



# The Dark Side of Chinese Growth: Declining Social Capital and Well-Being in Times of Economic Boom

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**Summary.** — Over the last two decades, subjective well-being in China declined. Using data from the World Values Survey, we identify predictors of the trend in life satisfaction in China during 1990–2007. Social comparisons and the decline of social capital explain the decrease in well-being, and they are strictly connected to the increasing orientation of Chinese people toward materialistic values. The increasing role of social comparisons is also a key factor in the increase of well-being inequalities between income classes. © 2015 Elsevier Ltd. All rights reserved.

**Key words** — China, Easterlin paradox, economic growth, life satisfaction, social capital, Oaxaca–Blinder decomposition

## 1. INTRODUCTION

Whether economic growth leads to higher well-being in the long run—the so-called Easterlin paradox—is a disputed issue. Less controversial is the finding that, over time, social capital is more closely associated to subjective well-being (SWB) than economic growth. This suggests that we should explore the possibility that durable improvements in the quality of life require new policies for building social capital. Most of the previous studies focus on developed countries, whereas studies from developing countries are rare. As such, the extant empirical literature says little about the generalizability of this conclusion and the extent to which it concerns only developed nations.

China is a crucial case for empirical research on this topic because it counts a large share of the world population, and because if there is a country where economic growth should have played a relevant role for people's well-being, it is China. The data we use begins in 1990, right after the Tiananmen Square Massacre, in a still extremely poor country oppressed by a dictatorship. Two decades later, China exhibits increasing segments of western-style opulence, generally improved standards of life, and greater political freedom, when compared to the 1980s. The living conditions of hundreds of millions of Chinese have significantly improved since 1990s with GDP per-capita growing by about 10% per year. During 1990–2010, sustained Chinese growth dramatically decreased the number of people living with less than 1.25 US\$ per day, while the percentage of rural population with access to improved water sources raised from 56% to 85%. In the same period the average annual growth of household final consumption expenditure was 6.5%.<sup>1</sup> China features all the ingredients for a big leap forward in subjective well-being.

Yet, these objective records are in striking contrast with those from subjective perceptions. China is perhaps the world's largest example of the Easterlin paradox: [Figure 1](#) shows that, during 1990–2007, average life satisfaction substantially dropped ([Easterlin, Morgan, Switek, & Wang, 2012](#)).

Using data from the World Values Survey, we empirically explore the factors that predict the disappointing trend of well-being in China. We investigate determinants of the

long-term trend of subjective well-being (1990–2007) and its shorter term variations (1990–2001 and 2001–07). Moreover, we identify the winners and losers of economic growth by analyzing what shaped the well-being in China's lower, middle, and upper classes. We adopt the Blinder–Oaxaca method to decompose the variation of well-being over time and among income classes in two components: a part explained by the variation in the endowments of each variable and a part explained by changes in people's preferences.

Our findings suggest that objective data do not adequately capture the increase in the importance of social comparisons and the decline of social capital. These two powerful drivers of the decline of well-being appear to be strictly connected to the increasing orientation of Chinese people toward materialistic values. Our results suggest that Chinese values are probably following a path launched by Deng Xiaoping at the beginning of the Chinese transition to capitalism and symbolized by the motto, “to get rich is glorious”. Probably Deng did not imagine that the kind of values he was promoting would be so successful in frustrating the well-being of Chinese people, despite a glorious economic take-off. Furthermore, economic growth resulted in higher well-being inequality between income classes: those in the lowest three deciles and the middle-class experienced a marked reduction in well-being, whereas people in the three highest deciles of the income distribution experienced a slight improvement in their conditions. The almost flat relationship between income and

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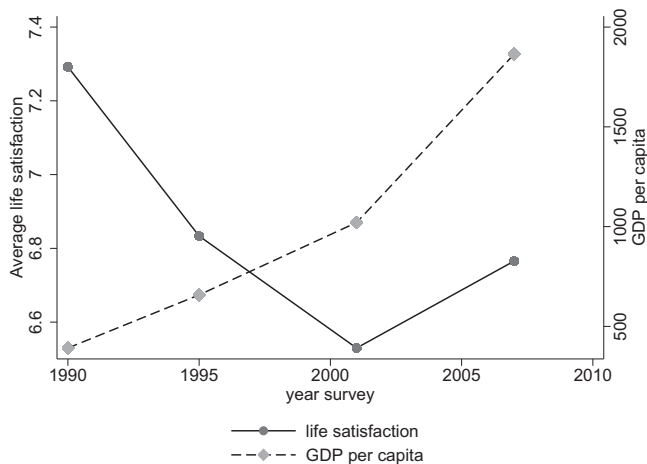


Figure 1. *Life satisfaction and income across time*\*. \*Data about GDP per capita (2000 US\$) are extracted from the World Development Indicators, The World Bank, <http://data.worldbank.org/data-catalog/world-development-indicators>.

life satisfaction observed in 1990 turned into a steep relationship at the end of 2007.

Our figures from China resemble those from the US documented by Bartolini, Bilancini, and Pugno, 2013: the declining trend of happiness in the US is almost entirely predicted by social comparisons and by the decline in social capital. In sum, the social qualities of economic growth are key to declining SWB in the most celebrated growth stories of the past few decades, both in the developed and the developing world.

The paper is organized as follows: Section 2 reviews the literature related to this paper. Section 3 illustrates the data available for the present study and the relevant variables. Section 4 discusses the relevant methodological aspects. Section 5 presents our findings about the evolution over time of subjective well-being in the overall period and across sub-periods and income classes. Section 6 concludes.

## 2. BACKGROUND

The relationship between economic growth and well-being raised a lively debate in the past few decades. Easterlin (1974) pointed out that the US economic growth from the Second World War onward did not bring about significant improvements in Americans' SWB. This evidence underwent intensive scrutiny. The availability of large data-sets that include several countries and long periods of time allowed scholars to test the existence of the paradox. Some scholars have confirmed the paradox, and clarified that, in the short run, economic growth and well-being are associated, whereas in the long-run this positive relationship vanishes (Easterlin & Angelescu, 2009; Easterlin, Angelescu, Switek, Sawangfa, & Zweig, 2010). Some others have contested the existence of the paradox itself and claim that economic growth brings about better lives (Inglehart, Foa, Peterson, & Welzel, 2008; Sacks, Stevenson, & Wolfers, 2012, cha 3; Stevenson & Wolfers, 2008; Veenhoven & Vergunst, 2013).

Independently from whether economic growth matters for well-being, social capital seems to matter more. The literature documents that social capital (SC) is an important ingredient of people's well-being (Helliwell, 2003, 2008; Uhlener, 1989). In particular the quality of personal relationships has a large, substantive impact on well-being (Helliwell, 2006; Helliwell &

Putnam, 2004; Becchetti, Pelloni, & Rossetti, 2008; Bruni & Stanca, 2008).

Beyond the cross-sectional evidence, it is relevant that SC and SWB are also related over time. Recently, Bartolini, Bilancini, and Pugno (2013) showed that the decline in a wide range of measures of SC predicts the decline in US happiness over the past 30 years. This suggests that the erosion of social capital (Putnam, 2000) may be an important component of the explanation of the American version of the Easterlin paradox, a result further confirmed for Germany (Bartolini, Bilancini, & Sarracino, 2013). Moreover, Bartolini and Sarracino (2014) show that, in a large sample of countries, economic growth is not correlated with the trends of well-being in the long run, whereas such trends are strongly and significantly correlated with the trends of social capital. These findings are mainly drawn from developed countries, while the extent to which social capital is associated over time with SWB in developing countries remains an open issue.

An important contribution to address such issue comes from China because of the size and of the pace of its economic boom. There are at least two papers analyzing the trend of SWB in China: Brockmann, Delhey, Welzel, and Yuan (2009) and Easterlin *et al.* (2012). Both papers stress the importance of social comparisons as a cause for the disappointing trend of life satisfaction. The main idea is that economic growth brought about a dramatic improvement in economic conditions by raising people's expectations about their perspective situation. Chinese growth went hand-in-hand with rapidly increasing income inequality. The result is that many Chinese people saw their absolute conditions improving, but not in relative terms. Their economic position worsened when compared to that of large segments of the population, thus resulting in a decrease in well-being.

Moreover, Easterlin *et al.* (2012) emphasized the role of the decay in the safety net as a prime cause of the decline in well-being. They point out the similarity of the Chinese trend of well-being with those from Eastern European countries that experienced the transition from socialism to capitalism. What China and Eastern Europe have in common is that, under socialism, workers were guaranteed jobs and provided with an extensive safety net including health care, child care, and pensions. Post 1989 privatization was typically accompanied by the erosion of the safety net, which in turn negatively impacted well-being.

We emphasize that the erosion of safety net may have been a consequence of the decline in social capital and not only of the transition to capitalism. Indeed, industrial revolutions are always associated to a decline in the informal safety net connected to decaying familiar and communitarian relationships. Despite being the first experiment of transition from a socialist to a capitalist economy managed by a Communist party, the Chinese take-off shares many features of all industrial revolutions: rapid urbanization, erosion of traditional institutions, pollution, reduced farmers' access to land, and an increase of income inequality. The diminished water flow and the pollution of the Yellow river basin—the core of Chinese agriculture—result from the industrial expansion and they are the contemporary version of the environmental devastation that accompanied the British Industrial Revolution. The expropriation of agricultural land for industrial purposes, that provokes every year thousands of riots, has the same effect of the enclosures.<sup>2</sup> The reduction of the access to land pushes the lower rural classes to feed the ranks of low-cost urban labor force on which the industrial take-off is based.

Thus, China mirrors the stylized facts typical of all industrial revolutions. These processes are associated with extensive

erosion of social capital and rapid changes in people's values. For example, urbanization is a well-known cause of erosion of social capital in rural areas. Between 100 and 200 million Chinese urban immigrants, lost a large part of their safety net related to their community. These phenomena, well-known to development economists (Polanyi, 1968; Williamson, 1995), clearly emerge from our figures on the decline of Chinese social capital and the upsurge of materialism. In this context, the transition to capitalism in China appears to have exacerbated the destruction of safety net associated to the decline of shared values and networks. This decline, influences well-being in various ways, well beyond the erosion of safety net.

Besides Brockmann *et al.* (2009) and Easterlin *et al.* (2012), who analyze the trend of SWB, there is a number of contributions on the relationship between quality of life and income inequality, government accountability, and materialistic values in China. Knight and Gunatilaka (2011), using survey data from 2002, conclude that income comparisons have a dominant impact on Chinese SWB. Jiang, Lu, and Sato (2012) show that income inequality between urban migrants and urban residents has a negative impact on SWB. Similarly, Knight and Gunatilaka (2010) argue that the relatively great unhappiness of urban migrants is largely explained by the feelings of relative deprivation that they develop. These feelings are drawn from their reference groups of their new urban surroundings, characterized by greater income inequality. These papers suggest that higher income inequality may have a negative impact on SWB by exacerbating the importance "to keep up with the Zhous". This is despite the fact that the Chinese may perceive inequality as more fair than unfair, and as providing chances for economic advancement of the industrious and ambitious (Whyte, 2010). Moreover, Cheung and Leung (2007) document that government accountability at the beginning of the millennium had significant effects on the life satisfaction of a sample of Beijing residents. Shek (2010) reviews several studies relating the quality of life in China to macro societal conditions, family and individual quality of life. Finally, Steele and Lynch (2013a) show that life satisfaction in the past two decades became increasingly dependent on individualist factors rather than collectivistic ones.

The value shift of Chinese people has been the object of various studies on materialism. Podoshen, Li, and Zhang (2011) examined the rise of materialism and conspicuous consumption in post-revolution China. Using survey data, they found significant differences in both materialism and conspicuous consumption, with Chinese young adults scoring higher in both variables. Only a few years before, Schaefer, Hermans, and Parker (2004) had found Chinese teenagers to be less materialistic than teens in both Japan and the United States. This suggests a very quick spread of materialism in China. As for mature consumers, the situation does not seem different: Wei and Talpade (2009) found that overall, Chinese mature consumers are more materialistic than their American counterparts. A research by IPSOS found that the share of Chinese people agreeing that "I measure my success by the things I own" was the largest (71%) among the 20 countries analyzed.<sup>3</sup>

Consistently with these studies, we refer to materialism as a personal value system attributing a high priority in life goals to extrinsic motivations and low priority to intrinsic motivations. The distinction between the two refers, respectively, to the instrumentality—or lack thereof—of the motivations for doing something about it (Kasser, 2002). The term extrinsic means that motivations are external to an activity, such as success, money, status, and image. Conversely, "one is said to be

intrinsically motivated to perform an activity when one receives no apparent reward except the activity itself" (Deci, 1971, p. 105).

