The Impact of Economic Growth on Subjective Well-being—Based on CGSS Data Research

Yiting He [1,a,*]

[1]Shanghai University, 20 Chengzhong Road, Jiading District, Shanghai, China

[2]Shanghai University, 20 Chengzhong Road, Jiading District, Shanghai, China

[a] Jenny2333333@163.com

[*]corresponding author

Keywords: Subjective well-being; Economic growth; Per capita GDP

Abstract: After the Second World War, the economy developed rapidly, people's material life was continuously enriched, income increased, living standards improved, and serious social problems were hidden behind the rapid economic development. People began to seek higher subjective well-being, which led to the discussion of happiness among scholars from all walks of life. This paper uses China's comprehensive social survey data (CGSS) to analyze the impact of economic growth factors on residents' subjective well-being. It is found that Chinese residents' happiness has been on the rise in the past 10 years, but there is also a phenomenon of “happiness paradox”, but per capita The economic growth factors expressed by GDP are positively correlated with subjective well-being. To ensure the coordinated development of the economy and society, more and more detailed tracking and research on happiness is needed.

1. Introduction

1.1. Background of the Study

On March 20, 2019, the United Nations released the "2019 World Happiness Index Report", which published the happiness index of countries around the world. In 156 countries and regions, the Chinese happiness score was 5.191, ranking from 86th to 93rd. The name has been falling for two years. Looking back at the happiness data of the previous five years, China's score trend showed a trend of rising first and then falling, and the peak appeared in 2017, reaching 5.273. Based on WVS data, Easterlin analyzed the subjective well-being of Chinese residents from 1990 to 2010. The results showed a U-shaped trend, and its inflection point appeared around 2000 and 2001. The reform promoted the rapid development of the economy, and the life of ordinary people has been generally improved. Taking the 2003-2014 survey of this study as an example, China's per capita GDP has increased by 4.1 times. But it also brings two "concomitant effects." The first is the urgent transformation of demand, and the second is the intensification of social inequality.

This paper uses the 2003-2015 China General Social Survey data to outline the trend of changes in Chinese residents' happiness, and uses the 2015 CGSS data to empirically study the relationship between China's current economic growth and residents' happiness.

1.2. Research Significance

The significance of the research is: Can economic growth bring about an increase in residents' well-being? In 1974, the Easterlin public opinion raised the "happiness paradox", that is, the "happiness-revenue mystery", which triggered a wave of happiness research in various countries, such as the release of the "Happy Planet Index" (2006) in the UK; 2006-2007, Korea Seoul Welfare Foundation and the Republic of Korea Academic Institute (2006-2007).

Secondly, relying solely on GDP indicators to judge the degree of development of a country or region is not complete enough. The current study of the public's sense of well-being has certain practical significance, involving political and social stability. The level of happiness of a society or

a country also represents its level of civilization to a certain extent. Economic and social development is not only limited to economic growth, but also to a more comprehensive, more inclusive and happier life. Therefore, the rise and prosperity of happiness economics is an inevitable trend.

1.3. Research and Innovation

Different from previous studies, the data used in this paper is the latest data of the 2015 China Comprehensive Social Survey released in 2018. Secondly, the previous research default subjective happiness answers are normally distributed, so the ordered probability model is adopted. Finally, the article combs the data from 2003 to 2015 for 12 years, and outlines the trend of residents' subjective well-being.

2. Literature Review of Economic Growth and Happiness

In most studies, scholars mostly obtain data through questionnaires. According to the complexity of the questions set in the questionnaire survey, they can be divided into direct question-answer type and indirect question-and-answer type. There is usually only one question for direct question-and-answer settings, such as those designed in the China Comprehensive Social Survey (CGSS) and World Values Survey (WVS) surveys. The indirect question and answer type is to measure the life satisfaction of the respondents by using a more complicated psychological scale, so as to comprehensively and comprehensively evaluate the happiness of the people. Such as the US General Well-Being Scale (GWB).

Pu Dexiang (2016) discusses the current methods of measuring happiness, including traditional quantitative analysis, daily reproduction method and happiness index method [1]. At present, there is no recognized authoritative index of happiness in measuring happiness. China mainly uses the national happiness index. In general, indirect Q&A measurements can measure people's well-being more accurately, but implementation costs are high, so more direct question-and-answer measurements are used today.

