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ABSTRACT

This paper examines the subjective consequence of rising income inequality amidst the rapid economic growth in China. Based on the data from a national representative survey conducted in 2005, we employ multi-level models to show that, while personal income improves life satisfaction, the effect decreases with the level of local economic development; moreover, the rate of local economic growth has a positive effect, but local income inequality has a negative effect, on individuals' life satisfaction. Our findings help to clarify the mixed results in previous studies and point to the importance of both economic and social policies in improving people's subjective well-being in China's transitional economy.

INTRODUCTION

Over the past three decades, China has experienced dramatic economic growth, accompanied by sharply increasing income inequality. On the one hand, as a successful model of a socialist transition economy, GDP per capita in China increased from 311 *yuan* in 1974 before the economic reform, to 1,644 *yuan* in 1990, and further to 12,336 *yuan* in 2004 (National Bureau of Statistics 2005). On the other hand, as indicated in Figure 1, the Gini coefficient, a measure of income inequality, also increased from 0.273 in 1974, to 0.357 in 1990, and then to 0.469 in 2004 (UN-WIDER 2008). This defies the inverted U-shaped relationship between economic growth and income distribution observed in many other developing countries, i.e., economic development first leads to an increase and then, once it reaches a certain level, to a decrease in income inequality (Kuznets 1955).

Figure 1: Temporal Trend of Economic Development (GDP per capita) and Income Inequality (Gini coefficient) in China, 1974-2004.
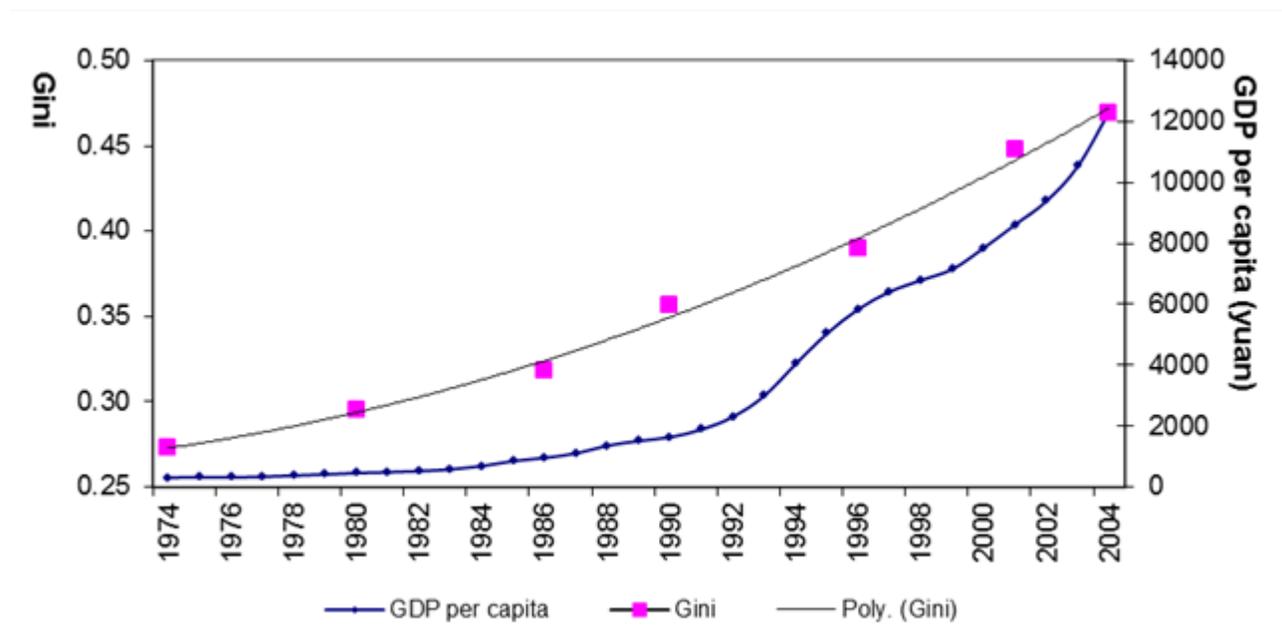
Sources: National Bureau of Statistics (2005); UNU-WIDER World Income Inequality Database, Version 2.0c, May 2008.

With reference to the past socialist egalitarianism, the sharp increase in income inequality has caused widespread social discontent that policy makers in China simply cannot ignore (Wu 2009). For instance, the two rounds of World Values Surveys of China conducted in 1990 and 2000 reveal that the proportion of population who considered themselves "very happy" fell by more than a half from 28 percent to 12 percent; if measured on a 10-point scale, the satisfaction score fell from an average of 7.3 to 6.5 over the two-year period (Brockmann *et al.* 2009). A more recent analysis shows that the distribution of life satisfaction in China has become increasingly unequal, with the worsening life satisfaction mainly from those left behind the country's economic prosperity (Easterlin *et al.* 2012).

Hence, China is confronted with problems of rising income inequality and falling subjective well-being despite its ever growing economy. As argued by Appleton and Song (2008), different manifestations of social discontent in China, such as demonstrations, strikes, civil disorder, and criminality, reflect individuals' dissatisfaction with life. As such, the subjective dimension is important in understanding the mechanism of how inequality affects social stability, especially in a society like China which is undergoing dramatic social and economic transformation.

