 about here]**

In order to formally explore the non-linearity in the impact of absolute income, we re-produce Table 5 where we replace per capita income variable by three dummy variables corresponding to the top three income quartiles. Results are reported in Table 8. Irrespective of the regression model used, increase in household income leads to significant gain in happiness in CGSS 2010 data. The coefficient on the top income quartile dummy is twice that on the second in the parsimonious specification (model 1). Controlling for employment and health status reduces size of the coefficients (model 2) and they still remain sizable even after controlling for comparison variables. Moreover, the monotonic relationship between income and happiness prevails across all models (1 through 4). Gains in happiness across absolute income quartiles are much larger in CGSS 2005 compared to 2010 data. The coefficient on the top income quartile dummy is four times that on the second irrespective of the overall specification of the regression models. In other words, the happiness-income gradient for China was much steeper in 2005 data. With an increase in income between 2005 and 2010, role of absolute income have become less pronounced in the happiness function. This is consistent with cross country studies that report a flatter income-happiness relationship among countries that are richer (Deaton, 2008).

**4.3 Oaxaca decomposition analysis**

In this section, we revisit two puzzles we have highlighted in earlier related to gender and location as determinants of happiness in China that. Urban-rural happiness gap has increased from 0.08 to 0.12 points between 2005 and 2010 (2.3% and 3.7% of 2005 and 2010 mean happiness figures respectively). In order to formally test whether the observed happiness gap by location in the raw data (see Table 1) is entirely explained by the superior characteristics endowment of urban residents over rural residents, we perform the Oaxaca decomposition analysis. The following equation is

estimated  $\overline{H}_U - \overline{H}_R = \dot{\beta}_U * (\overline{X}_U - \overline{X}_R) + \overline{X}_R * (\dot{\beta}_U - \dot{\beta}_R)$  where OLS regressions are used to estimate the underlying happiness functions.<sup>29</sup> The results are

---

<sup>28</sup> These result are consistent with findings from the literature on the higher influence of relative income in high-income countries (Esposito and Majorano 2012) and the significance of absolute income for both poor and better-off households in low income developing countries (Asadullah and Chaudhury 2012).

<sup>29</sup> Following Sinning et al. (2008), we also implemented a non-linear decomposition analysis using ordered probit regressions. However, this approach failed in couple of instances because of convergence problem.

reported in Table 9.<sup>30</sup> In all cases, majority of the happiness gap is explained by characteristics differences in 2010 data. This explains why controlling for absolute income differences, there is no happiness differences between rural and urban residents in **Table 5**. Results are similar for 2005 data.<sup>31</sup>

[Table 9 about here]

We can't directly apply the Oaxaca framework to explain the puzzle of contented women since the gender happiness paradox is completely absent in Table 1. What then explains the fact that the mean happiness of men and women in China (3.76 and 3.77 in 2010 and 3.41 and 3.42 in 2005 data respectively) remains unchanged over time and yet there is a statistically significant gender happiness gap in the conditional data? This is a puzzle given that women in our data are many times poorer than men when assessed in terms of total earnings, non-agricultural earnings as well as household income data. As seen from **Table 10**, the gender gap in income has increased in recent years e.g. the gender earnings gap increased from 28% to 45% between 2005 and 2010. And yet the coefficient on female dummy has changed in the opposite direction and doubled in size over the same time period. This is explained as a combination of two gender-specific patterns. First, the influence of absolute income is larger among female while the men no longer draws any satisfaction from their superior income – the coefficient on the income dummy is insignificant in the male regression (see Table 7). Second, men are more concerned about comparison incomes than women. In (see Table 7, the coefficient on the variable “Expect increase 10 years later” is positive and significant for men but insignificant for women. This implies that the potential gain from rising income among men vis-à-vis women has been offset by the gender-differentiated changes in comparison incomes.

[Table 10 about here]

## 5. Conclusion

Whether improvement in a country's macroeconomic conditions and the subsequent growth in private income buy its citizens happiness is an old question in the social science literature. While for developing countries most researchers find that income matters for happiness, evidence on the importance of relative income remains mixed. There is also an ongoing debate on happiness trends over time in relation to changes

---

<sup>30</sup> Our conclusion does not change if we use coefficients from pooled regression or urban sub-sample regression.

<sup>31</sup> We also estimated an alternative specification where we included mean per capita income at the county level as an additional proxy of relative income (results not report but available upon request). While the variable enters the happiness function with a positive and significant coefficient in rural sub-sample, it neither washed out the effect of absolute income and comparison income variables, nor changed results of the Oaxaca decomposition analysis.

in macroeconomic conditions. More importantly the earlier evidence on the magnitude of income-happiness gradient in China is mixed. Although China saw sharp decline in poverty and an unprecedented economic growth in the last three decades, income distribution has become skewed towards the upper class. In this context, we therefore revisit the role of income as a determinant of happiness in China with additional emphasis on the importance of relative income.

We note that well-being in China appears to have risen modestly in recent years along with income. Happiness scores in our data also show a rise across all income and social groups. Our estimates of the micro-determinants of well-being show that relative income matters for individual well-being: individuals who report their economic position to be lower than others in the community and/or worse than that 10 years ago also report being less happy with life. There are significant interaction effects as well – poorer respondents draw greater satisfaction from absolute income compared to better-off individuals. However, when compared to the effect of absolute income, these effects remain modest in China. Overall relative deprivation is becoming the dominant concern for an average person suggesting the changing pattern of happiness in China where income poverty is not the sole correlate of wellbeing. Income aspirations increase with people's income as well as income of others in the community and this is one explanation for declining the importance of absolute income as a determinant of happiness.