Will economic growth bring more happiness? Easterlin proposed the Easterlin Paradox in 1974. Usually in a country, the average happiness and happiness of the rich is higher than that of the poor. But after cross-country comparisons, the level of happiness in poor countries is not necessarily lower than in rich countries. However, some empirical studies have raised questions about the happiness paradox. Easterlin has revised the proposed “happiness-income mystery”, economic growth and national happiness through research on countries in transition and developing countries. The relationship between them is U-shaped.

Many scholars have explained the phenomenon of happiness in China through Chinese data. Bi Yibo (2016) Wu Qiang and Zhou Bo (2017) found that when income is low, the increase in absolute income will increase subjective well-being, but as income increases, the increase in relative income will lead to an increase in subjective well-being [2,3]. Li Lulu and Shi Lei (2017) found that with the development of macroeconomics, on the one hand, the needs of residents have changed, and the happiness returns brought by personal material wealth have been weakened [4]. On the other hand, social inequality has intensified and eliminated. The return of happiness brought about by the economic development itself. Zhao Xinyu et al. (2013) believe that there is a mystery of happiness-income in China, and there is an inverted U-shaped relationship between absolute income and public happiness [5]. The relative income has a significant role in promoting the subjective well-being of the public.

Factors affecting happiness include many aspects, such as demographic sociology, economic factors, institutional factors, and situational factors. Rafael Di Tella et al. (2003) found that a country's macroeconomic movement had a major impact on the happiness of the country's residents [6]. Yan Shouwei (2010) defines the social class of residents from three aspects: income, occupational status and education level. As the happiness level of residents increases, the impact of income on happiness is getting smaller and smaller [7]. John Knight and Ramani Gunatilaka (2010), through the 2002 Household Survey, emphasized that factors such as relative income, rising urban

uneasiness, and rapid urbanization prevented happiness from rising as incomes rose [8]. Liu Junqiang et al. (2012) found that national happiness has been on the rise for nearly 10 years. Among them, economic growth is the driving force for happiness [9]. Ren Haiyan (2012) and Jiang Yan (2012) found that gender, education, work status, family economic status satisfaction, absolute income and happiness were significantly related [10,11]. Xu Yingmei and Xia Lun (2014) used the WVS survey data to analyze the changes in the subjective well-being of Chinese residents in the past 20 years and found that economic, family and work factors have a greater impact on happiness [12].

Among the factors influencing the factors affecting happiness, the relationship between income and happiness is a field of considerable concern. Richard A. Easterlin collects data on happiness reports, material norms, and income in surveys conducted in some countries over the past half century, arguing that, on average, people with higher incomes at a given time in a country Happier. However, raising everyone's income does not increase the happiness of all. But the relationship between happiness and income is quite complicated. Since the 1970s, many economists have questioned "having happiness with money" and have falsified this proposition through various empirical studies.

3. The General Outlook and Trend of Chinese Residents' Happiness

3.1. Data Introduction

This paper analyzes the comprehensive social survey data of China and studies the happiness of Chinese residents. The China Comprehensive Social Survey (CGSS) began in 2003 and surveyed individuals in 125 counties (districts), 1,000 housing (village) committees, and 10,000 households across the country. We selected the data from the current 2015 sample survey, after deducting the missing values, a total of 18,195 samples. Among them, males totaled 5,134 samples, accounting for 46.8%, and urban residents totaled 6,470 samples, accounting for 59%.

Regarding the questionnaire design of happiness, the question is: "Overall, what are the feelings about the life you have lived?" The respondent's answer is "very unhappy, less happy, not happy, not happy, happier, very happy." We will answer the answers to the happiness of the respondents by 1 to 5 points, and use the statistical software STATA to integrate the relevant variables of each year, and then obtain the analytical data of this article.

3.2. Overall Situation

CGSS as shown in figure 1, 2015, according to data on the whole, think oneself "very unhappy" or "less happiness" the number of accounts for about 7.60%, 77.70% of residents think that they are "very happy" or "happiness", people's happiness index average 3.87 (5 is the highest score), between general and more happiness. It can be seen that more than half of Chinese people are happy, both in terms of the distribution of happiness and the score.