In this paper, we aim to examine the level of life satisfaction among individuals and its relationship with income inequality and other macro-socioeconomic factors in China, based on the analysis of a national representative household survey conducted in 2005. The paper is structured as follows. We first introduce the concept of subjective well-being and review the theoretical and empirical literature on its economic determinant, in China and elsewhere. We then present the substantive questions and research hypotheses of this paper, followed by a description of the data, variables, analytical strategies, and modeling techniques. Empirical analyses and findings from both conventional regression and multi-level models on the life satisfaction of individuals are then reported. Finally, we summarize the results and discuss the social and political implications of our findings for China.

THEORETICAL PERSPECTIVE AND EMPIRICAL FINDINGS

It has been a long held belief that economic development would necessarily lead to improvements in human welfare in a society, as the people's material living conditions, such as food, housing, education, and medical care, are closely tied to the economic resources at their disposal and to the resources available to the government for the provision of public goods (e.g., Kotaporpi and Laamanen 2010). Therefore, the governments of many developing countries, including China, have made concerted efforts to promote economic growth in hopes of upgrading their people's livelihood and enhancing public support. A huge emphasis on GDP growth, however, does not always yield the desired result, because exceptional GDP growth is often accompanied by other socioeconomic trends that could very well decrease human welfare. Economic development is not an end in itself; rather it is the means to increasing the well-being of the people, including both the objective conditions and the subjective evaluation of the development and their impact on human life. The latter has been receiving more and more attention from social scientists and policy makers in recent years (Neckman and Torche 2007; Van de Werhorst and Salverda 2012).

While life satisfaction is regarded as a global cognitive judgment of one's life and often employed to measure one's subjective well-being, happiness refers to an affective or emotional state, which is sensitive to sudden changes in mood (Diener and Lucas 2000; Diener and Ng 2010; Wong et al. 2006). Given the fact that the term "happiness" has gained much popularity in the literature on social consequences of economic development, in this paper, we use "subjective well-being", "happiness", and "life satisfaction" interchangeably, although what we are really referring to is subjective well-being. We employ overall life satisfaction to measure a respondent's subjective well-being, following the standard practice in this specific research area (e.g., Easterlin 2001), although one's subjective well-being can be further disaggregated into satisfaction with different life domains and the accuracy of the measurement can be further studied and discussed (see Kahneman and Krueger 2006).

Previous literature has largely focused on the relationship between economic conditions and subjective well-being (i.e., wealth and happiness) at either individual or national level (see the review by Dolan et al. 2008). Among all socio-economic characteristics, absolute income, be it at the personal or household level, is consistently and positively associated with an individual's reported happiness (Blanchflower and Oswald 2004; *opt. cit.* Easterlin 2001; Frijters *et. al.* 2004; Kahneman *et al.* 2006). Data from 19 European countries reveal that an increase in income from the lowest to a middle income group increases life satisfaction scores by 0.71 points, which is comparable to the rise in life satisfaction scores driven by a marginal improvement in respondents' health (Caporale *et. al.* 2009). Similar results have been repeatedly found in OECD countries from 1975 to 1997 (Di Tella and MacCulloch 2008). Further analysis suggests a non-linear relationship between absolute income and subjective well-being: the positive relationship between happiness and absolute income only holds for the lower end of the income distribution up to a threshold, beyond which the gains in happiness level off as absolute income continues to rise. The attenuation at higher income levels does not occur when happiness is regressed on the logarithm of income rather than absolute income (Easterlin 2001).

While it has been well established that the significantly strong and positive relationship between income and happiness persists across individuals, the relationship does not change over the life cycle, even if income increases with age (Diener *et. al.* 1999; Easterlin 1974, 2001; Firebaugh and Tach 2012; Yang 2008). Moreover, using time-series data, Easterlin (1995) reported that, the average subjective well-being for many countries has remained roughly constant over time, even though per capita income has risen substantially over the observed period. Di Tella *et. al.* (2003) also showed that the effect of GDP per capita on happiness wears off over time in a country panel. This contradiction concerning the lack of a relationship between wealth and happiness from a life cycle or longitudinal perspective is regarded as the "Easterlin Paradox."

According to Easterlin (1974, 2001), the paradox arises because people quickly get used to what they have and their aspirations increase with their income as they get older, and so the favorable effect of rising income on happiness disappears and subjective well-being reaches equilibrium. The processes of adapting to income rise and adjusting one's aspirations and expectations are suggested to be governed by social comparisons (Hagerty 2000; Haller and Hadler 2006). Individuals evaluate their level of income relative to that of a reference group rather than, or in addition to, absolute income and adjust their expectations accordingly. In this relative income hypothesis, comparison is based on evaluation of their economic situation or

income level against a reference value (Clark *et. al.* 2008; Firebaugh and Schroeder 2009; Tao and Chiu 2009; Diener and Lucas 2000).