Our work contributes to previous literature on the trend of SWB in China in various regards. We propose an explanation of the life satisfaction gap based on a systematic analysis of the changes over time in endowments and in preferences of the correlates of life satisfaction, using the Oaxaca–Blinder decomposition. We focus on the role of social capital as a predictor of well-being, along with a standard set of regressors including social comparisons, employment status, freedom and control over one's life and health. We adopt individual level data using a longer time-span than previous studies. Finally, we improve on the previous literature by explaining: (i) the changes in the distribution of SWB among income classes; (ii) the decline of life satisfaction during 1990–2001 and its recovery from 2001 onward.

### 3. DATA

We adopt data from the WVS (2009), a data-set providing comparable information about economic, social, cultural, and political characteristics, surveying nationally representative samples in each wave. This extensive data-set provides national-level time-series on social capital, subjective well-being, and socio-demographic and economic controls concerning—among others—China from the early 1990s to the year 2007.

The Chinese sample is made approximately of 1,000 observations in each wave. The sample was selected by quota after stratifying the population universe according to residence, gender, age, occupation, and education (WVS, 2009).

Subjective well-being (SWB) is proxied by reported life satisfaction, a variable ranging from 1 = "dissatisfied" to 10 = "satisfied" depending on the answers to the following question: "all things considered, how satisfied are you with your life as a whole these days?". This data-set provides also another proxy of SWB, namely feelings of happiness. However, in the present article we will focus only on life satisfaction. The reasons are mainly two: first, life satisfaction is reported on a ten points scale, whereas happiness is on a four point scale. Hence, the former provides a richer and more differentiated information than the second one. Second, although the evidence from the two variables is usually consistent, it is commonly held that happiness provides a more emotional measure of well-being. On the contrary, life satisfaction reflects a more cognitive evaluation of well-being and is therefore regarded as more reliable (Diener, 2006).

The three main explanatory variables of life satisfaction are household income, financial dissatisfaction and social capital. Income is measured with an ordered scale of income intervals. Financial dissatisfaction is observed after inverting the scale of answers to the question: "how satisfied are you with the financial situation of your household?" After recoding, the answers range on a 10 points scale where higher numbers stand for greater dissatisfaction.

We document an increasing trend of financial dissatisfaction that may appear astonishing in a country that experienced such an economic boom. As also noticed by Brockmann *et al.* (2009), such trend suggests that financial dissatisfaction is not shaped by absolute income. More specifically, D'Ambrosio and Frick (2012); D'Ambrosio and Frick (2007) show in a panel analysis that dissatisfaction is weakly predicted by absolute income, and strongly correlates with a measure of relative deprivation. In other words, financial



dissatisfaction is largely shaped by relative rather than absolute standards, thus reflecting social comparisons, i.e., individual achievements with respect to what other people—with whom the respondent compares herself—get. Moreover, including absolute income in our life satisfaction equation allows to control for its possible confounding effects on financial dissatisfaction, thus leaving the latter to mirror relative concerns.

The (OECD, 2001, p. 41), consistently with Putnam (2000) defines social capital (SC) as “networks together with shared norms, values and understandings that facilitate co-operation within or among groups”. To observe SC we use proxies that are generally accepted and applied by the literature on the argument: generalized trust, a measure of civicness, and associational activity (Costa & Kahn, 2003; Paxton, 1999).<sup>4</sup>

Trust in others is observed through answers to the following question: “Generally speaking, would you say that most people can be trusted, or that you can’t be too careful in dealing with people?” The resulting dichotomous variable is set to 1 if the respondent answers positively, 0 otherwise (Knack & Keefer, 1997).

The index of civic cooperation is based on answers to questions if “claiming government benefits which you are not entitled to”, “avoiding a fare on public transport”, “cheating on taxes if you have the chance”, or “accepting a bribe”, are acceptable. Answers to these questions range on a 1 (never justifiable) to 10 (always justifiable) scale. For the purposes of present work, each of these variables has been recoded so that larger values stand for stronger norms of civic cooperation. To construct the variable we first run a factor analysis on the four questions and finally we generated an index of civic cooperation as the average of the four initial variables (for more details, please refer to the Appendix I). The index of civic cooperation mirrors the scale of its four original variables: it ranges on a 10-point scale where higher values stand for higher sense of civicness.

Our third proxy of SC is the respondent’s participation in various kinds of groups and associations. Indeed, the WVS includes a battery of questions concerning whether people belong or actively participate in groups or associations. The list of organizations prompted during the interview is quite long and contains—among others—religious, cultural, sport, professional, environmental, human rights, and political associations (for the complete list of groups or associations see the Appendix J). We measure associational activity with a dichotomous variable set to 1 if the respondent participates or performs unpaid voluntary work for at least one of the mentioned groups or associations, 0 otherwise.

To allow comparison with previous studies, we further included controls for perceived freedom of choice and control over one’s own life. This variable is observed on a scale from 1 (“none at all”) to 10 (“a great deal”) to indicate how much freedom of choice the respondent feels to have over his/her own life.

Our key explanatory variables allow to study the evolution of materialism over time because, while freedom of choice or components of social capital as associational activities, civic-minded behavior and trust are intrinsically motivated, a strong emphasis on income and social comparisons is a typical materialistic feature. Therefore we interpret an increasing dependence of Chinese well-being on extrinsically motivated factors and a lesser dependence on intrinsically motivated ones, as reflecting shifts in life priorities connected to the spread of materialistic values.

Finally, we included a standard set of socio-demographic controls such as gender, age, marital, and employment status, reported health and the region where the interview was conducted. In the first wave in 1990 the surveyed sample largely consisted of people from urban areas, while residents in rural areas were seldom reached. In the subsequent waves a representative sampling of the urban and rural population was ensured. To account for the potential bias this could cause, we have included a control for the region where the interview was taken. Regional dummies allow to control for unobserved differences across regions and, together with the other socio-economic variables, account for the potential differences among the initial and the subsequent samples. Furthermore, the possible bias toward an over-representation of urban population in the first wave does not undermine our main findings, but would eventually strengthen them (see Section 5). Table 1 summarizes the main variables used in this study together with some descriptive statistics.

Percentages of missing data are on average below 10% thus they do not raise concerns of seriously biasing the estimates (Allison, 2001; Little & Rubin, 2002; Schafer, 1997).

#### 4. METHODOLOGICAL ASPECTS

Our aim is to predict the trend of SWB in China by quantifying the relative importance of the changes in the predictors of life satisfaction. For this purpose we use the Blinder–Oaxaca decomposition. This technique allows us to decompose the well-being gap between the initial and the final year of observations and to identify the extent to which changes over time in the levels and in the coefficients of life satisfaction regressors explain the well-being gap.

The Blinder–Oaxaca decomposition has been developed in the early ’70s by Blinder (1973) and Oaxaca (1973) to study discrimination between men and women in the labor market. Recently, it has been applied also in other fields, including the literature on subjective well-being (Becchetti, Massari, & Naticchioni, 2010; Helliwell & Barrington-Leigh, 2010; Sarracino, 2012).

The decomposition method allows us to study group differences in an outcome variable by dividing its differential in two parts: the explained one, accounting for differences in observed characteristics of the population and the unexplained one, measuring the differences in the coefficients between two groups. The latter is generally considered a discrimination measure (Jann, 2008). For the purpose of the present article, the decomposition allows to identify how much of the overall differential in the average subjective well-being between two years can be ascribed to differences in the set of characteristics as presented in Eqn. 1 (the explained part) and to differences in how these characteristics are evaluated (the unexplained part).

We are aware that the ordered nature of the dependent variable would require ordered probit or logit techniques. However, we adopted a linear model for ease of computation and comparison of the coefficients across years. Moreover, the recent literature on subjective well-being demonstrated that, when the dependent variable has a sufficient number of categories, linear models provide equivalent results of their ordered counterparts. In particular, Ferrer-i Carbonell and Frijters (2004) conclude that assumptions on ordinality or cardinality of the answers to a subjective well-being question are “relatively unimportant to results”.<sup>5</sup>

Table 1. *Descriptive statistics*

Variable	Mean	Sd	Min	Max	Obs	Missing
Satisfaction with life	6.876	2.343	1	10	3,754	0
Age	41.97	13.23	18	85	3,767	0
Age squared	1,937	1,152	324	7,225	3,767	0
Female	0.490	0.500	0	1	3,765	0
Marital status	–	–	1	6	3,749	0
Employment status	–	–	1	8	3,678	0.02
Region	–	–	156,001	156,043	3,765	0
State of health	3.805	1.001	1	5	3,758	0
Freedom of choice	7.205	2.321	1	10	3,602	0.04
Scale of incomes	4.293	2.142	1	10	3,400	0.10
Ffinancial dissatisfaction	5.049	2.589	1	10	3,725	0.01
Trust in others	0.548	0.498	0	1	3,715	0.01
Index of civicness	9.127	1.385	1	10	3,760	0
Social participation	0.560	0.496	0	1	3,763	0

A downside of the Blinder–Oaxaca approach is that the unexplained part captures also the potential effects of differences in any unobserved variables (Jann, 2008).

Formally, the decomposition can be represented as follows:

$$\Delta LS = \underbrace{[E(X_{fy}) - E(X_{iy})]}' \cdot \beta^*}_{\text{explained}} + \underbrace{[E(X_{fy})' \cdot (\beta_{fy} - \beta^*) + E(X_{iy})' \cdot (\beta^* - \beta_{iy})]}_{\text{unexplained}} \quad (1)$$

where  $\Delta LS$  is the difference in average subjective well-being between the final ( $fy$ ) and the initial ( $iy$ ) year of observations,  $E(X)$  is the yearly average of a vector of explanatory variables measured at the beginning and at the end of the period of observation,  $\beta_{fy}$  and  $\beta_{iy}$  are vectors of coefficients and  $\beta^*$  is a vector of *non-discriminatory* coefficients to quantify how much each group of variables explains the overall difference of means. The vector of explanatory variables includes the usual predictors of happiness such as: gender, age and age squared,<sup>6</sup> marital and employment status, income, financial dissatisfaction, subjective health, freedom of choice and control over one's life, trust in others, index of civicness, participation in groups and associations along with a dummy for each region of residence.

## 5. RESULTS

The results of the decomposition of the life satisfaction gap in China during 1990–2007 are presented in Table 2 and detailed in Table 4 in the Appendix. In 1990 the average level of life satisfaction amounted to 7.54 on a 10 points scale, whereas in 2007 it reduced to 6.83. Overall the Chinese subjective well-being decreased by  $-7.1\%$  during 1990–2007. Approximately 65% of this variation is explained by changes in the endowments between the two years. In other words, if the levels of each explanatory variables had not changed over time, the well-being differential would have been 65% smaller. The remaining 35% of the life satisfaction gap remains unexplained, that is to say it is related to changes in preferences between the two periods.

Figure 2a and b graphically summarize the contribution of the main predictors of well-being to the life satisfaction gap.

Three main factors predict the well-being gap during 1990–2007: the erosion of social capital, the increase of financial dissatisfaction and the changes in preferences; as for the latter, in 2007 Chinese well-being was more strongly associated to social

Table 2. *Decomposition of the life satisfaction gap during 1990–2007 in China*

Satisfaction with life		
	Differential	
Prediction_1	6.832***	(104.84)
Prediction_2	7.546***	(104.75)
Difference	-0.714***	(-7.35)
	Decomposition	
Explained	-0.462***	(-5.15)
Unexplained	-0.252***	(-3.94)
Observations	2,085	

*z* statistics in parentheses.

\* $p < 0.1$ .