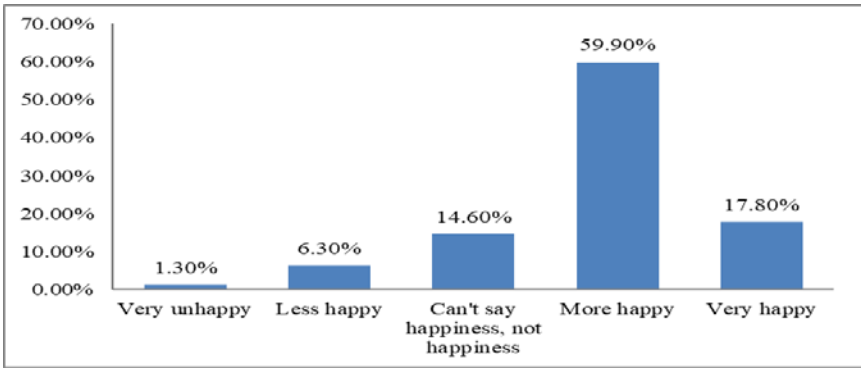

Figure 1 The overall distribution of subjective well-being of Chinese residents.

3.3. Trends of Change

According to the 2003-2015 CGSS data, residents who answered "very happy" and "relatively

happy" were regarded as "happiness", and those who were "very unhappy" and "less happy" were regarded as "unhappy" and obtained the map. 2 results shown. Among them, the number of "happiness" residents rose from 37.37% in 2003 to 77.70% in 2015, an increase of nearly 40%; the number of "unhappy" residents fell to 7.60% in 2015. From the data of the seven years from 2008 to 2015, although the number of residents who think they are "happy" has increased year by year, the growth rate is small. The average value of the residents' happiness index also rose from 3.3 in 2003 to 3.87 in 2015. Although the growth rate is getting smaller and smaller, the overall happiness of our residents is still rising year by year.

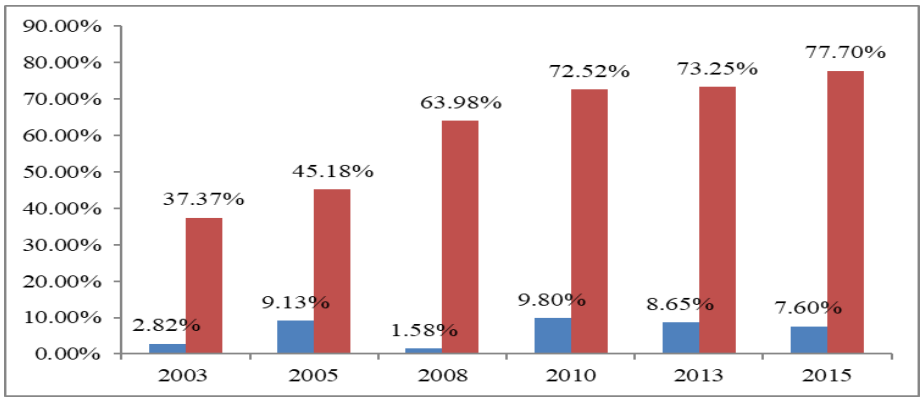

Figure 2 Changes in subjective well-being of Chinese residents in time series.

4. Multiple Regression Analysis

4.1. Research Design

There are currently two main methods for the study of residents' well-being. First, the degree of happiness of residents' self-reporting is regarded as an ordinal number, which is a discrete variable, and thus a sequential discrete selection model is adopted. The second is to regard the degree of happiness of residents' self-report as a base, which is a continuous variable, so it is estimated by least squares method. This article still regards happiness as an orderly discrete variable. There are multiple options for happiness. The options can be compared with the size relationship. For ordered multi-category variables, from the principle of prudence, subjective well-being Considered as an ordered discrete variable, an ordered probability model is used for the study.

4.2. Variable Description

This article chooses subjective well-being as a dependent variable. The article mainly studies the impact of economic growth on residents' subjective well-being. The explanatory variable is economic growth, and the per capita GDP of each province is used as an indicator.