The discussions above suggest that happiness is a positive function of income and a negative function of aspirations. When both income and aspiration rise, their countervailing effects lead to the stability of the subjective well-being of individuals. Furthermore, happiness or life satisfaction carries a strong relative component. When people compare their income levels with those of others, they could end up experiencing a state of relative deprivation, or put simply a negative feeling, if they find out that they earn less than others. In this sense, income inequality in the immediate environment, similar to reference income and subjective perceptions about one's own socio-economic status at the individual level, not only determines one's level of happiness, but could also generate feelings of relative deprivation (Zhao 2012).

Nonetheless, empirical findings on the relationship between income inequality and subjective well-being are mixed. According to Runciman's relative deprivation theory (1966), high inequality generates a sense of relative deprivation and reduces one's happiness. Empirical findings from different countries have lent some support to this claim (Alesina et al. 2004; Fahey and Smyth 2004; Morawetz et al. 1977; Oshio and Kobayashi 2010; Schwarze and Härpfer 2007). Based on the analysis of the data from over 70 countries over the period from 1980 to 2004, Verme (2011) showed that income inequality, measured by Gini coefficients, negatively and significantly affects the subjective well-being of individuals, even after controlling for the effects of explanatory variables in different forms and from different sources.

In contrast, other scholars have reported an insignificant or even a positive relationship between income inequality and happiness in Russia (Senik 2004), Latin America (Graham and Felton 2006), Japan (Ohtake and Tomioka 2004), and UK (Clark 2003). In China, Knight and Gunatilaka (2010) showed that rural residents in counties with higher Gini coefficients tend to be happier than those in counties with lower Gini coefficients. Jiang, Lu and Sato (2012) found that inequality (as measured by city-level Gini coefficients) positively correlates with happiness in urban China. Both suggested a different mechanism through which income inequality may affect individuals' satisfaction, known as the tunnel effect theory (Hirschman and Rothschild 1973).

Differing from the relative deprivation theory, the tunnel effect theory argues that a greater degree of income inequality can be interpreted as a sign of better prospects for economic developments and greater availability of employment opportunities (Marshall and Firth 1999). This "demonstration effect" occurring in people's immediate living environment in turn raises their level of life satisfaction.

Hence, based on different assumptions on how people perceive income inequality, the relative deprivation theory and the tunnel effect theory predict the opposite relationships between income inequality and subjective wellbeing. While it is true that happiness or life satisfaction is the product of relative comparison, be it with peers, or with future opportunities, whether the comparison leads to economic pessimism or optimism is largely contingent upon macro-economic conditions, such as the level of economic development and the rate of economic growth (Frey and Stutzer 2000, 2002). The widening income gap in China has been associated with a rapidly growing economy. We believe it is the latter, rather than income inequality *per se*, that creates enormous economic opportunities and chances for upward mobility, thus shaping individuals' perception of inequality and life satisfaction (Clark and Senik 2010; Marshall and Firth 1999).

Previous research on this topic for China has either completely ignored the contextual economic factors or employed poor measures of these factors at a highly aggregated level. For instance, while Zhao (2012) claims to examines how economic inequality affects subjective wellbeing in China's transitional economy, the four measures employed in the analyses - individuals' income, housing, durable goods consumption, and social welfare benefits, are no more than indicators of individuals' socioeconomic positions, rather than socioeconomic inequality in the place where the respondent lives. [1] In a comparative study of social determinants of happiness in China and United States, Lam and Liu (2013) employed no more than individual-level independent variables in their analyses thus suffer the same problem in the sense that they have mixed the issue of socioeconomic inequality in happiness with the impact of socioeconomic inequality on individuals' happiness. Among the literature that addressed the latter, Lu and Wang (2011) found a negative impact of income inequality, proxied by provincial Gini coefficients, on people's subjective wellbeing, but such measures are too crude at the provincial levels to gauge the inequality in the immediate living environment that could induce the social comparison and relative deprivation. Moreover, they demonstrated that income inequality negatively affects the subjective well-being through increasing provincial crime rate, which did not help to reconcile the inconsistent findings on the positive association between income inequality and life satisfaction that support the tunnel effect theory they discussed. While Knight and Gunatilaka (2010) employed county-level Gini coefficients and reported evidence supporting the tunnel effort theory, the Gini coefficients were calculated based on income

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[1] Take income as an example, what Zhao (2012) indeed has examined is the effect of absolute income on subjective wellbeing, whereas economic inequality, as previously discussed, seems to be more relevant to how relative income and social comparison affect the subjective wellbeing.

reported by the individuals in the sample they analyzed, an approach also adopted by Jiang, Lu and Sato (2012) in their analyses of the data from Chinese 26 cities, which reported similar findings.[2]

More crucially, none of the other macro-economic variables such as the level and growth rate of economic development has been explicitly taken into account in these analyses mentioned above. Moreover, even though in the data individuals are nested in geographic jurisdictions (county, city, or province), for which economic development and income inequality are measured, all studies except for Zhao (2012) employed either conventional OLS regression models or ordered logit (probit) models, without paying adequate attention to the regional heterogeneity and the interaction effect between individual and contextual variables. To gain a comprehensive understanding of how individuals' subjective well-being is determined by both their own characteristics and the socioeconomic contexts, multi-level models seem to be more appropriate (see Pittau et al. 2010; Qi 2012).