Sub-sample analysis of happiness function sheds further light on the reasons for the weakening relationship between income and happiness. Economic growth in China benefited men disproportionately increasing the gender gap in income. Yet the influence of absolute income is larger among women while Chinese men drew little satisfaction from absolute income. Instead they worried more about relative incomes. This explains the absence of a gender gap in the unconditional data on happiness despite growing gender income inequality in China.

In sum, findings reported in this paper highlight the need to study poverty in China using a multi-dimensional framework. Our findings are consistent with the results of standard micro-econometric well-being functions previously published for other developing countries. Even though this study is by far the most comprehensive on the perceived well-being of in rural and urban China, we have not considered all dimensions of subjective wellbeing (e.g. satisfaction with health, education and employment; adequacy of consumption) and psychological correlates of poverty. Future national surveys and investigations into subjective well-being in China should take into account these issues to identify social aspects of poverty dynamics in the country.

## Reference

- Ambrey, Christopher L. & Fleming, Christopher M. (2014) "The causal effect of income on life satisfaction and the implications for valuing non-market goods," *Economics Letters*, 123(2): 131-134.
- Appleton, S., J. Knight, L. Song, and Q. Xia (2009) "The Economics of Communist Party Membership: The Curious Case of Rising Numbers and Wage Premium during China's Transition", *Journal of Development Studies*, 45(2): 256-275.
- Asadullah, M. N. & Chaudhury, N. (2012) "Subjective Well-being and Relative Poverty in Rural Bangladesh," *Journal of Economic Psychology*, 33(5): 940-950.
- Benjamin, D., L. Brandt, and J. Giles. 2005. "The Evolution of Income Inequality in Rural China." *Economic Development and Cultural Change*, 53(4): 769-824.
- Blanchflower, David G. (2008). International Evidence on Well-being. IZA DP No. 3354. Institute for the Study of Labor, Bonn.
- Blanchflower, D.G., and A.J. Oswald (2008). "Hypertension and happiness across nation", *Journal of Health Economics*, 27(2): 218–233.
- Brockmann, Delhey, Welzel, and Yuan, (2009) "The China puzzle: Falling happiness in a rising economy." *Journal of Happiness Studies*, 10(4): 387-405.
- Carlsson, Fredrik, Gautam Gupta and Olof Johansson-Stenman (2009) "Keeping up with the Vaishyas? Caste and relative standing in India," *Oxford Economic Papers*, 61(1): 52-73.
- Chyi, H. and Mao, S.Y. (2010) "Determinants of Happiness of China's Elderly Population". Xiamen University.
- Clark, A.E., and A.J. Oswald (1994) "Unhappiness and unemployment", *The Economic Journal*, 104: 648-659.
- Clark, Andrew E., Paul Frijters & Michael A. Shields (2008) "Relative Income, Happiness, and Utility: An Explanation for the Easterlin Paradox and Other Puzzles," *Journal of Economic Literature*, 46(1): 95-144.
- Clark, Andrew E., & Claudia Senik (2011) "Is happiness different from flourishing? Cross-country evidence from the ESS," PSE Working Papers halshs-00561867, HAL.
- Caporale, G. M., et al. (2009) "Income and happiness across Europe: Do reference values matter?" *Journal of Economic Psychology*, 30(1): 42-51.
- Corazzini, Luca & Esposito, Lucio & Majorano, Francesca (2012) "Reign in hell or serve in heaven? A cross-country journey into the relative vs absolute perceptions of wellbeing," *Journal of Economic Behavior and Organization*, 81(3): 715-730.
- Camfield, L. and Esposito, L. (2014) "A Cross-Country Analysis of Perceived Economic Status and Life Satisfaction in High- and Low-Income Countries", *World Development*, 59: 212-223.
- Deaton, A. (2008) "Income, Health, and Well-Being around the World: Evidence from the Gallup World Poll," *Journal of Economic Perspectives*, 22(2): 5372.
- Di Tella, R. and R.J. MacCulloch (2006) "Some uses of happiness data in economics", *Journal of Economic Perspectives*, 20(1): 25-46.



Di Tella, Rafael & Haisken-De New, John & MacCulloch, Robert (2010) "Happiness adaptation to income and to status in an individual panel," *Journal of Economic Behavior & Organization*, 76(3): 834-852.

Easterlin, R.A. and Angelescu, L. (2009) "Happiness and Growth the World Over: Time-series Evidence on the Happiness-income Paradox." IZA Discussion Paper No. 4060.

Easterlin, R. A., McVey, L. A., Switek, M., Sawangfa, O., & Zweig, J. S. (2010). The happiness–income paradox revisited. *Proceedings of the National Academy of Sciences of the United States of America*, 107(52), 22463–22468.

Easterlin, R. A., Morgan, R., Switek, M., & Wang, F. (2012). China's life satisfaction, 1990–2010. *Proceedings of the National Academy of Sciences*, 109(25), 9775-9780.

Fafchamps, M. and Bereket Kebede (2008) "Subjective well-being, disability and adaptation: A case study from rural Ethiopia", in *Adaptation and Well-Being*, David Clark (ed.), Cambridge University Press.

Fafchamps, M. and Shilpi, F. (2009) "Isolation and Subjective Welfare: Evidence from South Asia," *Economic Development and Cultural Change* 57(4): 64183.

Frijters, P. and Beatton, T. (2012) "The Mystery of the U-shaped Relationship between Happiness and Age," *Journal of Economic Behavior & Organization*, 82(2–3): 525–542.