Table 1 Variable definitions used in regression models.

Variable	Variable meaning
Subjective well-being	1= more unhappiness， 2= unhappiness， 3= can't say happy or not happy， 4=happiness， 5=more happiness
Per capita GDP	Per capita GDP of the province where the respondent was located in 2014

It can be seen from Table 2 that when the significance level is 0.01, the two-sided test is performed, and the per capita GDP variable is significantly correlated with the subjective well-being, which is consistent with the theoretical expected result.

Table 2 Correlation between per capita GDP and subjective well-being.

Variable	correlation coefficient	significance
Per capita GDP	0.62**	very significant

4.3. Setting of Measurement Model

$$\text{Happiness}=\alpha+\beta_i \sum_{i=1}^{i} \beta_i x_i+\varepsilon \quad (1)$$

The K-S test generated in the table below. Since the p-value is 0.000, the null hypothesis is rejected and the subjective well-being does not exhibit a normal distribution.

Table 3 Normality test of SWB.

	Normality test	
Subjective well-being	Kolmogorov-Smirnova	
	df	Sig.
	10968	0.000

And because the probability distribution of the five categories of explanatory variables is uneven, the distribution probability of happiness and very happiness is 55.9% and 17.8%, and the probability of high category is higher, so the applicable connection function is supplementary Log-Log, function form is -ln (-ln ()).

The equations are set to:

$$\ln\left(-\ln(1-\pi_1)\right) = \beta_0^1 + \sum_{i=1}^{p} \beta_i x_i \quad (2)$$

$$\ln\left(-\ln(1-\pi_1-\pi_2)\right) = \beta_0^2 + \sum_{i=1}^{p} \beta_i x_i \quad (3)$$

$$\ln\left(-\ln(1-\pi_1-\pi_2-\cdots-\pi_{k-1})\right) = \beta_0^{k-1} + \sum_{i=1}^{p} \beta_i x_i \quad (4)$$

The following table gives the results of the significance test for the model regression equation and the current model. It can be seen that the log-likelihood value of the -2 times of the zero model is 22918.477, the likelihood chi-square value is 979.859, and the probability p value is 0.00.

The null hypothesis: there is no significant linear relationship between explanatory variables and functions.

Alternative hypothesis: The linear relationship between explanatory variables and functions is significant.

When the significance level α is 0.05, since the p value is close to 0 and less than the significance level of 0.05, the null hypothesis is rejected, and there is a significant linear relationship between the explanatory variable and the connection function, and the model selection is correct.

Table 4 Model Fitting Information Table.

Model	-2 log likelihood value	chi-square	df	significant
Intercept only	22918.477	979.859	34	0.00
Final	21938.618			

Join function: Auxiliary log-log.

Table 4 gives the regression results of the basic model of residents' happiness level. The table below gives an estimate of the position model parameters using a multi-ordered regression join function. The items are the regression coefficient estimation value, the standard error, the observation value of the Wald statistic, the degree of freedom, the probability p value corresponding to the Wald statistic observation value, and the upper and lower limits of the 95% confidence interval of the regression coefficient.

Table 5 Parameter Estimation Table.

		Estimation	standard error	Wald	df	significant	95% confidence interval	
							Lower limit	Upper limit
Threshold	[subjective happiness = 1]	-4.059	.095	1821.104	1	.000	-4.245	-3.872
	[subjective happiness = 2]	-2.229	.057	1537.525	1	.000	-2.340	-2.117
	[subjective happiness = 3]	-.968	.050	377.544	1	.000	-1.066	-.871
	[subjective happiness =4]	1.817	.053	1189.466	1	.000	1.714	1.921
	GDP per capita	5.199	8.350	38.759	1	.000	3.562	6.835

Join function: Auxiliary log-log.

a. Because this parameter is redundant, set it to zero.

Join function: Auxiliary log-log.