RESEARCH QUESTIONS AND HYPOTHESES

Our research question in this paper is quite straightforward. We aim to examine the effects of individuals' income and local economic factors on their life satisfaction in China, paying special attention to the rising income inequality over the past decades. Empirical results from different countries have consistently shown that individuals' personal income affects their subjective well-being, after controlling for other demographic characteristics. Therefore, we start to test the first hypothesis:

Hypothesis 1: Individuals with higher income tend to report higher levels of life satisfaction.

Despite the finding of a positive relationship between personal income and life satisfaction by many researchers, various studies based on time-series data have shown that the average subjective well-being for many countries has remained roughly constant even though per capita income has risen substantially over time. In other words, people in more developed countries do not necessarily report higher levels of life satisfaction than people in less developed countries. The "Easterlin Paradox" is likely to be applicable in China, a country with vast regional variations in economic development. Therefore, the second hypothesis we will test is:

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[2] It should be noted that the positive association between the Gini coefficients at 26 cities and individuals' happiness is found after controlling for inequality between urban residents and rural migrants in the cities (measured by income ratio between the two groups).

Hypothesis 2: Local economic development does not have a significant effect on people's life satisfaction.

As discussed in the previous session, individuals evaluate their level of income relative to that of a reference group, typically in a local context, and adjust their expectations accordingly. With the development of the local economy and the rise in living standards, people tend to quickly get used to what they have, especially those with relatively higher income. Such adaptation processes are said to be governed by social comparisons. Based on the analysis of the data from 70 regions in 15 European countries for the period between 1992 and 2002, Pittau *et. al.* (2010) showed that personal income matters more in poor regions than in rich regions. In other words, while personal income is always positively correlated with life satisfaction, its effect is weaker in rich regions than in poor regions. Therefore, we expect similar results to be found across different regions in China and pose our third hypothesis:

Hypothesis 3. The effect of personal income on life satisfaction diminishes in regions with higher levels of economic development, measured by GDP per capita.

The above hypothesis suggests that personal income is a relative term in determining people's life satisfaction. The role of relative income can be further tested by examining the effect of income inequality on the subjective well-being of individuals. As Brockmann *et. al.* (2009) argued, a rapidly increasing income inequality in China may generate a group of "frustrated achievers," who experience a deterioration in their relative income position despite considerable income gains in absolute terms, thus leading to a fall in their life satisfaction. Even urban residents with higher education who could be seen largely as the winners of the economic transition tend to be more critical toward income inequality (Jiang *et. al.* 2012; Li and Wu 2012). Therefore, higher income inequality tends to negatively affect people's subjective wellbeing, which leads to the following hypothesis:

Hypothesis 4. Income inequality, measured by local Gini coefficients, tends to reduce an individual's life satisfaction.

Finally, since the income inequality in China has been increasing with the rapid economic growth since the 1990s, the negative impact of income inequality on subjective well-being may be offset by the perceived opportunities for mobility in the future (Xie *et. al.* 2012). Indeed, as Wu (2009) argued, while actual income inequality in China has been higher than in many other countries, respondents tend to think that income inequality is fair and are more tolerant of existing income inequality because they perceive greater opportunities for social mobility. Some

scholars interpret the positive association between income inequality and life satisfaction observed in rural China (Knight and Gunatilaka 2010) and urban China (Jiang *et. al.* 2012) as evidence supporting the tunnel effect theory. If this is the case, the rate of economic growth or the level of economic prospects would be a better and more direct measure of economic opportunities than would income inequality, especially for newly developed and transition economies (Clark and Senik 2010). This leads to our final hypothesis:

Hypothesis 5. The rate of local economic growth has a positive effect on an individual's life satisfaction.

To examine the subjective well-being of individuals in China and study the effects of both personal characteristics and regional contexts on the overall life satisfaction, we analyze the data from the Chinese General Social Survey (CGSS) in 2005, combined with the statistical data at the prefectural level from China's National Bureau of Statistics. In this sense, our research, by design, is similar to various cross-country analyses that integrate micro data from international comparable surveys data with national statistics (e.g., Di Tella and MacCulloch 2008; Haller and Hadler 2006; Qi 2012; Zagorski *et. al.* 2010).

DATA, VARIABLES, AND ANALYTICAL STRATEGY

The Chinese General Social Survey is an annual survey of a national representative sample of the adult population aged 18 or above in both rural and urban China (except for Tibet), using a multi-stage stratified random sampling method. First, 125 principal sampling units are selected from 2,798 county or county-level districts, stratified by region, rural and urban populations, and education level. Then, four second-level sampling units in each selected principal unit, two third-level sampling units in each selected second-level unit, and ten households in each selected third-level unit are chosen. One eligible person aged 18 or above is randomly selected from each sampled household to serve as the survey respondent. In the CGSS conducted in 2005, a total of 10,372 interviews were completed in which 6,098 and 4,274 were from urban and rural areas respectively (for details, see Bian and Li 2012).

The survey collected objective data about the socio-economic and demographic characteristics of respondents and subjective data concerning their overall life satisfaction. Overall life satisfaction is classified into five levels (1=very dissatisfied, 2=dissatisfied, 3=so-so, 4=satisfied, and 5=very satisfied). We use it as the dependent variable in the analysis.