Graham, C. and Pettinato, S. (2002) 'Frustrated achievers: winners, losers and subjective well-being in new market economies' *Journal of Development Studies*, 38(4): 100-40.

Graham, C. and Felton, A. (2009) "Does Inequality Matter to Individual Welfare? An Initial Exploration Based on Happiness Surveys from Latin America." In Dutt, A.K. and Radcliff, B. (Eds.). *Happiness, Economics and Politics: Towards A Multi-disciplinary Approach*. 158-201. Edward Elgar Publishing.

Guillen-Royo, Monica (2011) "Reference group consumption and the subjective wellbeing of the poor in Peru", *Journal of Economic Psychology*, pp. 259-272.

Helliwell, J. (2006) "Well-Being, Social Capital and Public Policy: What's New?" *Economic Journal*, Vol. 116, pp. C34-45.

Hayo, B. (2007) "Happiness in transition: An empirical study on Eastern Europe." *Economic Systems*, 31(2): 204-221.

Jiang, Shiqing & Ming Lu & Hiroshi Sato (2012) "Identity, Inequality, and Happiness: Evidence from Urban China," *World Development*, 40(6): 1190-1200.

Kahneman, D. and A.B. Krueger (2006) "Developments in the measurement of subjective wellbeing," *Journal of Economic Perspectives*, 20(1): 3-24.

Kingdon, G. and J. Knight (2007) "Community, comparisons and subjective wellbeing in a divided society," *Journal of Economic Behavior and Organization*, 64: 69–90.

Kingdon, G. and J. Knight (2006) "Subjective well-being poverty vs. Income poverty and capabilities poverty?," *The Journal of Development Studies*, 42(7): 1199-1224.

Knight, John, Song, Lina and Gunatilaka, Ramani (2009) "Subjective well-being

and its determinants in rural China," *China Economic Review*, 20(4): 635-649.

Knight, John and Gunatilaka, Ramani (2010) "Great Expectations? The Subjective Well-being of Rural-Urban Migrants in China," *World Development*, 38(1): 113-124.

Knight, J., Shi, Li, and Chang, Y. (2014) "Minorities in Rural China: Poorer but Inherently Happier?," CSAE Working Paper Series 2014-26, Centre for the Study of African Economies, University of Oxford.

Knight, J., and Ramani Gunatilak (2014) "Subjective Well-being and Social Evaluation in a Poor Country," CSAE Working Paper Series 2014-09, Centre for the Study of African Economies, University of Oxford.

Knight, John and Gunatilaka, Ramani (2012) "Income, aspirations and the Hedonic Treadmill in a poor society," *Journal of Economic Behavior & Organization*, 82(1): 67-81.

Li, H., Liu, P-wai, Ye, M., and Zhang, J. (2014) "Does Money Buy Happiness? Evidence from Twins in Urban China".

Oswald, A. J. (1997) "Happiness and economic performance", *Economic Journal*, 107: 1815-1831.

Oshio, Takashi, Kayo Nozaki, and Kobayashi, Miki. (2013) "Division of household labor and marital satisfaction in China, Japan, and Korea," *Journal of Family and Economic Issues*, 34(2): 211-223.

Powdthavee, N. (2009) "How much does money really matter? Estimating the causal effects of income on happiness," *Empirical Economics*, 39(1): 77-92.

Ravallion, Martin and Lokshin, Michael (2010) "Who cares about relative deprivation?," *Journal of Economic Behavior and Organization*, 73(2): 171-18

Stevenson, Betsey & Justin Wolfers (2009) "The Paradox of Declining Female Happiness," *American Economic Journal: Economic Policy*, 1(2): 190-225.

Tsou, M.W. and LIU, J.T. (2001) "Happiness and domain satisfaction in Taiwan," *Journal of Happiness Studies*, 2(3): 269-288.

Sinning, M., Hahn, M. and Bauer, T.K. (2008) The Blinder-Oaxaca decomposition for nonlinear regression models, *Stata Journal*, vol. 8, 480-92.

Smyth, R. and Qian, X.L. (2008) "Inequality and Happiness in Urban China," *Economics Bulletin*. 4(23): 1-10.

Wang, H., Cheng, Z.M. and Smyth, R. (2013) "Happiness and Job Satisfaction in Urban China: A Comparative Study of Two Generations of Migrants and Urban Locals," Monash University Discussion Paper 08/13.

Wang, P., Pan, J. and Luo, Z. (2015) "The Impact of Income Inequality on Individual Happiness: Evidence from China", *Social Indicator Research*, 121:413-435.

Veenhoven, R and Hagerty, M. (2006) "Rising Happiness in Nations 1946-2004 A Reply to Easterlin," *Social Indicators Research*, 79: 421-436.

Xiao, J.J., Tang, C.Y. and Shim, S. (2009) "Acting for Happiness: Financial Behavior and Life Satisfaction of College Students," *Social Indicators Research*. 92: 53-68.