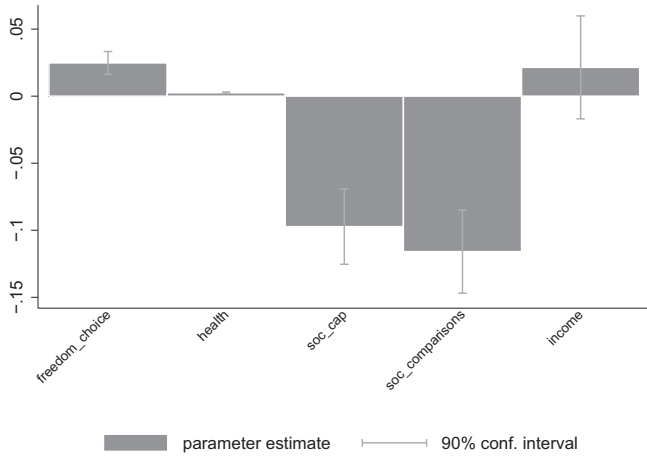
\*\* $p < 0.05$ .

\*\*\* $p < 0.001$ .

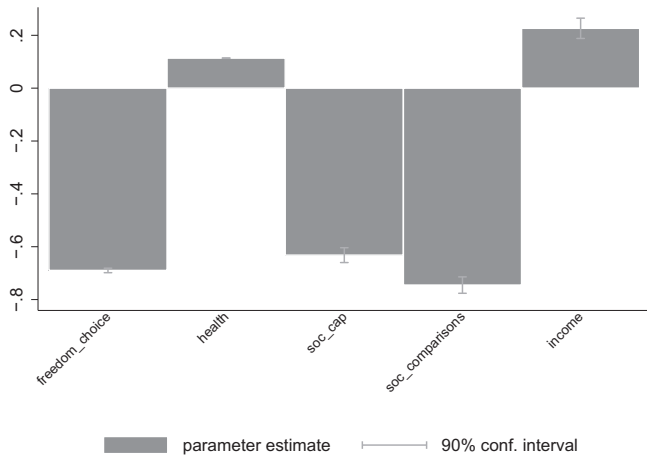
comparisons and less strongly associated to social capital and to freedom of choice compared to 1990. The negative impact of this changes in preferences is only partially moderated by the higher importance of health and of income. For what concerns the explained part of the gap, the negative impact of the changes in social capital and financial dissatisfaction is only attenuated by a weak increase in freedom of choice and control over one's life.

Besides these variables, part of the well-being gap is also explained by changes in socio-demographic predictors such as marital status, employment status and the aging of the population. During 1990–2007 the number of married people decreased, whereas those divorced or widowed increased. At the same time, also the importance that people attach to these dimensions reduced. Similarly, the number of part-time employees, housewives, students, and unemployed people increased significantly, while self-employed people reduced. According to Easterlin *et al.* (2012) the increase in unemployment, due to the high rate of retrenchment from state-owned enterprises, played a role in the decline of life satisfaction. Our calculations confirm this role, showing that the increase in unemployment (explained) accounts for about 1% of the life satisfaction gap (the unexplained part is non-significant). However, a major part of the life satisfaction gap is predicted by other factors.

Table 3 in Appendix A informs that all three proxies of social capital sharply declined. Trust in others decreased by 7%, the index of civic behavior reduced by 7.4%, while



(a) Explained



(b) Unexplained

Figure 2. Detailed decomposition of the explained and unexplained part of the life satisfaction gap during 1990–2007 in China. The y-axis reports the changes in life satisfaction on a 10 points scale. The x-axis reports some relevant explanatory variables. The bars represent the variation in life satisfaction predicted by changes over time in the levels (explained) and in the preferences (unexplained) of the set of explanatory variables. Note: *soc\_cap* stands for social capital and it refers to the summation of the effects of trust in others, civic cooperation and social participation on well-being. The summation is possible because the effects of the three proxies are expressed in the same unit, i.e., changes of life satisfaction.

associational activity dropped by 3.4%. Overall, the decline of social capital explains 21% of the explained gap and 13.5% of the overall life satisfaction gap. Given this erosion, if we assume that people’s preferences for social capital did not change since 1990, the overall effect on life satisfaction would be  $-1.8\%$  rather than the predicted decrease of  $-7.1\%$ . In other words the decline of life satisfaction due to the erosion of social capital would be  $-5.3\%$  smaller than the actual one.<sup>7</sup> To grasp how much the change in preferences for social capital affects life satisfaction, let’s assume that the endowments of social capital did not change since 1990. This amounts to compute the life satisfaction gap as if only preferences had changed. Computations are presented in Table 7 in Appendix B. The change in preferences that happened during 1990–2007 predicts a  $-6.6\%$  decrease in life satisfaction, only

$0.5\%$  less than the actual decrease. In other words, the loss of social capital endowments affects the life satisfaction gap less than the changes in preferences.

A further  $15.5\%$  of the gap is explained by a slight increase ( $+2.5\%$ ) in financial dissatisfaction (see Figure 2a). At the same time, the importance of social comparisons for the well-being of the average Chinese doubled compared to 1990, thus further affecting people’s well-being (see Figure 2b).

Summarizing, there are two main sets of forces shaping the life satisfaction gap between 1990 and 2007 in China:

- the variation of endowments of the correlates of life satisfaction: among these the increase of financial dissatisfaction and the erosion of social capital are the main sources of the decrease in well-being. Remarkably, the two groups of variables exert a fairly comparable effect on well-being;
- the change of preferences: in 2007 people attach more importance than previously to social comparisons and income, and lower importance to other dimensions such as social capital and freedom of choice and control.

The massive shifts in preferences that we document, arguably, mirror the shifts in life priorities connected to the spread of materialistic values. Our results document the increasing dependence of Chinese well-being on extrinsically motivated

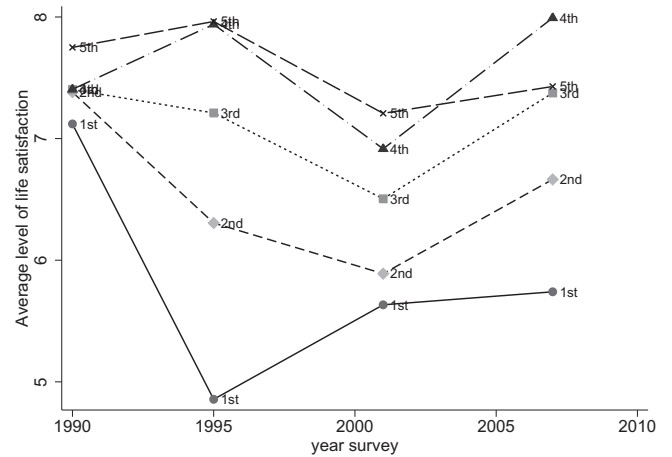


Figure 3. Trends of life satisfaction by income quintiles of the Chinese population.

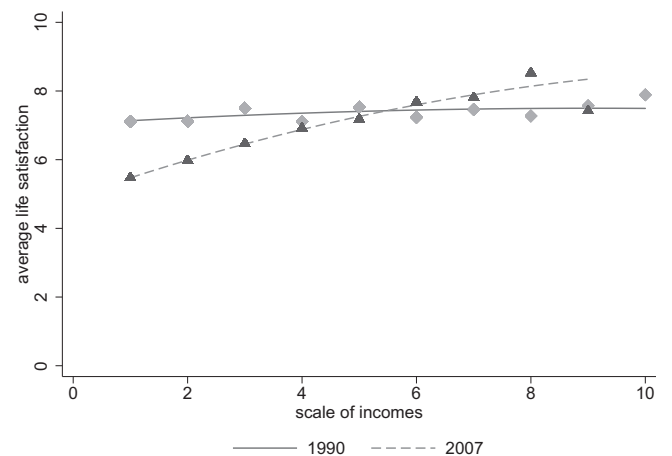


Figure 4. Relationship between life satisfaction and income deciles in 1990 and 2007.

factors and the lesser dependence on intrinsically motivated ones.

The possible bias toward an over-representation of urban population in the first wave (see Section 3) does not undermine our main findings, but would eventually strengthen them. Indeed, such bias would eventually lead to an underestimation of the decline of social capital and, in particular, of trust in others which is normally higher in rural areas. Moreover, the rural–urban divide in developing countries is generally associated to an income inequality divide which is greater in urban areas (Eastwood & Lipton, 2000). China makes no exception to this regularity that makes cities an engine of social comparisons. Therefore, the above-mentioned sample bias would lead to conclude that the sharp increase in the importance of social comparisons that we document is underestimated. Finally, the sample bias would make the relationship between income and well-being steeper because in urban areas income differences matter more for well-being, for instance, because of the lower availability of free or low-cost amenities. Hence, the strengthening over time of the relationship between income and life satisfaction (see Figure 4) does not depend on the sample bias because it would point to an even flatter relationship than the almost flat one that we find in 1990. Finally, the 1990 survey would hardly bias upward life satisfaction—due to the disproportionate representation of groups with high life satisfaction—because in 1990 virtually all socio-economic groups reported similar average levels of life satisfaction. Moreover, the trend of life satisfaction exhibited by the WVS is consistent with those by other data-bases (Easterlin *et al.*, 2012).

(a) Explaining the evolution of well-being inequalities across income classes

In a recent work Clark, Flèche, and Senik (2014) investigate whether economic growth reduces well-being inequalities. Analysing a broad set of countries, the authors find a positive answer. However, this does not seem to hold for China (Easterlin *et al.*, 2012) and present data confirm this conclusion: in the considered period the well-being inequality among income quintiles increased (see Figure 3).

In 1990 the average life satisfaction of the five quintiles of the Chinese income distribution was concentrated between 7 and 8 points on the 10-points life satisfaction scale. The period up to 2001 shows a generalized decrease in the average life

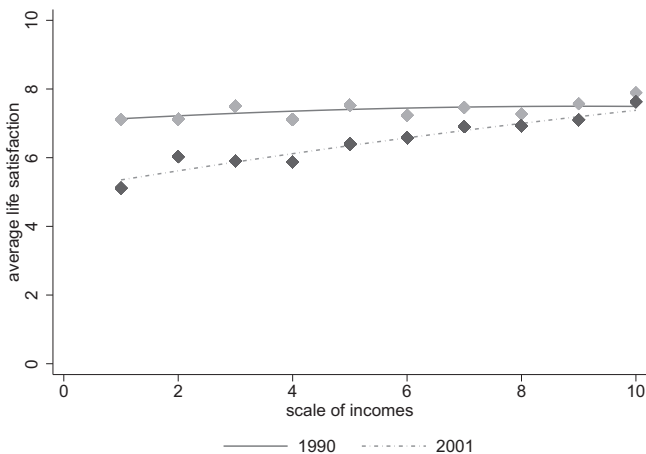
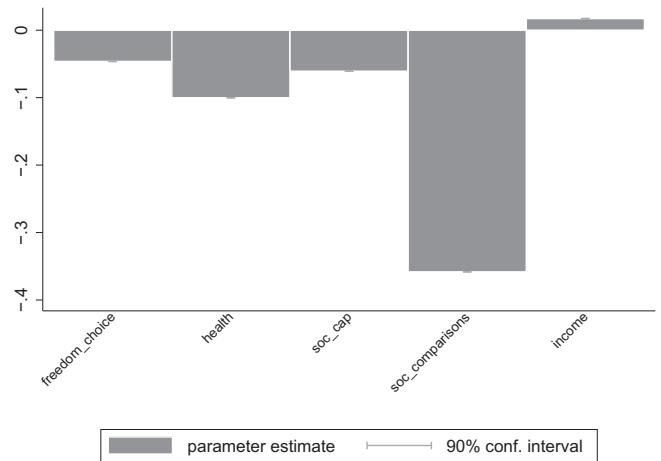


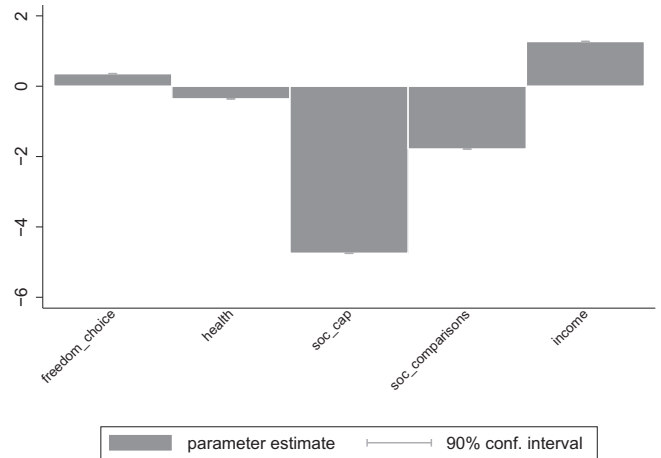
Figure 5. Anti-poor economic growth: life satisfaction and income deciles in 1990 and 2001.

satisfaction and a much higher dispersion across quintiles. In about 10 years the poorest income quintile lost about 1.5 points in well-being, whereas the richest quintile lost about 0.5 points. During the following 6 years the well-being conditions stopped worsening and possibly reverted. Overall, the average life satisfaction by income quintile in 2007 is more dispersed than previously, thus confirming that, in China, economic growth increased well-being inequalities. In other words, the relationship between income and well-being switched from basically flat—a condition of substantial equality—in 1990 to steep in 2007 (see Figure 4).