There are three sets of explanatory variables. The first includes the economic and socio-demographic characteristics of individuals. Personal income refers to the monthly income obtained by respondents from all employment and non-employment sources. Gender, age, years of schooling, marital status, employment status, and residential status are included in the models as statistical controls, despite the fact that they have been shown to be responsible for only a small part of the variance in life satisfaction (Diener et al. 1999; Liao et al. 2005).

Gender is coded as a dummy (male=1), whereas age and years of schooling are continuous variables. To capture the curvilinear relationship between age and life satisfaction, we include a square term of age in the equations. Marital status is coded into three categories: 1=married, 2=divorced/widowed, 3=single; employment status is classified into 5 categories: 1=full-time, 2=part-time/temporary, 3=retired, 4=unemployed, and 5=never worked. We combined the *hukou* status and residence place to classify residential status into three types: 1=rural residents, 2=rural migrants in cities, and 3=urban residents. They are included in the models as a set of dummy variables.

The contextual variables refer to the characteristics of prefectures where the respondents lived at the time of the survey. Prefecture-level data are drawn from two sources. First, to measure the level and growth rate of economic development, we collect respectively information on GDP per capita and annual growth rate of GDP in 2005 in each prefecture from *the China City Statistical Yearbook* (National Bureau of Statistics 2006). Second, we compute the Gini coefficient for each prefecture-level jurisdiction based on the data from the one percent population survey of China in 2005, also known as the 2005 mini-census.[3] Individual records from CGSS are then matched to the three contextual variables. We restrict our sample to those aged between 18 and 69, and after matching with prefecture-level data, we are left with 7,938 individuals residing in 91 prefectures with complete information for multivariate analyses in this paper.

Descriptive statistics of all dependent, explanatory, and control variables are presented in Table 1. As shown in the table, overall, the Chinese are satisfied with their life: 5.39 percent reported being "very satisfied", 40.92 percent "satisfied", 45.32 percent "so-so", 7.39 percent "dissatisfied", and only 0.98 percent "very dissatisfied." Of the sample to be analyzed, 69.42

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[3] The 2005 mini-census, conducted by the National Bureau of Statistics (NBS), surveyed 5.43 million households in 77,000 residential blocks of 61,000 rural villages and urban neighborhoods from 21,000 townships (*xiangzhen*) or streets (*jiedao*) across China (Feng 2006).

percent hold full-time employment and 6.74 percent a part-time/temporary job. These people have, on average, received 8.18 years of schooling and earn 710.58 *yuan* per month. They come from 91 prefectural jurisdictions across the country, with average GDP per capita of 21,220.18 *yuan*, and an annual GDP growth rate of 13.77 percent. The average Gini coefficient of the 91 prefectures is 0.39.

Table 1: Summary Statistics for All Variables, China 2005

Level 1: individual (N=7938)	
Life satisfaction	
Very dissatisfied	0.98
Dissatisfied	7.39
So-so	45.32
Satisfied	40.92
Very satisfied	5.39
Marital status	
Married	88.70
Divorced/Widowed	4.15
Single	7.15
Employment status	
Full time	69.42
Part time/Temporary	6.74
Retired	10.78
Unemployed	8.58
Never worked	4.48
Residential status	
Rural residents	47.71
Rural migrants	5.38
Urban residents	46.91
Male	0.47
	(0.50)
Age	43.14
	(12.43)
Years of schooling	8.18
	(4.38)
Monthly income (*yuan*)	710.58
	(1251.09)
Level 2: prefecture (N=91)	
GDP per capita (*yuan*)	21220.18
	(16224.54)
GDP growth rate (%)	13.77
	(3.66)
Gini	0.39
	(0.04)

Notes: Percentages for categorical variables and means for continuous variables are reported; numbers in parentheses are standard deviations. Statistics are based on weighted data.

Table 2 presents descriptive statistics on both the mean score and proportionate distribution of life satisfaction in relation to other independent variables of interest. As shown, life satisfaction increases monotonically with personal income and education, and married people seem to be happier than people who are divorced, widowed, or never married. The effects of other variables are not as clear as expected, perhaps confounded by other variables. For this reason, we now turn to multivariate regression analyses.

Table 2: Comparing Life Satisfaction among Different Groups, China 2005

	Mean score of life satisfaction	Life satisfaction (%) (Recoded into 3 categories)		
	Mean	Dissatisfied	So-so	Satisfied
Income				
1st Quartile	3.27	13.07	47.92	39.01
2nd Quartile	3.35	9.76	48.98	41.26
3rd Quartile	3.45	7.06	45.88	47.06
4th Quartile	3.64	3.42	37.61	58.97
Gender				
Male	3.42	8.42	45.19	46.38
Female	3.42	8.32	45.43	46.25
Age				
20-29	3.56	5.07	41.93	53.00
30-39	3.46	7.67	43.77	48.56
40-49	3.35	10.21	48.03	41.76
50-59	3.40	8.37	45.98	45.65
60-69	3.38	10.20	46.19	43.61
Marital status				
Married	3.45	7.28	44.76	47.96
Divorced/Widowed	2.90	26.98	53.63	19.38
Single	3.34	11.08	47.39	41.53
Education				
Primary school & below	3.31	10.88	49.08	40.03
Junior high school	3.44	8.19	44.76	47.05
Senior high school	3.49	6.82	43.49	49.69
Tertiary	3.69	2.08	35.68	62.24
Employment status				
Full time	3.44	7.97	44.09	47.94
Part time/Temporary	3.40	7.90	49.76	42.34
Retired	3.46	6.83	45.46	47.71
Unemployed	3.29	12.48	51.52	36.00
Never worked	3.38	11.10	45.42	43.48
Residential status				
Rural residents	3.39	9.57	45.13	45.30
Rural migrants	3.46	7.16	46.67	46.17
Urban residents	3.46	7.29	45.35	47.36
Total	3.42	8.37	45.32	46.31