**Table 1: Mean Score of Happiness by Income Quintiles**

<b>2010</b>	<b>Overall</b>	<b>1st</b>	<b>2nd</b>	<b>3<sup>rd</sup></b>	<b>4th</b>	<b>5th</b>
<b>Whole</b>	3.77	3.44	3.67	3.78	3.93	4.04
<b>Urban</b>	3.81	3.39	3.65	3.77	3.92	4.04
<b>Rural</b>	3.69	3.47	3.70	3.79	3.96	4.02
<b>Female</b>	3.77	3.41	3.67	3.82	3.96	4.07
<b>Male</b>	3.76	3.47	3.68	3.73	3.90	4.01
<b>2005</b>						
<b>Whole</b>	3.41	3.10	3.33	3.45	3.58	3.70
<b>Urban</b>	3.45	2.96	3.23	3.38	3.56	3.69
<b>Rural</b>	3.37	3.15	3.40	3.57	3.68	3.83
<b>Female</b>	3.41	3.10	3.33	3.48	3.57	3.74
<b>Male</b>	3.42	3.10	3.33	3.42	3.59	3.66

**Table 2: Percentage of Respondents by Level of Happiness, Overall and by Income Quintiles**

<b>2010</b>	<b>Sample share (%)</b>	<b>1st</b>	<b>2nd</b>	<b>3rd</b>	<b>4th</b>	<b>5th</b>	<b>N</b>
<b>1</b>	2.12	4.85	2.38	1.29	1.05	0.69	2.11
<b>2</b>	7.81	14.69	8.95	7.46	4.32	2.91	7.69
<b>3</b>	17.67	23.28	20.66	19.00	14.01	10.64	17.69
<b>4</b>	56.40	46.00	54.95	56.67	61.83	63.60	56.53
<b>5</b>	16.00	11.18	13.07	15.58	18.78	22.17	15.99
<b>N</b>	10327	2165	2357	1784	1991	2030	11767
<b>Mean happiness</b>	3.76	3.43	3.67	3.77	3.92	4.03	
<b>2005</b>	<b>Sample share (%)</b>	<b>1st</b>	<b>2nd</b>	<b>3rd</b>	<b>4th</b>	<b>5th</b>	<b>N</b>
<b>1</b>	1.42	3.16	1.15	1.03	0.80	0.88	1.40
<b>2</b>	7.71	15.66	8.86	5.87	3.95	2.41	7.73
<b>3</b>	44.55	50.25	49.58	45.48	40.64	33.16	45.06
<b>4</b>	40.56	29.45	36.72	42.46	45.71	52.89	40.13
<b>5</b>	5.75	1.48	3.68	5.16	8.90	10.66	5.68
<b>N</b>	9685	2024	2527	1260	2505	1369	10372
<b>Mean happiness</b>	3.41	3.10	3.32	3.44	3.57	3.70	

Note: Data for this table and for all subsequent tables are derived from the CGSS survey.

**Table 3:** The Percentage of Respondents by Level of Happiness and by Comparison of Own Family Economic Status w.r.to Others in the Same City

<b>2010</b>		<b>Sample share (%)</b>	<b>Far Below</b>	<b>Below</b>	<b>Average</b>	<b>Above</b>	<b>Far Above</b>
<b>1</b>		2.11	12.67	2.49	0.46	1.07	.
<b>2</b>		7.71	22.76	12.08	3.52	1.95	9.52
<b>3</b>		17.67	24.22	24.01	14.45	6.32	14.29
<b>4</b>		56.53	32.17	50.91	62.74	64.01	42.86
<b>5</b>		15.98	7.96	10.52	18.83	26.65	33.33
<b>N</b>		11744	892	3899	5883	1028	42
<b>Mean happiness</b>		3.76	3.01	3.54	3.95	4.13	4.00
<b>2005</b>		<b>Sample share (%)</b>	<b>Far Below</b>	<b>Below</b>	<b>Average</b>	<b>Above</b>	<b>Far Above</b>
<b>1</b>		1.40	3.79	0.61	0.58	1.62	2.53
<b>2</b>		7.73	19.84	6.23	3.05	2.07	2.53
<b>3</b>		45.06	52.79	53.50	38.70	22.30	15.19
<b>4</b>		40.13	21.46	35.72	50.41	59.68	58.23
<b>5</b>		5.68	2.13	3.94	7.27	14.33	21.52
<b>N</b>		10372	2349	3099	4168	677	79
<b>Mean happiness</b>		3.40	2.98	3.36	3.60	3.83	3.93

**Table 4:** Percentage of Respondents by Level of Happiness and by Comparison of Current Self-rated Class in Society with the Previous One in 2010 and 2005

		<b>Sample share (%)</b>	<b>Worse</b>	<b>Same</b>	<b>Better</b>
<b>2010</b>	<b>1</b>	2.11	5.34	2.68	0.87
	<b>2</b>	7.71	13.11	8.75	5.56
	<b>3</b>	17.71	22.72	18.92	15.55
	<b>4</b>	56.48	47.57	54.41	60.29
	<b>5</b>	15.99	11.27	15.23	17.74
	<b>N</b>	11704	1686	3874	6144
	<b>Mean Happiness</b>	3.76	3.46	3.70	3.88
<b>2005</b>		<b>Sample share (%)</b>	<b>Worse</b>	<b>Same</b>	<b>Better</b>
	<b>1</b>	1.36	3.33	0.91	0.83
	<b>2</b>	7.74	20.10	6.58	2.63
	<b>3</b>	44.84	53.97	52.61	32.11
	<b>4</b>	40.33	19.85	36.22	55.06
	<b>5</b>	5.73	2.75	3.68	9.38
	<b>N</b>	10200	2040	4161	3999
	<b>Mean Happiness</b>	3.41	2.98	3.35	3.69