What is behind this transformation? What does explain the different outcome in terms of well-being of Chinese income classes? The following subsections describe the predictors of



(a) Explained part of the gap



(b) Unexplained part of the gap

Figure 6. Explained and unexplained part of the well-being gap for the lower class during 1990–2001 in China. The y-axis reports the changes in life satisfaction on a 10 points scale. The x-axis reports some relevant explanatory variables. The bars represent the variation in life satisfaction predicted by changes over time in the levels (explained) and in the preferences (unexplained) of the set of explanatory variables. Note: soc\_cap stands for social capital and it refers to the summation of the effects of trust in others, civic cooperation and social participation on well-being. The summation is possible because the effects of the three proxies are expressed in the same unit, i.e., changes of life satisfaction.

the well-being gap for the lower, the middle and the upper class during 1990–2001 and 2001–07. People in the three lowest deciles of the income distribution belong to the lower class; people in the three highest deciles belong to the upper class and those in between belong to the middle class.

(i) *The period 1990–2001*

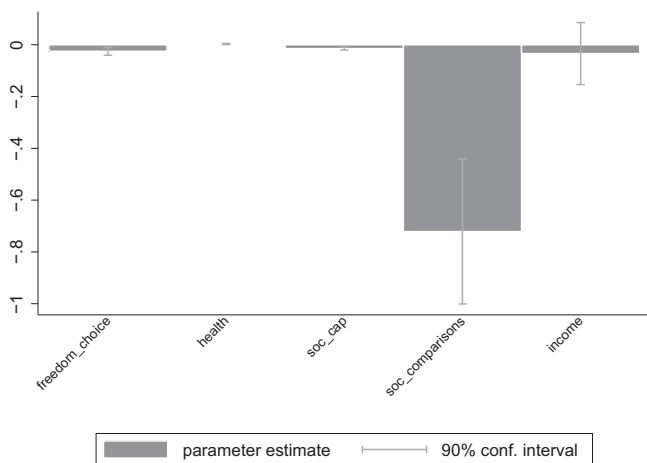
The first phase of the Chinese economic growth can be defined as anti-poor from the point of view of well-being. Figure 5 documents that the 90s penalized much more the well-being of the poorer income deciles than that of the richer ones.

During 1990–2001 the average life satisfaction of the poorer class dropped by –1.64 points (that is to say a variation of –16.4%). Besides the socio-demographic changes, 81% of the

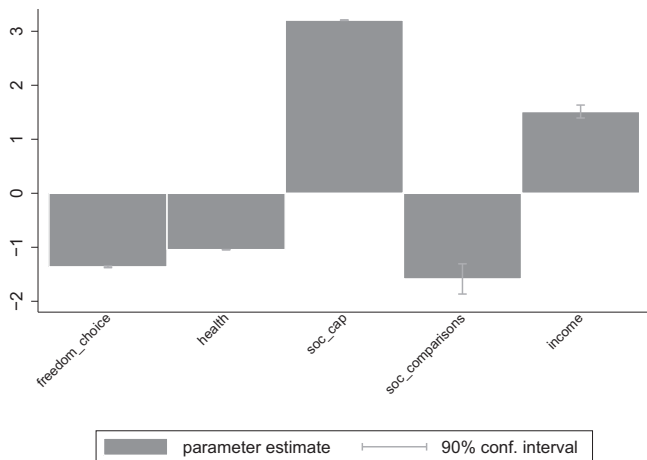
life satisfaction gap is explained by changes in endowments, whereas the changes in preferences account for the remaining 19% (see Tables 9 and 10 in Appendix C). The contribution of each of the relevant variables to the decomposition of the gap is graphically summarized in Figure 6.

During 1990–2001 the lowest three deciles of the income distribution became largely dissatisfied with their financial situation, shared lower levels of social capital, perceived less freedom of choice and control over their lives and less health (see Figure 6a). Among these, the effect of financial dissatisfaction was pivotal.

The negative impact for well-being of these changes is further reinforced by the changes in preferences (see Figure 6B). In 2001 well-being was considerably more related to financial

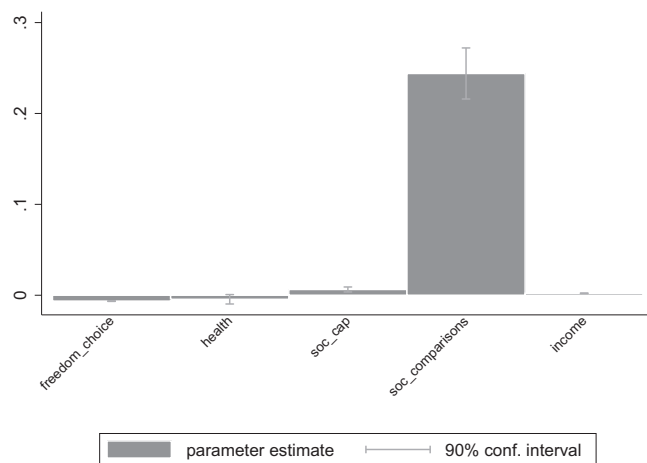


(a) Explained part of the gap

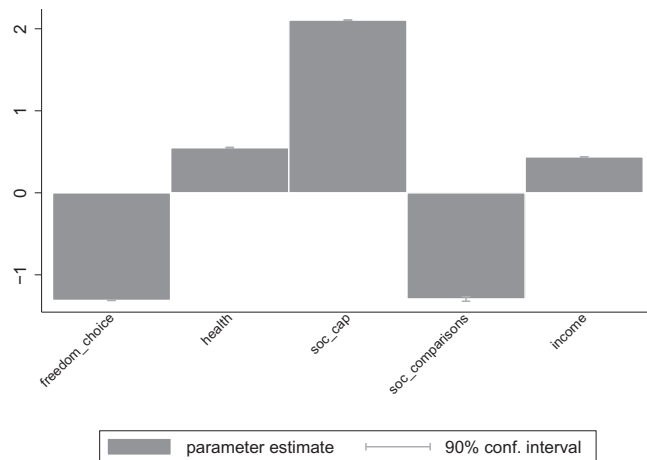


(b) Unexplained part of the gap

Figure 7. Explained and unexplained part of the well-being gap for the middle class during 1990–2001 in China. The y-axis reports the changes in life satisfaction on a 10 points scale. The x-axis reports some relevant explanatory variables. The bars represent the variation in life satisfaction predicted by changes over time in the levels (explained) and in the preferences (unexplained) of the set of explanatory variables. Note: soc\_cap stands for social capital and it refers to the summation of the effects of trust in others, civic cooperation and social participation on well-being. The summation is possible because the effects of the three proxies are expressed in the same unit, i.e., changes of life satisfaction.



(a) Explained part of the gap



(b) Unexplained part of the gap

Figure 8. Explained and unexplained part of the well-being gap of rich people during 1990–2001 in China. The y-axis reports the changes in life satisfaction on a 10 points scale. The x-axis reports some relevant explanatory variables. The bars represent the variation in life satisfaction predicted by changes over time in the levels (explained) and in the preferences (unexplained) of the set of explanatory variables. Note: soc\_cap stands for social capital and it refers to the summation of the effects of trust in others, civic cooperation and social participation on well-being. The summation is possible because the effects of the three proxies are expressed in the same unit, i.e., changes of life satisfaction.



dissatisfaction and less connected to social capital. The negative effect of these two forces was only marginally offset by the increase in income and in its importance.

In the same period also the middle class experienced a substantial well-being loss of approximately -13%. Also in this case the largest part of the life satisfaction gap (about 91%) is accounted for by changes in endowments. Among them, the lion's share belongs to the outburst of financial dissatisfaction. All other changes play a limited role, including those regarding preferences. The latter exhibit a higher importance attached to social capital, income and social comparisons and a smaller importance of health and freedom of choice (see Figure 7).

Rich people are those who lost less in terms of well-being during the 90s. In this period the average well-being of the three upper deciles of the income distribution decreased by 7%, less than half of the loss of the lower class. The change in endowments predicts an increase in life satisfaction due to the fall in the financial dissatisfaction of the winners of the Chinese economic race. However, this positive contribution is more than off-set by the negative contribution of the change in preferences. Among them, the greater importance of social comparisons and the loss of importance of freedom of choice had a dominant effect on the increased importance of social capital, health and income (see Figure 8).

Summarizing, the change in the position and inclination of the relationship between life satisfaction and income during 1990–2001 (see Figure 5) is largely related to changes in the endowments of the middle and the lower classes. In both cases, the increased financial dissatisfaction explains a large share of the overall variation. However, the lower class experienced a greater loss of life satisfaction mainly because it was the only class to experience a decline in social capital. Moreover, the increase in the importance of income and social comparisons for life satisfaction across all income classes suggests a generalized spread of materialistic values. Such spread seems relatively stronger among the lower classes, thus further contributing to the relatively greater diminution of their well-being. Indeed, the lower classes experienced a decrease in the importance attached to social capital, whereas such importance increased for the middle and the upper class. On the contrary, the moderate decrease in the life satisfaction of the upper class was entirely explained by changes in its preferences, with a pivotal role for the higher importance of social comparisons and the lower importance of freedom of choice and control.

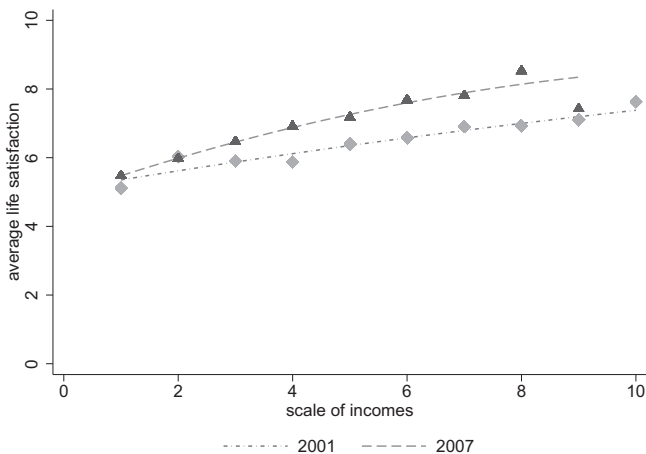
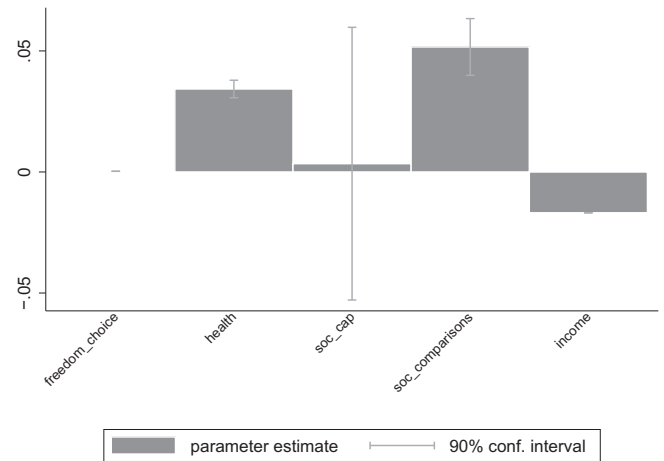


Figure 9. Pro-rich economic growth: life satisfaction and income deciles in 2001 and 2007.