Note: Level of life satisfaction is recoded into three categories: dissatisfied (very dissatisfied and dissatisfied), so-so, and satisfied (very satisfied and satisfied). Statistics are based on weighted data.

As mentioned earlier, the level of subjective well-being was measured on a five-point scale. In other words, the dependent variable of the current analysis is of ordinal level of measurement. It is thus statistically more appropriate to use ordered logistic regression than ordinary linear regression. We employ both OLS and ordered logistic regression models to check the robustness of the results. Because urban residents are oversampled, we use sampling weights to compute figures representative of the general population in China. The clustering effect on prefectures is also taken into account and robust standard errors are reported.

To take advantage of the hierarchical data structure of the 2005 GCSS and the availability of variables at the prefecture level, we further estimate hierarchical linear (HLM) models. While the Gini coefficient, GDP per capita, and annual growth rate of each of the 91 prefectures are employed as explanatory variables at the regional level, socio-demographic and economic characteristics are employed as variables at the individual level. The HLM models enable us to estimate patterns of variation within and across prefectures simultaneously, by allowing intercepts, and eventually slopes, to vary (Raudenbush and Bryk 2002). Given the great variations across regions in China in terms of the level of economic development and income inequality, the models can effectively capture the socio-economic context in which the individuals are embedded and their subjective well-being affected.

EMPIRICAL FINDINGS

1. Determinants of Subjective Well-being at the Individual Level

As aforementioned, we employ both ordered logistic and OLS regression models to examine the determinants of subjective well-being at the individual level. The key independent variable of interest is personal income, with other socio-demographic variables, such as gender, age, education, marital status, employment status and residential status as control variables in the model. Results are presented in Table 3. As shown in the table, results from ordered logistic regression and linear regression models are largely consistent. First, men are less happy than women and those who are not currently married are less happy than those who are married. Second, a non-linear relationship is found between age and life satisfaction, which shows that happiness drops with age but its effect levels off after individuals reach midlife. Third, while those who have attained more years of schooling tend to be happier, the unemployed are the least happy. These findings are generally consistent with previous studies (Lam and Liu 2013; Smyth *et. al.* 2010). Although all the coefficients reported above are statistically significant (p< 0.05), there are no differences between rural residents, rural migrants, and urban residents in terms of their level of subjective well-being, consistent with previous findings (Jiang *et. al.* 2012).

Table 3: Ordered Logistic Regression and OLS Regression of Life Satisfaction on Individual-level Variables, China 2005

	Ordered Logistic Regression	OLS Regression
Income/100	0.015**	0.005**
	(0.005)	(0.001)
Male	-0.139**	-0.048**
	(0.044)	(0.016)
Age/10	-1.206***	-0.474***
	(0.166)	(0.063)
Age/10^2	0.129***	0.051***
	(0.018)	(0.007)
Marital status		
Divorced/Widowed	-1.401***	-0.522***
	(0.147)	(0.057)
Single	-1.092***	-0.414***
	(0.128)	(0.048)
Years of schooling	0.071***	0.027***
	(0.011)	(0.004)
Employment status		
Part time/Temporary	-0.209	-0.077
	(0.137)	(0.049)
Retired	-0.054	-0.021
	(0.118)	(0.045)
Unemployed	-0.452***	-0.165***
	(0.113)	(0.042)
Never worked	-0.031	-0.017
	(0.171)	(0.065)
Residential status		
Rural migrants	0.012	0.029
	(0.169)	(0.065)
Urban residents	-0.102	-0.023
	(0.116)	(0.044)
Constant	-	4.299***
		(0.147)
Cutoff Point 1	-6.995***	-
	(0.418)	
Cutoff Point 2	-4.729***	-
	(0.403)	
Cutoff Point 3	-2.053***	-
	(0.393)	
Cutoff Point 4	0.763	-
	(0.432)	
Chi-square	329.43	-
(Pseudo) R^2	0.03	0.07
N	7,938	7,938

Notes: Estimations are based on weighted data; robust standard errors adjusted for clustering on prefectures are shown in parentheses. Reference categories: marital status = married; employment status = full time; residential/*hukou* groups = rural residents.

*** $p<0.001$, ** $p<0.01$, * $p<0.05$ (two-tailed tests)

Our central interest is the effect of the economic factor on happiness (life satisfaction). Consistent with previous findings in different countries, the effect of personal income on the level of life satisfaction, after controlling for other factors, is significant and positive, lending support to Hypothesis 1. [4]

As similar results are found between ordered logistic regression models and OLS regression models, we use continuous measures of life satisfaction in the estimation of hierarchical linear models to account for the contextual effect on the subjective well-being of individuals.