**Table 5: Ordered Probit Estimates of the Determinants of Well-being in China, 2005-2010**

	2010				2005			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
<b>Basic Variables</b>								
Age	-.053*** (11.10)	-.046*** (9.62)	-.037*** (7.59)	-.038*** (7.71)	-.061*** (11.44)	-.055*** (10.23)	-.048*** (8.80)	-.047*** (8.31)
Age square	.001*** (12.57)	.001*** (11.93)	.000*** (9.96)	.000*** (10.09)	.001*** (11.51)	.001*** (11.21)	.001*** (9.46)	.001*** (8.95)
Female	.080*** (3.50)	.121*** (5.16)	.110*** (4.65)	.111*** (4.68)	.046** (1.98)	.087*** (3.66)	.043* (1.81)	.052** (2.07)
Minority	.124*** (2.62)	.104** (2.20)	.056 (1.16)	.042 (0.87)	.193*** (3.64)	.177*** (3.32)	.151*** (2.80)	.155*** (2.75)
Married	.417*** (8.61)	.382*** (7.85)	.314*** (6.41)	.307*** (6.15)	.531*** (10.52)	.505*** (9.94)	.506*** (9.82)	.460*** (8.60)
Divorced	-.269*** (3.08)	-.280*** (3.19)	-.232*** (2.63)	-.221** (2.47)	-.297*** (2.84)	-.345*** (3.28)	-.241** (2.26)	-.275** (2.45)
Widowed	.016 (0.25)	-.016 (0.23)	.004 (0.06)	-.005 (0.07)	.019 (0.25)	.007 (0.09)	.080 (1.03)	.015 (0.18)
Years of education	.024*** (7.32)	.021*** (6.56)	.019*** (5.87)	.018*** (5.39)	.026*** (7.59)	.024*** (7.14)	.017*** (4.76)	.016*** (4.53)
In good health		.419*** (17.14)	.332*** (13.38)	.331*** (13.23)		.492*** (19.52)	.404*** (15.71)	.406*** (15.26)
Unemployed		-.045* (1.77)	-.015 (0.60)	-.011 (0.43)		-.031 (1.32)	.040 (1.27)	.042 (1.30)
<b>Household variables</b>								
Household income pc	.188*** (15.34)	.171*** (13.86)	.057*** (4.31)	.048*** (3.54)	.317*** (21.45)	.298*** (20.01)	.145*** (9.08)	.138*** (8.31)
House area				.000*** (3.87)				.001*** (3.46)
Family property				.036* (1.67)				
Family car				.137*** (3.32)				.073 (0.88)
<b>Comparison Variables</b>								
Equal to community average			-.243*** (5.81)	.218*** (5.13)			-.254*** (5.47)	-.257*** (5.36)
Below average			-.625*** (13.80)	-.590*** (12.72)			-.474*** (9.58)	-.474*** (9.22)
Far below average			-1.057*** (17.66)	-1.027*** (16.86)			-.815*** (14.98)	-.798*** (14.06)
Better than last10 year			.132*** (5.09)	.128*** (4.90)			.452*** (16.80)	.440*** (15.80)

Worse than last10 year			-.222***	-.224***			-.332***	-.349***
			(6.33)	(6.34)			(10.16)	(10.34)
Expect increase 10 years later			.083***	.086***				
			(3.16)	(3.27)				
Expect decrease 10 years later			-.075	-.074				
			(1.47)	(1.46)				
<b>Geographical Variable</b>								
Rural	.018	.008	-.071**	-.082***	.291***	.245***	-.067*	-.102***
	(0.65)	(0.27)	(2.54)	(2.87)	(9.55)	(7.34)	(1.88)	(2.70)
N	10235	10235	10235	10097	9674	9674	9674	9061
Chi <sup>2</sup>	1208.39	1511.91	2236.73	2265.05	1426.02	1815.26	2935.37	2747.87
Pseudo R <sup>2</sup>	0.04	0.06	0.09	0.09	0.06	0.08	0.1321	0.13

**Note:** (1) All regressions include a full set of province dummies. (2) \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% levels respectively.

**Table 6:** Ordered Probit Estimates of the Determinants of Well-being in China by Location and Gender, 2005-2010

	2010				2005			
	Urban	Rural	Female	Male	Urban	Rural	Female	Male
<b>Basic Variables</b>								
Age	-.044*** (6.86)	-.031*** (4.00)	-.040*** (5.81)	-.036*** (5.05)	-.051*** (6.95)	-.046*** (5.12)	-.045*** (5.56)	-.050*** (6.23)
Age square	.001*** (8.55)	.000*** (5.71)	.001*** (7.27)	.001*** (6.89)	.001*** (7.25)	.001*** (5.73)	.000*** (5.94)	.001*** (6.75)
Female	.138*** (4.49)	.092** (2.37)			.049 (1.51)	.046 (1.15)		
Minority	.002 (0.02)	.041 (0.58)	.082 (1.25)	.008 (0.11)	.082 (0.97)	.186** (2.37)	.095 (1.22)	.220*** (2.70)
Married	.388*** (6.20)	.152* (1.73)	.214*** (2.75)	.355*** (5.30)	.459*** (6.92)	.562*** (5.57)	.389*** (4.58)	.516*** (7.28)
Divorced	-.249** (2.36)	-.083 (0.46)	-.392*** (3.00)	-.132 (1.06)	-.290** (2.29)	-.078 (0.29)	-.395** (2.27)	-.178 (1.20)
Widowed	.079 (0.89)	-.168 (1.50)	-.090 (0.94)	.025 (0.24)	.133 (1.30)	-.103 (0.73)	.104 (0.92)	-.213* (1.71)
Years of education	.015*** (3.54)	.024*** (4.26)	.017*** (3.80)	.017*** (3.41)	.013*** (2.83)	.020*** (3.30)	.017*** (3.49)	.016*** (2.89)
In good health	.336*** (10.29)	.312*** (7.90)	.343*** (9.76)	.313*** (8.70)	.414*** (11.86)	.379*** (9.03)	.378*** (10.28)	.450*** (11.58)
Unemployed	-.030 (0.87)	.011 (0.26)	.010 (0.29)	-.043 (1.05)	.053 (1.43)	.033 (0.36)	.071 (1.61)	.007 (0.15)