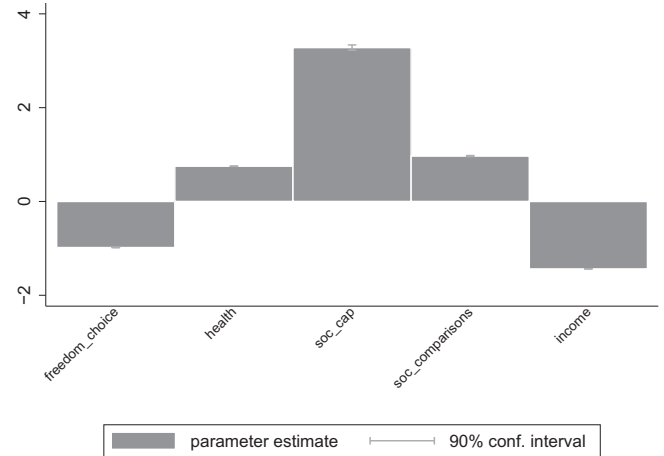
(ii) The period 2001–2007

During 2001–07 the relationship between life satisfaction and income shifted upwards and became steeper. While the 90s were characterized by a general worsening of life satisfaction, the period 2001–07 exhibited an improvement of life satisfaction across all income classes. In this second period, the gain in life satisfaction of the lower class was smaller than the gains of the other classes. This further amplified the well-being inequality accumulated over the first period (see Figure 9).

From 2001 to 2007 the average life satisfaction of the lower class increased by about 2.3%: the explained and unexplained components of the life satisfaction gap are not significantly different from zero (see Tables 15 and 16 in Appendix F). Figure 10a informs that during 2001–07 the main contributors



(a) Explained part of the gap



(b) Unexplained part of the gap

Figure 10. Explained and unexplained part of the well-being gap of the lower class during 2001–07 in China. The y-axis reports the changes in life satisfaction on a 10 points scale. The x-axis reports some relevant explanatory variables. The bars represent the variation in life satisfaction predicted by changes over time in the levels (explained) and in the preferences (unexplained) of the set of explanatory variables. Note: soc\_cap stands for social capital and it refers to the summation of the effects of trust in others, civic cooperation and social participation on well-being. The summation is possible because the effects of the three proxies are expressed in the same unit, i.e., changes of life satisfaction.

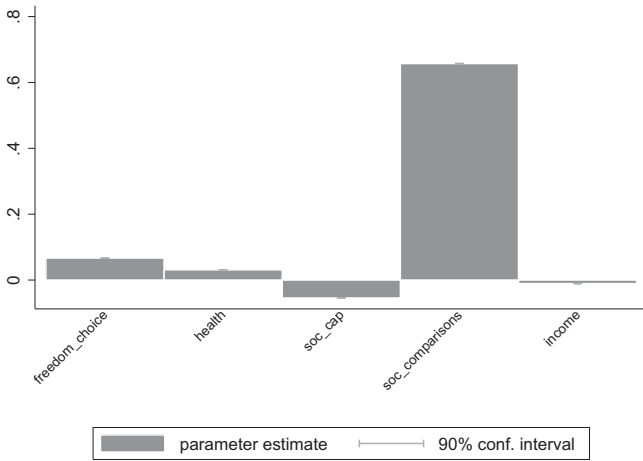
to the increasing life satisfaction were the decreased financial dissatisfaction and the improvement in perceived health.

The middle and the upper classes are those who gained the most from the second period of economic growth (approximately 9.5%).

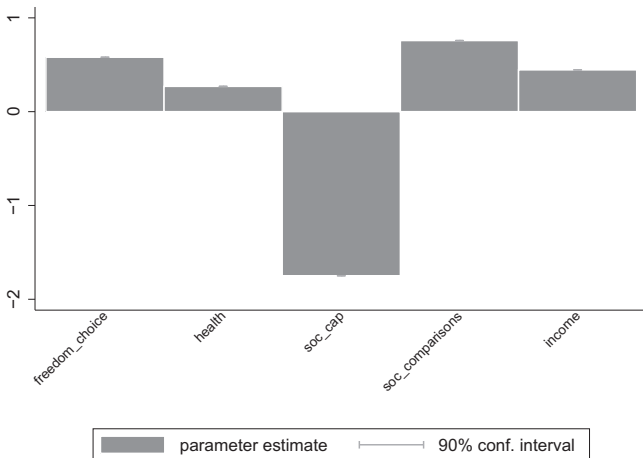
For what concerns the middle class, lower financial dissatisfaction explains about 2/3 of the increase in well-being. The variations of other endowments play a negligible role (see Figure 11a). The remaining 1/3 of the increase in well-being is accounted for by changing preferences: a higher importance of income, of freedom of choice and control and, to a smaller extent, of health, and a lower importance of social comparisons. Their positive impact on well-being is moderated by the lower importance that people from the middle-class

attached to social capital (see Tables 17 and 18 in Appendix G and Figure 11).

The Chinese at the top of the income distribution were those who gained the most both during 2001–07 and in the overall period. In the second phase of the economic growth, the average happiness of the richest people increased by 9.7%, basically as much as the middle class. Figures from the decomposition in Table 20 point out that this effect was entirely explained by changes in the endowments, whereas changes in preferences predict a negligible variation of well-being. During 2001–07 the Chinese upper class reported lower levels of dissatisfaction with their financial situation, had more freedom of choice and control over their lives and shared less social capital (see Tables 19 and 20 in Appendix H and Figure 12a). Similarly to what

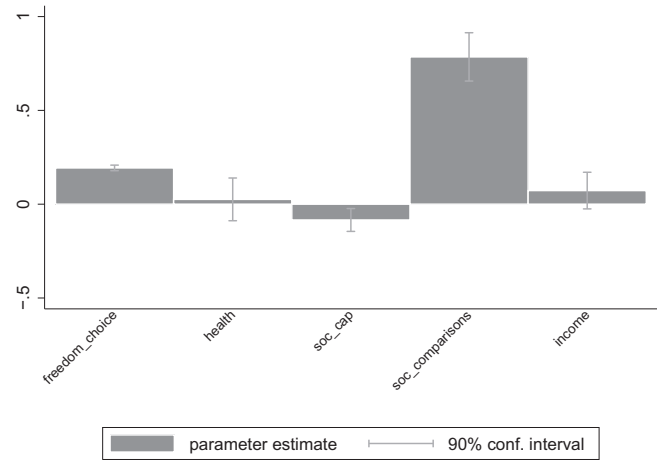


(a) Explained part of the gap

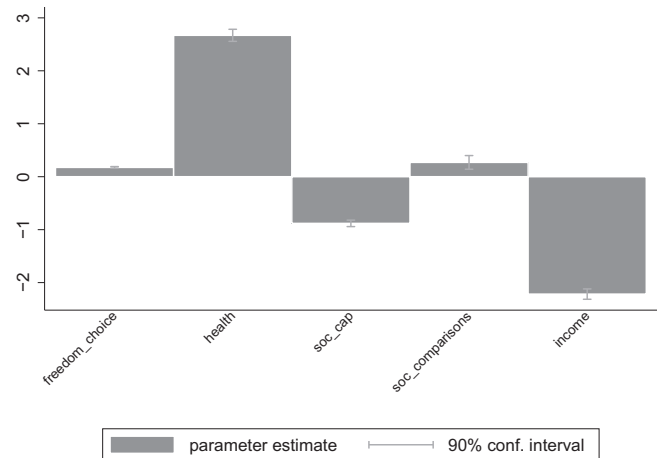


(b) Unexplained part of the gap

Figure 11. Explained and unexplained part of the well-being gap of the middle class during 2001–07 in China. The y-axis reports the changes in life satisfaction on a 10 points scale. The x-axis reports some relevant explanatory variables. The bars represent the variation in life satisfaction predicted by changes over time in the levels (explained) and in the preferences (unexplained) of the set of explanatory variables. Note: soc\_cap stands for social capital and it refers to the summation of the effects of trust in others, civic cooperation and social participation on well-being. The summation is possible because the effects of the three proxies are expressed in the same unit, i.e., changes of life satisfaction.



(a) Explained part of the gap



(b) Unexplained part of the gap

Figure 12. Explained and unexplained part of the well-being gap of the rich people during 2001–07 in China. The y-axis reports the changes in life satisfaction on a 10 points scale. The x-axis reports some relevant explanatory variables. The bars represent the variation in life satisfaction predicted by changes over time in the levels (explained) and in the preferences (unexplained) of the set of explanatory variables. Note: soc\_cap stands for social capital and it refers to the summation of the effects of trust in others, civic cooperation and social participation on well-being. The summation is possible because the effects of the three proxies are expressed in the same unit, i.e., changes of life satisfaction.

happened to other Chinese people, if social capital had not been eroded, people's subjective well-being would have been higher.

However, differently from the middle class, the upper class had lost much less in terms of well-being during the period 1990–2007. Hence, the net effect at the end of the 17 years considered was an increase in well-being by 2.7% whereas the middle class lost –3.4%. As for the lower class, the good news is limited to the halt of the worsening of its well-being. From the point of view of well-being, the upper class was the only winner of the Chinese economic miracle.

In the period 2001–07 the predictors of the increase in the life satisfaction of the middle and upper classes have much in common: both classes became more satisfied with their financial situation, attached less importance to and shared less social capital, and were giving more emphasis to social comparisons.

In the overall period, the coefficients associated with financial dissatisfaction have a similar U-shape across all social classes. Considering the whole sample, during 1990–2001 social comparisons assumed a pivotal role for Chinese well-being (from –0.19 in 1990 to –0.58 in 2001). In the subsequent period the importance of social comparisons attenuated (from –0.58 in 2001 to –0.34 in 2007). Nonetheless, the net effect of these changes was still very negative since the coefficient almost doubled during 1990–2007.

Summarizing, both the increase (1990–2001) and the decrease (2001–07) in average life satisfaction appear to be mainly driven by opposite changes in the financial dissatisfaction in the lower and the middle class. Some role is played by the spread of materialism recorded during 1990–2001 especially among the lower class, that attenuated and eventually reverted in the subsequent period. In such changes in the values of Chinese people, a major role is played by the importance of social comparisons, sharply increasing across all income classes in the first period, decreasing in the second period. Moreover, in the 90s, the losses of social capital, health and freedom of choice affected entirely the lower class, further penalizing its well-being. The health decline reported by the lower class probably reflects the dissolution of the safety net emphasized by [Easterlin et al. \(2012\)](#): the collapse of socialized medicine and the upsurge of health care costs.

## 6. CONCLUSION

Recent findings suggest that, in shaping changes of subjective well-being, over the long run, social capital trends are more important than economic growth. These findings, rich of policy implications, derive mainly from evidence about developed countries. This raises the question of the generality of such conclusions and the extent to which they apply to developing countries.

China is a crucial case because of the gigantic scale of its growth. China scores outstanding improvements in all indicators of standards of life, yet these objective records are in striking contrast with those from subjective perceptions. In 2007 the average Chinese felt substantially less satisfied with his/her life than in 1990. To predict this change, our work applies the Blinder–Oaxaca decomposition on life satisfaction data of the World Values Survey, 1990–2007.

Our findings suggest that subjective data capture information that objective indicators do not adequately convey, namely, the increase in the importance of social comparisons and the decline of social capital. These two powerful drivers of the decline of well-being appear to be strictly connected to the increasing orientation of Chinese people toward materialistic values. The decreasing role of sociability and the increasing role of income comparisons in the life experience and values of Chinese people are at the core of the decline in their well-being.

Important differences emerged between Chinese income classes and time periods. Economic growth not only had a disappointing impact on average well-being, but it also increased well-being inequalities between income classes. China shifted from a situation of substantial equality of well-being between income deciles in 1990 to an unequal one in 2007.

Our results show substantial differences between the two sub-periods of 1990–2001 and 2001–07. The huge loss in average life satisfaction in China in 1990–2001 was mainly concentrated in the middle and lower classes. While absolute income was increasing, the upsurge of financial dissatisfaction negatively affected their life satisfaction. In a time of rapidly increasing prosperity and inequality, people's rising expectations were frustrated by the perception of being left behind.