The regression equations are as follows:

$$\ln\left(-\ln\left(1-\pi_1\right)\right)=-4.059+5.199X1_1 \quad (5)$$

$$\ln\left(-\ln\left(1-\pi_1-\pi_2\right)\right)=-2.229+5.199X1_1 \quad (6)$$

$$\ln\left(-\ln\left(1-\pi_1-\pi_2-\pi_3\right)\right)=-0.968+5.199X1_1 \quad (7)$$

$$\ln\left(-\ln\left(1-\pi_1-\pi_2-\pi_3-\pi_4\right)\right)=1.817+5.199X1_1 \quad (8)$$

This paper uses the 2015 CGSS data to conduct empirical research on the relationship between per capita GDP and residents' happiness. Descriptive statistics and regression results show that per capita GDP has a significant impact on subjective well-being. Specifically, when the respondents feel very happy, the respondents' GDP per capita GDP growth is positively related to their subjective well-being, and they feel happier with economic growth; conversely, the opposite. Among them, the group of respondents who feel very unhappy is more likely to have a negative impact on happiness than the group of respondents who feel happier.

5. Conclusion

5.1. Summary

From the analysis in the above sections, the following conclusions can be drawn:

First, in terms of time series, with the rapid economic growth, the level of happiness of Chinese residents has not increased significantly, and even the level of happiness may decline. In general, there is also a phenomenon of "happiness paradox" in China at this stage.

Second, per capita GDP has a significant impact on subjective well-being. Specifically, when the respondents feel very happy, the respondents' GDP per capita GDP growth is positively related to their subjective well-being, and they feel happier with economic growth; conversely, the opposite. Among them, the group of respondents who feel very unhappy is more likely to have a negative impact on happiness than the group of respondents who feel happier.

5.2. Future Research Directions

This paper combs the relevant research results of happiness research in economics through the literature research method, and finds that there is a lack of data in the current happiness research. At present, most Chinese scholars use China's comprehensive social survey data, world values data and China Health and Nutrition Survey database to analyze and study the happiness level of Chinese

residents, but the data of these three databases are not continuous data. Therefore, it is very important to establish a nationwide or regional database that is continuously available on a large scale.

In the future, China and the United States, Canada and other developed countries, and Norway, Finland and other high happiness index, and Japan, South Korea and other East Asian countries will be compared and analyzed to explore the country's differences and their causes.

References

[1] Pu Dexiang. Review of Happiness Research - Concepts, Measurements, and Antecedent Variables [J]. Chengdu: Journal of Southwest Jiaotong University (Social Science Edition), 2014, (2): 21-26.

[2] Bi Yibo. Economic Analysis of "Happiness Paradox" [D]. Jilin: Jilin University, 2016.

[3] Wu Qiang, Zhou Bo. Absolute Income, Relative Income and Eastlin Paradox: An Empirical Study Based on CGSS [J]. Tianjin: Nankai Economic Research, 2017, (4): 41-58.

[4] Li Lulu, Shi Lei. Economic Growth and Well-being——Analysis of the Formation Mechanism of Easterlin Public Opinion [J]. Beijing: Sociological Research, 2017, (3): 95-244.

[5] Zhao Xinyu and so on. Income, expectations and public subjective well-being: an empirical study based on Chinese questionnaire data [J]. Degree: Economist, 2013, (9): 15-23.

[6] Rafael Di Tella, Robert J Mac Culloch, Andrew J. Oswald [J]. Review of Economics and Statistics. 2003, 85(4): 809-827.

[7] Yan Shouwei. Econometric analysis of subjective well-being of Chinese residents during the transition period [D]. Wuhan: Huazhong University of Science and Technology, 2010.

[8] John Knight, Ramani Gunatilaka [J]. Citing Literature, 2011, 4: 1-24.

[9] Liu Junqiang and so on. National Happiness in the Period of Economic Growth——Based on Tracking Analysis of CGSS Data [J]. Beijing: Chinese Social Sciences, 2012, (12): 82-102.

[10] Ren Haiyan. Research on Chinese Happiness from the Perspective of Economics——Based on the Development of Foreign Happiness Economics [D]. Shanghai: East China Normal University, 2012.

[11] Jiang Yan. Nanchang City residents' sense of well-being [D]. Nanchang: Nanchang University, 2012.

[12] Xu Yingmei, Sharon. Analysis of the Factors Affecting Subjective Well-being of Chinese Residents——A Comprehensive Analysis Framework [J]. Wuhan: Journal of Zhongnan University of Economics and Law, 2014, (2): 12-19.