<b>Income Variables</b>								
Household income pc	.038**	.068***	.070***	.029	.127***	.171***	.160***	.127***
	(2.02)	(3.33)	(3.69)	(1.45)	(5.76)	(6.34)	(6.73)	(5.40)
House area	.000***	.001**	.001***	.000*	.001***	.001*	.000	.001***
	(2.88)	(2.23)	(3.50)	(1.77)	(2.87)	(1.89)	(1.24)	(3.51)
Family property	.033	.069*	.019	.058*				
	(1.30)	(1.67)	(0.60)	(1.95)				
Family has a car	.139***	.183*	.135**	.124**	.120	-.118	-.032	.183
	(2.99)	(1.93)	(2.25)	(2.15)	(1.29)	(0.63)	(0.28)	(1.50)
<b>Comparison Variables</b>								
Equal to community average	-.199***	-.284***	-.185***	-.257***	-.283***	-.243***	-.393***	-.121*
	(3.80)	(3.88)	(2.99)	(4.36)	(4.13)	(3.56)	(5.81)	(1.77)
Below average	-.573***	-.661***	-.561***	-.629***	-.511***	-.446***	-.585***	-.365***
	(9.86)	(8.40)	(8.41)	(9.65)	(7.08)	(5.92)	(8.04)	(5.00)
Far below average	-.985***	-1.115***	-.927***	-1.153***	-.867***	-.712***	-.968***	-.632***
	(12.29)	(11.43)	(10.87)	(13.06)	(10.89)	(8.54)	(12.07)	(7.80)
Better than last10 year	.073**	.193***	.139***	.110***	.356***	.556***	.477***	.402***
	(2.17)	(4.64)	(3.82)	(2.92)	(9.63)	(12.76)	(12.25)	(10.00)
Worse than last10 year	-.237***	-.222***	-.218***	-.234***	.357***	-.312***	-.324***	-.381***
	(5.53)	(3.48)	(4.36)	(4.64)	(8.59)	(5.26)	(6.85)	(7.84)
Expect increase 10 years later	.096***	.056	.031	.146***				
	(2.84)	(1.34)	(0.86)	(3.81)				
Expect decrease 10 years later	-.034	-.144*	-.098	-.044				
	(0.53)	(1.67)	(1.38)	(0.60)				
<b>Geographical Variables</b>								
Rural			-.083**	-.081**			-.071	-.114**



			(2.07)	(1.97)			(1.30)	(2.14)
<b>N</b>	6055	4042	5182	4915	5388	3673	4647	4414
<b>Chi<sup>2</sup></b>	1336.78	954.95	1210.63	1123.78	1573.91	1210.79	1431.57	1380.58
<b>Pseudo R<sup>2</sup></b>	0.09	0.09	0.09	0.09	0.12	0.14	0.13	0.13

**Notes:** See Table 5.

**Table 7:** Ordered Probit Estimates of the Determinants of Well-being in China by Income Groups, 2005-2010

	2010						2005					
	Poorest quartile			Richest quartile			Poorest quartile			Richest quartile		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
<b>Basic Variables</b>												
Age	-.031*** (3.19)	-.021** (2.13)	-.022** (2.27)	-.050*** (4.88)	-.048*** (4.64)	-.052*** (4.96)	-.035*** (3.51)	-.039*** (3.83)	-.037*** (3.40)	-.048*** (4.22)	-.042*** (3.65)	-.043*** (3.58)
Age square	.000*** (4.72)	.000*** (3.59)	.000*** (3.69)	.001*** (6.07)	.001*** (5.87)	.001*** (6.24)	.000*** (4.36)	.000*** (4.52)	.000*** (4.04)	.001*** (4.43)	.000*** (3.79)	.000*** (3.73)
Female	.055 (1.16)	.021 (0.43)	.035 (0.73)	.155*** (3.22)	.164*** (3.38)	.168*** (3.43)	.072 (1.53)	.035 (0.73)	.060 (1.17)	.124*** (2.62)	.095** (1.98)	.087* (1.77)
Minority	.164** (1.90)	.101 (1.16)	.077 (0.88)	.085 (0.78)	.083 (0.75)	.063 (0.57)	.321*** (3.44)	.267*** (2.81)	.231** (2.29)	.080 (0.64)	.057 (0.45)	.110 (0.85)
Married	.362*** (3.58)	.257** (2.51)	.242** (2.31)	.348*** (3.79)	.341*** (3.70)	.318*** (3.39)	.675*** (6.12)	.655*** (5.83)	.608*** (5.05)	.365*** (3.93)	.390*** (4.15)	.355*** (3.69)
Divorced	-.298** (1.99)	-.269* (1.79)	-.286* (1.85)	-.147 (0.66)	-.156 (0.69)	-.158 (0.70)	-.043 (0.22)	.068 (0.34)	.057 (0.27)	-.593** (2.19)	-.615** (2.25)	-.692** (2.45)
Widowed	-.022 (0.18)	-.022 (0.18)	-.038 (0.30)	.015 (0.09)	.037 (0.22)	-.007 (0.04)	.163 (1.19)	.248* (1.78)	.192 (1.28)	.147 (0.80)	.121 (0.65)	.093 (0.49)
Years of education	.022*** (3.27)	.021*** (3.03)	.020*** (2.85)	.015** (2.20)	.010 (1.50)	.007 (0.95)	.033*** (4.87)	.028*** (3.98)	.029*** (3.94)	.018** (2.47)	.013* (1.73)	.012 (1.60)
In good health	.385*** (8.15)	.278*** (5.78)	.268*** (5.52)	.378*** (7.17)	.344*** (6.46)	.347*** (6.44)	.537*** (11.44)	.453*** (9.42)	.447*** (8.73)	.511*** (9.43)	.437*** (7.93)	.450*** (8.01)
Unemployed	-.079 (1.61)	-.039 (0.79)	-.043 (0.85)	-.070 (1.26)	-.080 (1.42)	-.076 (1.35)	.058 (0.72)	.063 (0.77)	.065 (0.74)	-.004 (0.08)	.064 (1.05)	.065 (1.05)