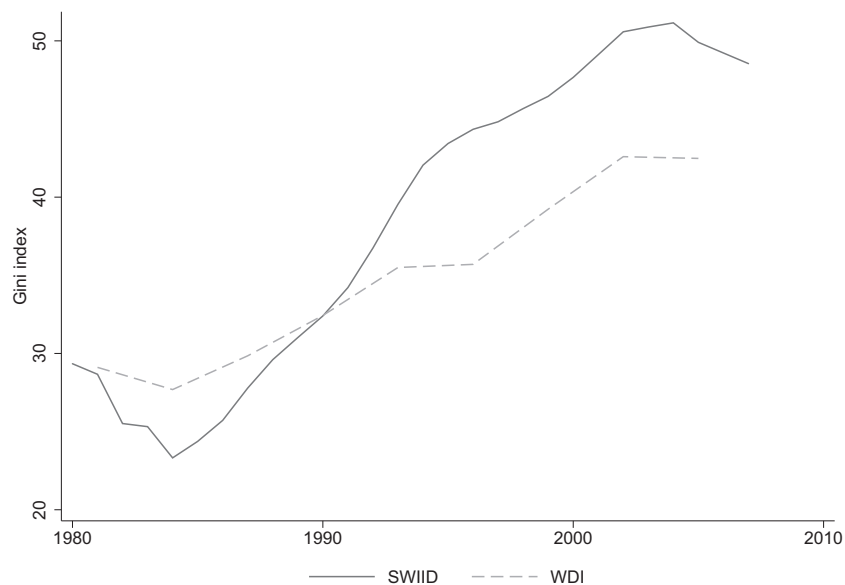


Figure 13. Trend of income inequality in China between. Data are drawn from the Standardized World Income Inequality Database (SWIID) and from the World Development Indicators (WDI).

The spread of materialism, of social comparisons, and the decline in social capital, all contributed to depress the well-being of the Chinese lower class. These findings seem to replicate previous observations on the conditions of the working class (including those by Marx and Polanyi) characterizing all industrial revolutions. Similarly, the Chinese lower income class' perception of declining freedom of choice and control of one's own life may not be an isolated case. One does not need to think that "proletarians have nothing to lose but their chains" to suspect that the transition to a market industrial economy may not be an easy walk to freedom for many components of the working class.

In 1990–2001 the outburst of social comparisons fully involved the middle class that experienced a greater financial dissatisfaction. As a result, well-being decreased. Financial satisfaction increased only in the upper class, the real winners of the economic race. Nonetheless, the importance of social comparisons for well-being increased across all income classes, predicting a limited fall in the life satisfaction of the upper class as well.

In China, during the period 2001–07, the softening of financial dissatisfaction and the reduction of its importance for the well-being of the lower and the middle classes predict the partial recovery of average life satisfaction. Changes in financial dissatisfaction affecting the lower and the middle classes seemed to drive the opposite changes of average life satisfaction. In the two sub-periods the uneven distribution of life satisfaction changes is unfavorable to the lower class, which loses more when everybody loses and gains less when everybody gains. Such distribution is mainly explained by the uneven distribution of the changes in financial dissatisfaction—unfavorable to the lower class in both sub-periods. In the 1990s, however, the losses of social capital, health and freedom of choice were entirely reported by the lower class, further penalizing its well-being.

The positive trend of financial satisfaction since 2001 may mirror the attenuation of social comparisons. This may be connected to the income redistribution policies launched by the State Council in the aftermath of the Asian financial crisis of 1997–98 to support domestic demand. These policies were further reinforced by Hu Jintao after the change in leadership

in 2002 (Hung, 2008; Steele & Lynch, 2013b). The interruption of the upsurge of income inequality (see Figure 13) may reflect such policy changes. In this period, the government underwent a serious effort to rebuild some of the safety net that had eroded earlier.

While financial dissatisfaction has a very large influence on the change in average life satisfaction in both sub-periods, in the overall period 1990–2007, social capital emerges as a comparably important driver. This is consistent with previous studies showing that the importance of social capital as a driver of well-being over time increases as the length of time horizon of the analysis increases. Additionally, The increase of materialism—rampant in the 1990s—plays a large role in the overall period.

Summarizing, during 1990–2007, the good news for Chinese life satisfaction are limited to a 2.7% increase for the upper class. The bad news is the 3.4% and 14.1% decrease in life satisfaction for the middle and the lower class, respectively. There was little gain in well-being, even for the few winners of the Chinese economic miracle, and even these minimal gains were paid at the price of substantial losses of life satisfaction for the great majority of people. This mirrors the picture of a country that grew rapidly yet unevenly. The increasing poverty of social capital—especially for the lower class—was the dark side of rising economic wealth.

This study raises serious doubts about two popular opinions: (1) that growth is more important for the well-being of developing countries and (2) that social capital is a luxury good that only rich countries can afford. Rather, we find the opposite: social needs seem to be crucial to the well-being of people living in developing countries as well. China seems to exhibit surprising similarities with developed countries. The declines of Chinese life satisfaction and American happiness in the past few decades are similar in that the decline of social capital and the increase in social comparisons play a crucial role (Bartolini, Bilancini, & Pugno, 2013). In sum, the decline in social capital seems to be central to the major episodes of the Easterlin paradox in the developed and developing world (Bartolini, Bilancini, & Pugno, 2013).

## NOTES

1. World Bank national accounts data and <http://www.chinatoday.com/>.
2. Since early 90s, China faced a proliferation of "mass incidents" (cases of civil unrest officially recorded) that rose from under 9,000 in 1993 to 180,000 in 2010. A substantial share of such incidents is due to protests against the expropriation of agricultural land (Knight, 2013).
3. <http://www.ipsos.com/content/global-attitudes-materialism-finances-and-family>
4. The WVS allows to observe also another form of social capital, namely participation in political actions. However, in the case of China the relevant variables are observed only in one year thus preventing the analysis over time. For this reason, political action is excluded from present analysis.
5. Ferrer-i Carbonell and Frijters (2004).
6. To account for the non-linearity between well-being and age, a squared term of the age variable has been included in the equation. For ease of interpretation, the new variable has been divided by 100.
7. See Table 8 in Appendix B for more details.

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APPENDIX A. LIFE SATISFACTION DECOMPOSITION  
DURING 1990–2007

Table 3. Coefficients and X-values for 1990 and 2007 in China

	$b_{2007}$	$b_{1990}$	$b_{ref}$	$X_{2007}$	$X_{1990}$
Age	-0.087	-0.011	-0.053	44.340	43.921
Age squared	0.001	0.000	0.001	2139.795	2073.807
Female	-0.062	0.028	0.042	0.519	0.398
How many children do you have	0.099	-0.002	0.063	1.873	2.224
Married	0.680	1.652	0.460	0.840	0.957
Living together	0.112	3.158	0.439	0.010	0.003
Divorced	0.052	0.836	-0.205	0.015	0.008
Separated	-0.738	0.826	-0.485	0.004	0.003
Widowed	0.457	2.164	0.456	0.039	0.029
Part time	-0.011	0.080	-0.116	0.085	0.020
Self-employed	0.158	0.160	0.216	0.042	0.236
Retired	-0.297	0.201	-0.110	0.051	0.061
Housewife	0.081	0.320	-0.080	0.075	0.010
Student	-0.777	0.635	-0.082	0.019	0.003
Unemployed	-0.331	0.028	0.158	0.034	0.003
Other	-0.594	-0.124	-0.642	0.079	0.003
Scale of incomes	0.070	0.010	0.027	3.983	3.179
Financial dissatisfaction	-0.370	-0.207	-0.465	4.967	4.717
State of health	0.386	0.356	0.308	3.806	3.798
Freedom of choice	0.197	0.294	0.169	7.344	7.197
Trust in others	0.064	0.147	0.143	0.543	0.617
Index of civicness	0.045	0.118	0.064	8.806	9.549
Social participation	0.098	-0.024	0.116	0.374	0.711
Constant	6.160	2.431	7.247	1.000	1.000

Table 4. Detailed decomposition of the life satisfaction gap during 1990–2007 in China

	Satisfaction with life		
	Differential	Explained	Unexplained
Prediction_1	6.832*** (7.50e+15)		
Prediction_2	7.546*** (3.85e+16)		
Difference	-0.714*** (-7.35e+14)		
Age		0.0190** (2.39)	-1.592*** (-200.47)
Female		0.00508 (0.97)	-0.0484*** (-9.19)
How many children do you have		-0.0222*** (-3.51)	0.212*** (33.57)
mar_stat		-0.0479** (-1.97)	-1.024*** (-42.15)
empl_stat		-0.0994*** (-3.40)	-0.0337 (-1.15)
Scale of incomes		0.0215 (0.92)	0.227*** (9.71)
Financial dissatisfaction		-0.116*** (-6.15)	-0.745*** (-39.50)
Health		0.00254***	0.114***

freedom_choice	(6.65) 0.0248***	(297.90) -0.690***
soc_cap	(4.80) -0.0973***	(-133.37) -0.632***
Total	(-5.70) -0.462***	(-37.02) -0.252**
Constant	(-3.67)	(-2.00) 3.729*** (2.93e+12)
Observations	2,085	

t statistics in parentheses.

Note: soc\_cap stands for social capital and it refers to the summation of the effects of trust in others, civic cooperation and social participation on well-being. The summation is possible because the effects of the three proxies are expressed in the same unit, i.e., changes of life satisfaction.

\*  $p < 0.1$ .

\*\*  $p < 0.05$ .

\*\*\*  $p < 0.001$ .

APPENDIX B. THREE SCENARIOS FOR THE UNEXPLAINED LIFE SATISFACTION GAP

Table 5 provides figures about the coefficients and the endowments for 1990 and 2007 for the three proxies of social capital. These figures are used to compute the life satisfaction variation predicted by the proxies of social capital.

According to the unexplained side of the Oaxaca–Blinder decomposition, the variation of life satisfaction due to differences in the coefficients of social capital proxies is given by:

$$LS_{gap}^{SC} = [E(X_{2007})' \cdot (b_{2007} - b_{ref}) + E(X_{1990})' \cdot (b_{ref} - b_{1990})] \quad (B.1)$$

amounting to -0.63 (see Table 6).

How much does life satisfaction change when holding the endowment of social capital constant to its 1990 level? Formally, the unexplained part of the Oaxaca–Blinder decomposition turns to be:

Table 5. Coefficients and X-values for the proxies of social capital

Variable	$\beta_{2007}$	$\beta_{1990}$	$\beta_{ref}$	$X_{2007}$	$X_{1990}$
Trust in others	0.064	0.147	0.143	0.543	0.617
Index of civic cooperation	0.045	0.118	0.064	8.806	9.549
Social participation	0.098	-0.024	0.116	0.374	0.711

Table 6. Life satisfaction variation due to differences in the coefficients of social capital

Variable	$\Delta$ life satisfaction
Trust in others	-0.04
Index of civic cooperation	-0.68
Social participation	0.09
Total	-0.63

Table 7. Life satisfaction variation due to differences in social capital coefficients holding constant the levels of 1990

Variable	$\Delta$ life satisfaction
Ttrust in others	-0.05
Index of civic cooperation	-0.69
Social participation	0.08
Total	-0.66

Table 8. *Life satisfaction variation due to differences in the coefficients of social capital holding the 1990 values*

Variable	Δlife satisfaction
Trust in others	-0.01
Index of civic cooperation	-0.08
Social participation	0.008
Total	-0.09

$$LS_{gap}^{SC} = [E(X_{1990})' \cdot (b_{2007} - b_{ref}) + E(X_{1990})' \cdot (b_{ref} - b_{1990})] \quad (B.2)$$

amounting to -0.66 (see Table 7).

How much does life satisfaction change when holding the coefficients of social capital constant to their 1990 values? Formally, the unexplained part of the Oaxaca–Blinder decomposition turns to be:

$$LS_{gap}^{SC} = [E(X_{2007})' \cdot (b_{1990} - b_{ref}) + E(X_{1990})' \cdot (b_{ref} - b_{1990})] \quad (B.3)$$

amounting to -0.09 (see Table 8).