2. Economic Inequality and Subjective Well-being: a Multi-level Analysis

In HLM models, we keep the individual variables used in Table 3 as the determinants of life satisfaction at the first level and prefectural GDP per capita, the Gini coefficient, and then GDP growth rate as contextual variables at the second level. We also take into account the cross-level interaction effects between personal income and prefectural GDP per capita. Results are presented in Table 4.

To begin with, Model 1 and Model 2 of Table 4 are the baseline models with only individual characteristics included. Model 1 is the random-intercept model whereas Model 2 is the random coefficient model, i.e., the one in which the coefficient of individual income is set as random at the prefectural level. The likelihood ratio test shows that the random coefficient model fits the data better than the random intercept model. In other words, the estimated coefficient of individual income indeed varies across prefecture. This justifies the introduction of the second-level (prefecture) variables into the models. We perform this exercise step by step: GDP per capita (logged) in Model 3, the interaction effect between personal income and GDP per capita in Model 4 , the Gini coefficient in Model 5, and finally GDP growth rate in Model 6, corresponding to each hypothesis we aim to test.

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[4] Consistent with previous findings on the impact of absolute personal income on happiness (Easterlin 2001), we found a curvilinear relationship between the two variables in our data. As we aim to examine the cross-level interaction between personal income and regional context in the subsequent analyses, we omitted the presentation of the estimated results to simplify the interpretation of the coefficients in the hierarchical linear models.

Table 4: Hierarchical Linear Models (HLMs) of Life Satisfaction on Individual and Prefectural-level Variables, China 2005

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Level 1: individual						
Income/100	0.004***	0.010***	0.010***	0.051**	0.053**	0.053**
	(0.001)	(0.001)	(0.001)	(0.018)	(0.018)	(0.018)
Male	-0.047**	-0.055**	-0.055**	-0.056***	-0.056***	-0.056***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Age/10	-0.487***	-0.483***	-0.483***	-0.484***	-0.483***	-0.483***
	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)
Age/10^2	0.051***	0.051***	0.051***	0.051***	0.051***	0.051***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Marital status						
Divorced/Widowed	-0.483***	-0.482***	-0.482***	-0.482***	-0.482***	-0.484***
	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)
Single	-0.363***	-0.362***	-0.362***	-0.363***	-0.363***	-0.364***
	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)
Years of schooling	0.025***	0.023***	0.023***	0.022***	0.023***	0.022***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Employment status						
Part time/Temporary	-0.135***	-0.123***	-0.123***	-0.125***	-0.126***	-0.127***
	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)
Retired	-0.031	-0.018	-0.019	-0.022	-0.021	-0.021
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
Unemployed	-0.202***	-0.168***	-0.168***	-0.170***	-0.172***	-0.173***
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
Never worked	-0.014	0.029	0.029	0.027	0.024	0.025
	(0.041)	(0.041)	(0.041)	(0.041)	(0.041)	(0.041)
Residential status						
Rural migrants	0.072	0.042	0.042	0.039	0.044	0.041
	(0.041)	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)
Urban residents	0.041	0.016	0.016	0.013	0.017	0.015
	(0.027)	(0.028)	(0.028)	(0.028)	(0.028)	(0.027)
Intercept	4.320***	4.304***	4.279***	3.831***	4.281***	2.393***
	(0.117)	(0.117)	(0.296)	(0.358)	(0.398)	(0.667)
Level-2: prefecture						
Ln(GDP per capita)	-	-	0.003	0.050	0.049	0.034
			(0.029)	(0.036)	(0.036)	(0.035)
Gini	-	-	-	-	-1.128*	-0.947*
					(0.439)	(0.413)
GDP growth rate (%)	-	-	-	-	-	0.017***
						(0.005)
Cross-level interaction						
Income/100 × Ln(GDP per capita)	-	-	-	-0.004*	-0.004*	-0.004*
				(0.002)	(0.002)	(0.002)
Level-1 variance	0.494	0.489	0.489	0.489	0.489	0.489
Level-2 variance	0.029	0.039	0.039	0.038	0.037	0.035
Explained variance	0.081	0.073	0.073	0.074	0.075	0.078
Level-1 N	7,938	7,938	7,938	7,938	7,938	7,938
Level-2 N	91	91	91	91	91	91

Notes: Maximum likelihood estimations are reported; standard errors are shown in parentheses. Reference categories: marital status = married; employment status = full time; residential/*hukou* groups = rural residents.

*** $p<0.001$, ** $p<0.01$, * $p<0.05$ (two-tailed tests)

After controlling for all relevant variables at the individual level, while living in a prefecture with a higher level of GDP per capita increases one's level of life satisfaction, this positive effect, on average, is not statistically significant. This is consistent with Hypothesis 2 and the Easterlin Paradox seems to be applicable to China as well. It is argued that personal income is a relative term in a local context. While people living in a more developed region tend to have higher income on average than people living in a less developed region, they would also have higher expectations and compare themselves with higher income earners. Therefore, we introduce the interaction effect between level-1 (personal income) and level-2 (logged GDP per capita) variables into the subsequent models.