<b>Household variables</b>												
Household income pc	.145***	.060*	.064*	.021	-.038	-.071**	.148***	.066*	.050	.138***	.058	.019
	(4.51)	(1.82)	(1.90)	(0.64)	(1.14)	(2.03)	(3.90)	(1.70)	(1.20)	(3.52)	(1.43)	(0.46)
House area			.001*			.000			.001***			-.001
			(1.85)			(1.37)			(2.76)			(1.27)
Family property			-.010			.030						
			(0.19)			(0.88)						
Family has a car			.208			.223***			-.741**			.194*
			(1.05)			(3.99)			(2.39)			(1.92)
<b>Comparison Variables</b>												
Equal to community average		-.185	-.180		-.322***	-.303***		-.018	-.016		-.273***	-.287***
		(1.18)	(1.15)		(5.37)	(4.95)		(0.14)	(0.12)		(3.66)	(3.74)
Below average		-.594***	-.584***		-.568***	-.522***		-.257*	-.285**		-.492***	-.518***
		(3.81)	(3.74)		(7.20)	(6.46)		(1.91)	(2.03)		(5.82)	(5.89)
Far below average		-.967***	-.953***		-.961***	-.908***		-.603***	-.591***		-.872***	-.908***
		(5.92)	(5.80)		(5.12)	(4.74)		(4.42)	(4.16)		(7.70)	(7.68)
Better than last10 year		.213***	.216***		-.016	-.029		.559***	.538***		.311***	.305***
		(4.15)	(4.16)		(0.31)	(0.54)		(10.16)	(9.15)		(5.94)	(5.70)
Worse than last10 year		-.238***	-.243***		-.203***	-.210***		-.432***	-.455***		-.264***	-.285***
		(3.58)	(3.63)		(2.68)	(2.74)		(7.38)	(7.33)		(3.46)	(3.69)
Expect increase 10 years later		.065	.067		.066	.078						
		(1.30)	(1.34)		(1.20)	(1.40)						
Expect decrease 10 years later		-.026	-.029		-.114	-.107						
		(0.25)	(0.27)		(1.17)	(1.09)						
<b>Geographical Variables</b>												
Rural	.020	-.080	-.090*	-.049	-.967	-1.047	.201***	-.085	-.121	.276***	.055	.051

	(0.38)	(1.51)	(1.66)	(0.67)	(1.31)	(1.39)	(2.65)	(1.08)	(1.44)	(3.31)	(0.63)	(0.56)
<b>N</b>	2523	2523	2479	2574	2574	2544	2577	2577	2279	2395	2395	2328
<b>Chi<sup>2</sup></b>	395.81	641.85	638.00	249.87	335.25	352.28	466.92	873.54	780.62	269.39	448.24	450.93
<b>Pseudo R<sup>2</sup></b>	0.05	0.09	0.09	0.04	0.06	0.06	0.07	0.14	0.14	0.05	0.08	0.08

**Notes:** See Table 5.

**Table 8:** Ordered Probit Estimates of the Determinants of Well-being in China  
(based on non-linear income specification), 2005-2010

<b>CGSS 2010</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
Household income pc, 2 <sup>nd</sup> quartile	.140*** (5.05)	.124*** (4.45)	.060** (2.11)	.072** (2.50)
Household income pc, 3 <sup>rd</sup> quartile	.245*** (8.26)	.206*** (6.92)	.082*** (2.68)	.095*** (3.08)
Household income pc, 4 <sup>th</sup> quartile	.389*** (12.40)	.349*** (11.07)	.126*** (3.82)	.117*** (3.47)
Control for age, gender, martial status, ethnicity and education	Yes	Yes	Yes	Yes
Control for health and employment status	No	Yes	Yes	Yes
Control for comparison variables	No	No	Yes	Yes
Control for household assets	No	No	No	Yes
Province dummies	Yes	Yes	Yes	Yes
N	11733	11733	11733	11510
Chi <sup>2</sup>	1295.70	1657.95	2573.52	2581.34
Pseudo R <sup>2</sup>	0.046	0.058	0.091	0.093
<b>CGSS 2005</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
Household income pc, 2 <sup>nd</sup> quartile	.229*** (7.49)	.207*** (6.74)	.083*** (2.63)	.096*** (2.88)
Household income pc, 3 <sup>rd</sup> quartile	.473*** (14.17)	.442*** (13.17)	.227*** (6.54)	.235*** (6.49)
Household income pc, 4 <sup>th</sup> quartile	.754*** (20.35)	.719*** (19.24)	.364*** (9.22)	.374*** (9.04)
Control for age, gender, martial status, ethnicity and education	Yes	Yes	Yes	Yes
Control for health and employment status	No	Yes	Yes	Yes
Control for comparison variables	No	No	Yes	Yes
Control for household assets	No	No	No	Yes
Province dummies	Yes	Yes	Yes	Yes
N	10361	10361	10361	9549
Chi <sup>2</sup>	1436.90	1880.04	3141.87	2910.11
Pseudo R <sup>2</sup>	0.06	0.08	0.13	0.13