### APPENDIX C. LIFE SATISFACTION DECOMPOSITION FOR THE LOWER CLASS DURING 1990–2001

Table 9. *Coefficients and X-values for 1990 and 2001 in China for the three lowest deciles of the income distribution*

	$\beta_{2001}$	$\beta_{1990}$	$\beta_{ref}$	$X_{2001}$	$X_{1990}$
Age	-0.091	-0.048	-0.053	40.880	42.952
Age squared	0.001	0.000	0.001	1809.769	1986.095
Female	-0.309	-0.073	-0.167	0.513	0.392
How many children do you have	-0.129	0.004	-0.006	1.778	2.266
Married	2.139	1.976	1.923	0.838	0.950
Living together	3.389	3.426	3.009	0.009	0.004
Divorced	-0.671	1.139	0.825	0.009	0.010
Separated	0.000	0.377	0.333	0.000	0.002
Widowed	1.317	2.556	2.197	0.034	0.033
Part time	1.110	0.295	0.850	0.111	0.014
Self-employed	-1.932	0.387	0.466	0.009	0.247
Retired	-0.508	0.231	0.257	0.017	0.046
Housewife	1.396	0.006	-0.532	0.085	0.012
Student	0.000	0.751	0.979	0.000	0.004
Unemployed	2.037	1.918	1.507	0.051	0.002
Other	-1.333	0.013	0.242	0.009	0.002
Scale of incomes	0.686	0.165	0.123	2.427	2.288
Financial dissatisfaction	-0.507	-0.196	-0.287	6.103	4.853
State of health	0.230	0.333	0.328	3.479	3.784
Freedom of choice	0.328	0.276	0.252	6.974	7.158
Trust in others	0.212	0.231	0.243	0.453	0.614
Index of civicness	-0.415	0.157	0.130	9.415	9.587
Social participation	0.865	-0.039	0.113	0.718	0.712
Constant	7.214	2.385	5.110	1.000	1.000

Table 10. *Detailed decomposition of the life satisfaction gap during 1990–2001 in China for the three lowest deciles of the income distribution*

	Satisfaction with life		
	Differential	Explained	Unexplained
Prediction_1	5.872*** (1.10e+18)		
Prediction_2	7.512*** (9.16e+16)		
Difference	-1.640*** (-2.14e+16)		
Age		0.00647*** (1.45e+14)	-0.146*** (-6.80e+16)
Female		-0.0202*** (-4.87e+15)	-0.109*** (-5.68e+16)
How many children do you have		0.00289*** (3.16e+15)	-0.242*** (-2.20e+16)
mar_stat		-0.200*** (-1.43e+15)	0.0741*** (1.08e+16)
empl_stat		-0.00278*** (-2.27e+14)	0.196*** (5.46e+15)
Scale of incomes		0.0172*** (1.66e+15)	1.271*** (4.87e+16)
Financial dissatisfaction		-0.358*** (-1.90e+16)	-1.786*** (-2.55e+17)
Health		-0.100*** (-3.70e+16)	-0.360*** (-2.87e+18)
freedom_choice		-0.0463*** (-1.36e+15)	0.356*** (4.18e+16)
soc_cap		-0.0609*** (-3.43e+16)	-4.750*** (-1.32e+17)
Total		-1.323*** (-3.03e+16)	-0.317*** (-2.63e+15)
Constant			4.829
Observations	635		

t statistics in parentheses.

Note: soc\_cap stands for social capital and it refers to the summation of the effects of trust in others, civic cooperation and social participation on well-being. The summation is possible because the effects of the three proxies are expressed in the same unit, i.e., changes of life satisfaction.

\*p < 0.1.

\*\*p < 0.05.

\*\*\*p < 0.001.

### APPENDIX D. LIFE SATISFACTION DECOMPOSITION FOR THE MIDDLE CLASS DURING 1990–2001

See Tables 11 and 12.

Table 11. *Coefficients and X-values for 1990 and 2001 in China for the four intermediate deciles of the income distribution*

	$\beta_{2001}$	$\beta_{1990}$	$\beta_{ref}$	$X_{2001}$	$X_{1990}$
Age	-0.074	0.102	-0.016	39.612	47.022
Age squared	0.001	-0.001	0.000	1678.606	2350.067
Female	-0.288	0.386	-0.127	0.494	0.406
How many children do you have	0.022	0.025	0.057	1.791	2.222
Married	0.702	-0.186	0.516	0.924	0.972
Living together	0.000	0.000	0.000	0.000	0.000
Divorced	-0.822	0.000	-1.034	0.012	0.000
Separated	0.000	-0.528	-0.014	0.000	0.006
Widowed	0.379	0.000	0.095	0.018	0.022
Part time	-0.516	-0.738	-0.470	0.082	0.039

(continued on next page)

Table 11 (continued)

	$\beta_{2001}$	$\beta_{1990}$	$\beta_{ref}$	$X_{2001}$	$X_{1990}$
Self-employed	0.166	-0.296	-0.183	0.009	0.211
Retired	0.500	-0.450	-0.149	0.009	0.106
Housewife	0.593	2.419	0.312	0.068	0.006
Student	-4.472	0.000	-4.002	0.003	0.000
Unemployed	1.352	-1.569	0.993	0.038	0.006
Other	0.476	-0.094	0.299	0.012	0.006
Scale of incomes	0.065	-0.240	-0.073	5.221	4.756
Financial dissatisfaction	-0.532	-0.179	-0.465	5.750	4.200
State of health	0.237	0.509	0.361	3.853	3.844
Freedom of choice	0.125	0.313	0.164	7.124	7.278
Trust in others	0.328	0.295	0.339	0.559	0.622
Index of civicness	0.227	-0.095	0.143	9.473	9.479
Social participation	0.042	-0.149	0.061	0.821	0.700
Constant	5.218	3.874	4.326	1.000	1.000

Table 12. Detailed decomposition of the life satisfaction gap during 1990–2001 in China for the four intermediate deciles of the income distribution

	Satisfaction with life		
	Differential	Explained	Unexplained
Prediction_1	6.324*** (5.90e+15)		
Prediction_2	7.622*** (2.90e+15)		
Difference	-1.299*** (-4.59e+14)		
Age		-0.0730 (-1.42)	-4.215*** (-81.87)
Female		-0.0113 (-0.48)	-0.288*** (-12.25)
How many children do you have		-0.0244** (-2.00)	0.00835 (0.68)
mar_stat		-0.0376** (-2.32)	0.866*** (53.34)
empl_stat		0.0729** (3.10)	0.109*** (4.64)
Scale of incomes		-0.0340 (-0.47)	1.514*** (20.80)
Financial dissatisfaction		-0.722*** (-4.24)	-1.587*** (-9.33)
Health		0.00307** (2.51)	-1.045*** (-855.68)
freedom_choice		-0.0253** (-2.76)	-1.363*** (-148.76)
soc_cap		-0.0150*** (-4.66)	3.206*** (992.44)
Total		-1.182*** (-91.44)	-0.117*** (-9.05)
Constant			1.344*** (2.11e+12)
Observations	520		

*t* statistics in parentheses.

Note: soc\_cap stands for social capital and it refers to the summation of the effects of trust in others, civic cooperation and social participation on well-being. The summation is possible because the effects of the three proxies are expressed in the same unit, i.e., changes of life satisfaction.

\* $p < 0.1$ .

\*\* $p < 0.05$ .

\*\*\* $p < 0.001$ .

## APPENDIX E. LIFE SATISFACTION DECOMPOSITION FOR THE UPPER CLASS DURING 1990–2001

See Tables 13 and 14.

Table 13. Coefficients and *X*-values for 1990 and 2001 in China for the three highest deciles of the income distribution

	$\beta_{2001}$	$\beta_{1990}$	$\beta_{ref}$	$X_{2001}$	$X_{1990}$
Age	-0.092	0.164	-0.123	40.287	42.447
Age squared	0.001	-0.003	0.001	1751.591	1960.868
Female	0.252	-0.747	0.153	0.493	0.447
How many children do you have	-0.008	0.401	0.019	1.710	1.658
Married	0.572	0.000	0.884	0.880	0.974
Living together	2.153	0.000	2.318	0.003	0.000
Divorced	0.000	-5.104	1.053	0.000	0.026
Separated	-1.687	0.000	-1.762	0.003	0.000
Widowed	-0.037	0.000	0.226	0.022	0.000
Part time	0.341	-0.975	0.256	0.092	0.026
Self-employed	0.705	1.657	0.555	0.092	0.211
Retired	-0.386	3.386	-0.343	0.078	0.053
Housewife	0.077	0.000	-0.037	0.056	0.000
Student	-0.260	0.000	-0.228	0.008	0.000
Unemployed	0.547	0.000	0.385	0.045	0.000
Other	-0.734	0.000	-0.863	0.008	0.000
Scale of incomes	-0.066	-0.122	-0.072	7.838	7.868
Financial dissatisfaction	-0.552	-0.307	-0.530	4.855	5.316
State of health	-0.050	-0.196	-0.084	3.816	3.763
Freedom of choice	0.239	0.417	0.236	7.315	7.342
Trust in others	0.266	-1.089	0.198	0.571	0.632
Index of civicness	0.094	-0.025	0.050	9.431	9.362
Social participation	0.166	-0.016	0.115	0.866	0.737
Constant	9.088	11.292	10.137	1.000	1.000

Table 14. Detailed decomposition of the life satisfaction gap during 1990–2001 in China for the three highest deciles of the income distribution

	Satisfaction with life		
	Differential	Explained	Unexplained
Prediction_1	6.950*** (1.51e+16)		
Prediction_2	7.658*** (1.42e+16)		
Difference	-0.708*** (-1.63e+15)		
Age		-0.0133 (-1.03)	-3.191*** (-246.63)
Female		0.00699 (1.02)	0.451*** (66.18)
How many children do you have		0.000981 (1.22)	-0.680*** (-847.16)
mar_stat		-0.104** (-2.45)	0.742*** (17.51)
empl_stat		-0.0518*** (-10.91)	-0.363*** (-76.52)
Scale of incomes		0.00217*** (12.00)	0.439*** (2425.81)
Financial dissatisfaction		0.244*** (14.28)	-1.294*** (-75.77)
Health		-0.00445 (-1.42)	0.550*** (174.85)
freedom_choice		-0.00645*** (-1.312)	-1.312***

(continued on next page)



Table 14 (continued)

	Satisfaction with life	
	Differential	Unexplained
		(-32.63)
soc_cap	0.00634***	2.106***
		(3.81)
Total	-0.118	-0.590***
		(-0.66)
Constant		-2.203***
		(-2.58e+12)
Observations	397	

t statistics in parentheses.

Note: soc\_cap stands for social capital and it refers to the summation of the effects of trust in others, civic cooperation and social participation on well-being. The summation is possible because the effects of the three proxies are expressed in the same unit, i.e., changes of life satisfaction.

\*p < 0.1.

\*\*p < 0.05.

\*\*\*p < 0.001.

APPENDIX F. LIFE SATISFACTION DECOMPOSITION FOR THE LOWER CLASS DURING 2001-07

Table 15. Coefficients and X-values for 2001 and 2007 in China for the three lowest deciles of the income distribution

	$\beta_{2007}$	$\beta_{2001}$	$\beta_{ref}$	$X_{2007}$	$X_{2001}$
Age	-0.028	-0.091	-0.038	46.295	40.880
Age squared	0.000	0.001	0.001	2301.874	1809.769
Female	-0.203	-0.309	-0.105	0.498	0.513
How many children do you have	0.115	-0.129	0.111	2.105	1.778
Married	0.117	2.139	0.348	0.860	0.838
Living together	0.445	3.389	0.761	0.012	0.009
Divorced	0.180	-0.671	-0.033	0.010	0.009
Separated	-0.805	0.000	-0.498	0.005	0.000
Widowed	-0.087	1.317	0.115	0.053	0.034
Part time	0.149	1.110	0.133	0.078	0.111
Self-employed	0.502	-1.932	0.419	0.041	0.009
Retired	-0.482	-0.508	-0.448	0.034	0.017
Housewife	0.502	1.396	0.380	0.062	0.085
Student	-1.373	0.000	-1.476	0.009	0.000
Unemployed	-0.680	2.037	-0.498	0.047	0.051
Other	-0.754	-1.333	-0.897	0.095	0.009
Scale of incomes	0.096	0.686	0.073	2.195	2.427
Financial dissatisfaction	-0.348	-0.507	-0.392	5.971	6.103
State of health	0.445	0.230	0.428	3.559	3.479
Freedom of choice	0.187	0.328	0.184	6.976	6.974
Trust in others	0.026	0.212	0.050	0.533	0.453
Index of civicness	0.012	-0.415	-0.008	8.845	9.415
Social participation	-0.110	0.865	0.011	0.266	0.718
Constant	4.332	7.214	6.941	1.000	1.000

Table 16. Detailed decomposition of the life satisfaction gap during 2001-07 in China for the three lowest deciles of the income distribution

	Satisfaction with life	
	Differential	Unexplained
Prediction_1	6.102***	
	(5.21e+15)	
Prediction_2	5.872***	
	(7.40e+16)	

	Difference	0.230***
		(1.95e+14)
Age	0.0681**	0.857***
	(3.18)	(39.95)
Female	0.00153	0.0557***
	(1.24)	(45.08)
How many children do you have	0.0362***	0.436***
	(14.84)	(178.70)
mar_stat	0.0102	-1.771***
	(0.62)	(-107.07)
empl_stat	-0.0951***	-0.284***
	(-10.98)	(-32.73)
Scale of incomes	-0.0169***	-1.438***
	(-1201.85)	(-102462.93)
Financial dissatisfaction	0.0516***	0.967***
	(7.25)	(135.83)
Health	0.0343***	0.752***
	(15.57)	(341.60)
freedom_choice	0.000277***	-0.983***
	(52.13)	(-185222.35)
soc_cap	0.00343	3.281***
	(0.10)	(95.84)
Total	0.169	0.0613
	(0.92)	(0.34)
Constant		-2.882***
		(-8.04e+12)
Observations	697	

t statistics in parentheses.