After the introduction of the interaction term in Model 4, while personal income shows a significantly positive effect on one's level of life satisfaction ($p<.01$), the interaction term is negative and statistically significant ($p<.05$), suggesting that personal income matters less for those living in prefectures with a higher level of GDP per capita. In other words, personal income is a stronger predictor for subjective well-being in poorer prefectures than in richer ones. These observations might be related to the proposition of post-materialism, which argues that life satisfaction in rich regions is more related to non-materialistic issues while life satisfaction in poor regions is derived simply from being able to make ends meet. An alternative explanation is that, in richer regions, wealthy people spend more time on materialistic pursuits or activities (e.g., work, selfish spending) that do not generate positive affect and thus offset the positive effect of income. Poorer regions afford fewer opportunities for such pursuits or activities; income in these regions thus is more able to increase happiness, probably through having more leisure to spend with families or more prosocial spending (Kahneman *et. al.* 2006; Mogilner 2010; Aknin *et al.* 2013). The evidence also provides a further elaboration of the "Easterlin Paradox" at the regional level within China, lending support to Hypothesis 3.

In Model 5, we introduce the variable that interests us most, the prefectural Gini coefficient, to examine the impact of local income inequality on people's life satisfaction. As Hypothesis 4 predicts, results show that local income inequality significantly reduces the level of happiness ($p<.05$), even after controlling for personal income, local GDP per capita and their interaction term.

Furthermore, as pointed out earlier, it is the annual GDP growth rate, rather than the level of economic development as measured by GDP per capita, or the Gini coefficient, that is directly related to mobility chances and therefore an individual's life satisfaction. We thus add the

variable in Model 6. Confirming Hypothesis 5, we find that individuals living in a prefecture with a higher annual GDP growth rate report significantly greater levels of life satisfaction. The effect is statistically significant ($p<.001$). Even after controlling for the effect of economic optimism (the tunnel effect), the negative impact of income inequality on subjective well-being remains.

SUMMARY AND DISCUSSIONS

In this paper, we aim to specifically examine the subjective consequence of rising income inequality in China amidst the economic boom that has continued for decades. Based on the data from a national representative survey in 2005 and prefecture-level statistics in China, we employ multi-level models to show how subjective well-being is affected by individual characteristics and the local context, and propose five hypotheses, with particular attention paid to the role of economic factors.

At the individual level, we show that personal income affects life satisfaction in a positive way, namely, individuals with higher income tend to report higher levels of life satisfaction. However, this effect is largely mediated by the process of social comparisons, highlighting the fact that subjective well-being carries a relative component. In other words, it is how one's income compares with peers in the immediate social environment instead of absolute income that determines one's subjective well-being. Thus we turn our attention to the role of the local socioeconomic context, such as economic development, growth rate, and income inequality, in affecting life satisfaction

At the prefectural level, after controlling for all other factors, we found that GDP per capita has no effect on individuals' subjective wellbeing. It appears that, after decades of continuing economic growth, the living standard in China has improved so much so that the "Easterlin Paradox" has inevitably emerged. Further analysis shows that the interaction between personal income and local GDP per capita is significantly negative. In other words, higher personal income matters more in determining one's subjective wellbeing in poorer areas than in richer ones. This finding provides evidence to support social comparison theory that offers explanation for the "Easterlin Paradox."

The sharply rising income inequality amidst the rapid economic development, on the other hand, is associated with lower levels of subjective well-being, as indicated by the significantly negative coefficient for the local Gini index, even after controlling for GDP per

capita. Moreover, the rate of economic growth in the immediate living environment, which is often associated with rising inequality in the Chinese context, signals the economic prospects of individuals, boosts their confidence in the future and positively affects their life satisfaction.

Previous studies have failed to take the rate of economic growth or any related macro-economic factors into account when examining the effect of income inequality on the life satisfaction of individuals and have therefore yielded mixed results. Controlling for factors at both individual and aggregate levels, including the rate of GDP growth, we find that a higher Gini coefficient leads to a reduction in individuals' happiness. China's political leaders have been warned that a negative relationship between income inequality and the subjective well-being of individuals will lead to public discontent and social instability in the country. Our analysis provides some evidence to support this view. Echoing the widening gap between rich and poor, exacerbating environmental degradation, and escalating social conflicts in China, there have been calls for a policy shift from emphasizing GDP growth to improving people's livelihood. For instance, Guangdong Province, under the leadership of Wang Yang, then the Party Secretary, has launched the "Happy Guangdong" project since 2011, aiming to alleviate social and political conflicts and boost people's life quality and subjective wellbeing via a series of social and economic policies in the Province's 12th Five-Year Plan (2011-2015) (Page 2011).

From a policy point of view, early studies have shown that progressive taxation that redistributes income and wealth is positively associated with increased levels of subjective well-being (Oishi *et. al.* 2012), and expenditure on public health care also contributes to the improvement of life satisfaction (e.g., Kotakorp and Laamanen 2010). Further research needs to be done to assess of the impact of government specific redistributive policies on people's subjective wellbeing in China.

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