**Note:** for full-specification, see Table 5.

**Table 9:** Oaxaca Decomposition of Rural-Urban Gap in Happiness, 2005-2010

<b>CGSS 2010</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
Explained variation	0.139	0.130	0.072	0.067
(in %)	(114%)	(107%)	(59.5%)	(55.3%)
Unexplained variation	-0.018	-0.009	0.048	0.056
Raw mean difference	0.121			
N	10235	10235	10235	10068
<b>CGSS 2005</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
Explained variation	0.273	0.239	0.043	0.019
(in %)	(332.9%)	(291.1%)	(52.43%)	(24.0%)
Unexplained variation	-0.019	-0.157	0.039	0.061
Raw mean difference	0.082			
N	9674	9674	9674	9061
Control for age, gender, marital status, ethnicity and education	Yes	Yes	Yes	Yes
Control for health and employment status	No	Yes	Yes	Yes
Control for comparison variables	No	No	Yes	Yes
Control for household assets	No	No	No	Yes
Province dummies	Yes	Yes	Yes	Yes

**Note:** (1) for full-specification, see Table 5. (2) Pooled coefficient vector used as weights.

**Table 10:** Gender gap in earnings and income, 2010-2005

<b>CGSS 2010</b>	<b>Total earnings</b>	<b>Non-agricultural earnings</b>	<b>Per capita household income</b>
<b>Men</b>	28,995	37,767	18,944
<b>Women</b>	15,942	22,647	16,368
<b>Raw mean difference</b>	13,052	15,120	2,576
<b>% mean difference</b>	45.02%	40.03%	13.60%
<b>N</b>			
<b>CGSS 2005</b>			
<b>Men</b>	11,449	18,083	6,826
<b>Women</b>	8,149	15,547	6,190
<b>Raw mean difference</b>	3,299	2,535	635
<b>% mean difference</b>	28.82%	14.02%	9.31%
<b>N</b>			

**Note:** (1) All figures in Yuan and correspond to annual figures. (2) Earnings data for 2005 refers to all earnings while figure for 2010 refers to wage earnings.

**Appendix Table 1: Descriptive Statistics and Variable Definitions**

	2010		2005	
	Mean	SD	Mean	SD
<b>Personal characteristics</b>				
Age	47.30	15.67	44.70	14.79
Female	51.82	.50	52.57	.49
Minority	9.344	.291	6.113	.240
Married	80.294	.398	84.564	.361
Divorced	2.139	.145	1.398	.117
Widowed	7.748	.267	4.609	.210
Education, years	8.708	4.631	8.058	4.513
In good health	58.474	.493	61.203	.487
Unemployed	42.706	.495	30.177	.459
<b>Household characteristics</b>				
Per capita hh income	17503.46	51116.82	6490.716	16355.3
House area	107.861	102.2259	94.019	61.431
Family property	1.098	.562	--	--
Family has car	11.101	.314	2.160	.145
<b>Comparison and aspiration variables</b>				
Just at average family	49.970	.500	40.185	.490
Below average family	33.116	.471	29.879	.458
Far below average family	7.570	.265	22.648	.419
Better than last10 years	52.762	.499	38.556	.487
Worse than last 10 years	14.326	.350	19.668	.398
Expect increase10 years later	63.210	.482	--	--
Expect decrease 10 years later	5.576	.229	--	--
<b>Geographic location</b>				
Rural	38.708	.487	41.207	.492
<b>Province dummies</b>				
Beijing	0.044	0.205	0.039	0.194
Tianjin	0.034	0.181	0.039	0.194
Hebei	0.025	0.156	0.040	0.197
Shanxi	0.025	0.156	0.016	0.125
Neimenggu	0.008	0.092	0.016	0.126
Liaoning	0.034	0.181	0.040	0.196
Jilin	0.041	0.199	0.016	0.127
Heilongjiang	0.053	0.223	0.032	0.176
Shanghai	0.045	0.207	0.039	0.193
Jiangsu	0.043	0.203	0.059	0.236
Zhejiang	0.049	0.215	0.031	0.173
Anhui	0.035	0.183	0.051	0.219
Fujian	0.026	0.158	0.031	0.173
Jiangxi	0.040	0.197	0.023	0.151



Shandong	0.049	0.216	0.065	0.246
Henan	0.049	0.216	0.064	0.245
Hubei	0.053	0.223	0.047	0.212
Hunan	0.042	0.200	0.047	0.212
Guangdong	0.047	0.211	0.056	0.231
Guangxi	0.034	0.180	0.040	0.195
Hainan	0.008	0.092	0.008	0.087
Chongqing	0.024	0.154	0.008	0.090
Sichuan	0.051	0.220	0.064	0.245
Guizhou	0.026	0.159	0.032	0.177
Yunnan	0.033	0.178	0.031	0.173
Xizang	0.007	0.082	--	--
Shanx	0.035	0.183	0.032	0.177
Gansu	0.017	0.129	0.024	0.155
Qinghai	0.008	0.092	--	--
Ningxia	0.008	0.092	--	--
Xinjiang	0.008	0.092	0.008	0.087
N	11783		10372	