Note: soc\_cap stands for social capital and it refers to the summation of the effects of trust in others, civic cooperation and social participation on well-being. The summation is possible because the effects of the three proxies are expressed in the same unit, i.e., changes of life satisfaction.

\*p < 0.1.

\*\*p < 0.05.

\*\*\*p < 0.001.

APPENDIX G. LIFE SATISFACTION DECOMPOSITION FOR THE MIDDLE CLASS DURING 2001-07

Table 17. Coefficients and X-values for 2001 and 2007 in China for the four intermediate deciles of the income distribution

	$\beta_{2007}$	$\beta_{2001}$	$\beta_{ref}$	$X_{2007}$	$X_{2001}$
Age	-0.129	-0.074	-0.098	42.965	39.612
Age squared	0.001	0.001	0.001	2029.233	1678.606
Female	-0.003	-0.288	-0.091	0.519	0.494
How many children do you have	0.098	0.022	0.051	1.722	1.791
Married	0.975	0.702	0.759	0.826	0.924
Living together	-0.980	0.000	-1.122	0.006	0.000
Divorced	0.301	-0.822	-0.023	0.020	0.012
Separated	-0.779	0.000	-0.767	0.003	0.000
Widowed	0.682	0.379	0.407	0.026	0.018
Part time	0.060	-0.516	-0.136	0.096	0.082
Self-employed	-0.106	0.166	-0.002	0.043	0.009
Retired	-0.191	0.500	-0.062	0.065	0.009
Housewife	0.067	0.593	0.159	0.085	0.068
Student	-0.358	-4.472	-0.468	0.025	0.003
Unemployed	0.219	1.352	0.683	0.022	0.038
Other	-0.337	0.476	-0.283	0.066	0.012

(continued on next page)

Table 17 (continued)

	$\beta_{2007}$	$\beta_{2001}$	$\beta_{ref}$	$X_{2007}$	$X_{2001}$
Scale of incomes	0.156	0.065	0.040	4.952	5.221
Financial dissatisfaction	-0.376	-0.532	-0.477	4.372	5.750
State of health	0.307	0.237	0.294	3.958	3.853
Freedom of choice	0.204	0.125	0.163	7.532	7.124
Trust in others	0.120	0.328	0.143	0.557	0.559
Index of civicness	0.042	0.227	0.034	8.787	9.473
Social participation	0.290	0.042	0.082	0.440	0.821
Constant	6.761	5.218	7.010	1.000	1.000

Table 18. Detailed decomposition of the life satisfaction gap during 2001–07 in China for the four intermediate deciles of the income distribution

	Satisfaction with life		
	Differential	Explained	Unexplained
Prediction_1	7.282*** (9.89e+15)		
Prediction_2	6.324*** (6.16e+15)		
Difference	0.959*** (7.62e+14)		
Age		0.0557*** (8.06)	-1.378*** (-199.32)
Female		-0.00221 (-0.65)	0.143*** (41.70)
How many children do you have		-0.00353 (-1.21)	0.132*** (45.38)
mar_stat		-0.0803*** (-5.77)	0.256*** (18.36)
empl_stat		-0.0396*** (-25.83)	-0.0400*** (-26.10)
Scale of incomes		-0.0108 (-0.63)	0.446*** (25.78)
Financial dissatisfaction		0.657*** (6.11)	0.758*** (7.04)
Health		0.0310*** (11.76)	0.270*** (102.22)
freedom_choice		0.0667*** (3.74)	0.580*** (32.47)
soc_cap		-0.0545 (-1.21)	-1.749*** (-38.69)
Total		0.642*** (6.19)	0.317** (3.06)
Constant			1.543*** (2.33e+12)
Observations	988		

*t* statistics in parentheses.

Note: soc\_cap stands for social capital and it refers to the summation of the effects of trust in others, civic cooperation and social participation on well-being. The summation is possible because the effects of the three proxies are expressed in the same unit, i.e., changes of life satisfaction.

\* $p < 0.1$ .

\*\* $p < 0.05$ .

\*\*\* $p < 0.001$ .

## APPENDIX H. LIFE SATISFACTION DECOMPOSITION FOR THE UPPER CLASS DURING 2001–07

Table 19. Coefficients and *X*-values for 2001 and 2007 in China for the three highest deciles of the income distribution

	$\beta_{2007}$	$\beta_{2001}$	$\beta_{ref}$	$X_{2007}$	$X_{2001}$
Age	-0.118	-0.092	-0.103	42.331	40.287
Age squared	0.001	0.001	0.001	1954.992	1751.591
Female	0.092	0.252	0.233	0.620	0.493
How many children do you have	0.039	-0.008	0.029	1.570	1.710
Married	1.440	0.572	0.848	0.818	0.880
Living together	1.926	2.153	1.864	0.017	0.003
Divorced	-1.509	0.000	-1.726	0.008	0.000
Separated	0.000	-1.687	-1.991	0.000	0.003
Widowed	1.626	-0.037	0.271	0.033	0.022
Part time	-0.040	0.341	0.152	0.066	0.092
Self-employed	-0.562	0.705	0.329	0.033	0.092
Retired	0.408	-0.386	-0.463	0.058	0.078
Housewife	-0.823	0.077	-0.265	0.083	0.056
Student	-1.382	-0.260	-0.884	0.041	0.008
Unemployed	0.122	0.547	0.303	0.041	0.045
Other	-2.820	-0.734	-1.622	0.074	0.008
Scale of incomes	-0.362	-0.066	-0.153	7.364	7.838
Financial dissatisfaction	-0.487	-0.552	-0.518	3.339	4.855
State of health	0.600	-0.050	0.072	4.174	3.816
Freedom of choice	0.261	0.239	0.246	8.099	7.315
Trust in others	-0.042	0.266	0.194	0.521	0.571
Index of civicness	0.025	0.094	0.107	8.718	9.431
Social participation	0.025	0.166	-0.005	0.545	0.866
Constant	11.333	9.088	9.130	1.000	1.000

Table 20. Detailed decomposition of the life satisfaction gap during 2001–07 in China for the three highest deciles of the income distribution

	Satisfaction with life		
	Differential	Explained	Unexplained
Prediction_1	7.926*** (3.41e+15)		
Prediction_2	6.950*** (1.68e+16)		
Difference	0.976*** (4.17e+14)		
Age		0.0145 (0.69)	-1.278*** (-60.92)
Female		0.0296*** (10.25)	-0.0968*** (-33.53)
How many children do you have		-0.00405 (-0.75)	0.0798*** (14.70)
mar_stat		-0.0328** (-1.97)	0.780*** (46.78)
empl_stat		-0.158*** (-3.74)	-0.255*** (-6.03)
Scale of incomes		0.0725 (1.22)	-2.217*** (-37.35)

(continued on next page)

Table 20 (continued)

	Satisfaction with life		
	Differential	Explained	Unexplained
Financial dissatisfaction		0.785***	0.270***
		(10.03)	(3.45)
Health		0.0257	2.670***
		(0.37)	(38.56)
freedom_choice		0.193***	0.176***
		(21.26)	(19.34)
soc_cap		-0.0842**	-0.882***
		(-2.27)	(-23.81)
Total		0.951***	0.0252***
		(129.84)	(3.44)
Constant			2.245***
			(3.09e+12)
Observations	480		

*t* statistics in parentheses.

Note: soc\_cap stands for social capital and it refers to the summation of the effects of trust in others, civic cooperation and social participation on well-being. The summation is possible because the effects of the three proxies are expressed in the same unit, i.e., changes of life satisfaction.

\* $p < 0.1$ .

\*\* $p < 0.05$ .

\*\*\* $p < 0.001$ .

## APPENDIX I. FACTOR ANALYSIS FOR THE INDEX OF CIVICNESS

In the pooled sample, factor loadings range from .72 to .80 thus suggesting that the four variables contribute equally to the definition of civic cooperation. The picture does not change much when observing results wave by wave. In this case, factor loadings stay approximately constant across waves.

Table 21. Factor loading and unique variances for the pooled sample

	Factor 1	Psi
Justifiable: claiming government benefits	.7354614	.4590965
Justifiable: avoiding a fare on public transport	.7844583	.3846252
Justifiable: cheating on taxes	.8061527	.3501179
Justifiable: someone accepting a bribe	.7274631	.4707974

Table 22. Factor loadings and unique variances across waves

	Factor 1	Psi
<i>Wave 1</i>		
Justifiable: claiming government benefits	.7966403	.3653643
Justifiable: avoiding a fare on public transport	.834389	.303795
Justifiable: cheating on taxes	.7776205	.3953064
Justifiable: someone accepting a bribe	.6871919	.5277673

<i>Wave 2</i>		
Justifiable: claiming government benefits	.6669682	.5551534
Justifiable: avoiding a fare on public transport	.7524343	.4338426
Justifiable: cheating on taxes	.7656387	.4137974
Justifiable: someone accepting a bribe	.5649274	.6808571
<i>Wave 3</i>		
Justifiable: claiming government benefits	.6884222	.5260749
Justifiable: avoiding a fare on public transport	.7724496	.4033216
Justifiable: cheating on taxes	.7844648	.384615
Justifiable: someone accepting a bribe	.6200904	.6154879
<i>Wave 4</i>		
Justifiable: claiming government benefits	.7373559	.4563062
Justifiable: avoiding a fare on public transport	.7846328	.3843513
Justifiable: cheating on taxes	.8119551	.3407289
Justifiable: someone accepting a bribe	.7871107	.3804567
<i>Wave 5</i>		
Justifiable: claiming government benefits	.7772684	.3958539
Justifiable: avoiding a fare on public transport	.8067852	.3490976
Justifiable: cheating on taxes	.8470783	.3824584
Justifiable: someone accepting a bribe	.7956081	.3670077
<i>Wave 6</i>		
Justifiable: claiming government benefits	.7613381	.4203643
Justifiable: avoiding a fare on public transport	.7248758	.474555
Justifiable: cheating on taxes	.8180381	.3308137
Justifiable: someone accepting a bribe	.7286719	.4690373

The slight variability among factor loadings both in the pooled sample and within waves support the decision to build an aggregated index of civic cooperation resulting from the average of the four items. (see Tables 21 and 22).

## APPENDIX J. LIST OF GROUPS AND ASSOCIATIONS MENTIONED IN THE WVS/EVS QUESTIONNAIRE

Respondents were asked to mention whether they belonged or were performing unpaid voluntary work for any of the following list of associations:

- social welfare service for elderly;
- religious organization;
- education, arts, music or cultural activities;
- labor unions;
- political parties;
- local political actions;
- human rights;
- conservation, the environment, ecology, animal rights;
- conservation, the environment, ecology;
- animal rights;
- professional associations;
- youth work;
- sports or recreation;
- women's group;
- peace movement;
- organization concerned with health;
- consumer groups;
- other groups.