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## Article

# AN INITIAL RESEARCH ON OUTPUT WELL-BEING INDEX APPLIED TO RESIDENTS IN WEALTHY COUNTIES FROM CHINA

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*The Measurement of Subjective Well-Being in Survey Research*  
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## AN INITIAL RESEARCH ON OUTPUT WELL-BEING INDEX APPLIED TO RESIDENTS IN WEALTHY COUNTIES FROM CHINA

Zhanjun Xing<sup>1</sup>, Xiaxia Qu<sup>2</sup>

### ABSTRACT

Sampling from three wealthy counties in Shandong province ( $n = 855$ ), this research examined the characteristics of an output well-being index, and the index shows good internal consistency reliability and ideal construct validity. It could be used as an instrument to evaluate the quality of life of Chinese citizens. The index was applied to an analysis of the quality of life of the residents from three wealthy counties. It shows that the level of the quality of life of the rural residents is higher than that of the urban residents, but the level of some indicators is imbalanced, and the levels of subjective and objective indicators are consistent. These characteristics of the well-being index of the rural residents from the wealthy counties are closely related with the level of the local economy and social development. It is advised that the output well-being index could be used to evaluate the degree of citizen's need that was met and the degree of human being's all-over development that was realized. It could also be used as an important policy instrument for the policy makers' good governance.

**Key words:** well-being index, output index, quality of life.

## 1 Introduction

### 1.1. Background

The subjective well-being indicator system is the measurement for subjective feelings. It has been much criticized because of a strong sense of subjectivity and difficulties in measuring, although the subjective well-being indicator system has been demonstrated to be valid in a variety of researches. Therefore, in order to find an index which is a real efficient reference point for policy makers, a single subjective indicators system is not adequate enough and objective quality of life

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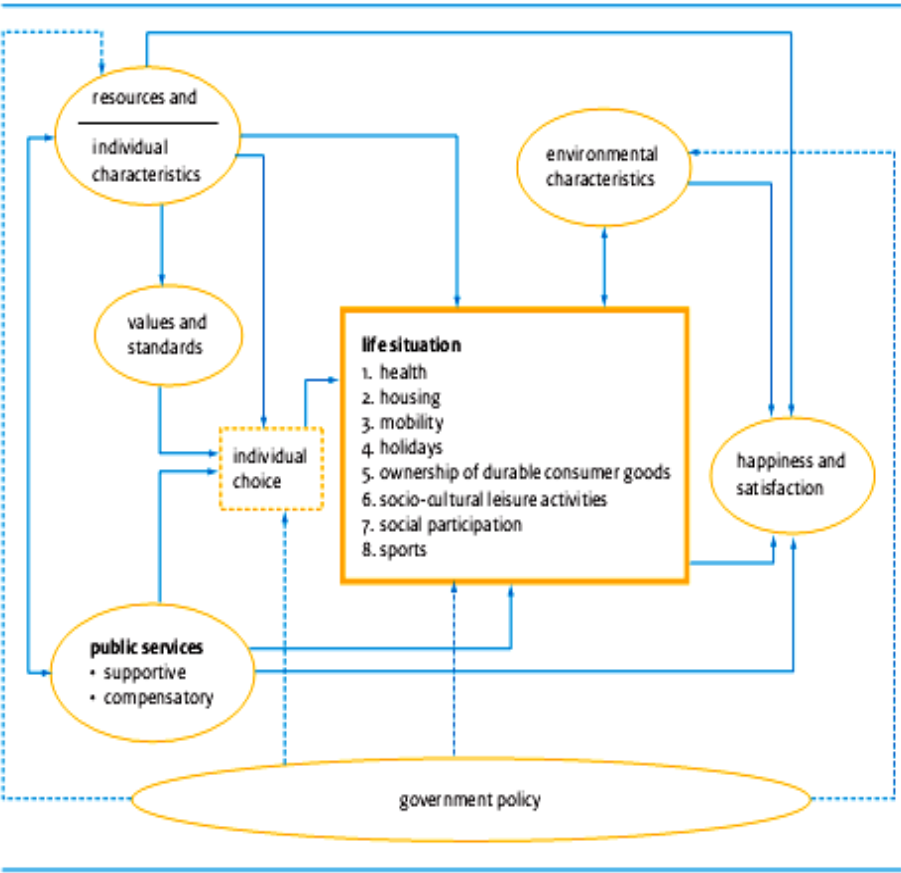
indicators are called for to set up a reasonable comprehensive index system of quality of life. Affected and inspired by researchers working on indicators in China and abroad, we proposed that a set of indicators which are closer to the citizens should be constructed. There have been many objective indicators systems constructed based on official statistical data, of which the imperfection is gradually emerging nowadays. If the first hand data which directly reflects the quality of life condition of Chinese citizens is absent, policy makers' decisions will lose their indispensable pertinence and manoeuvrability, especially to the local government, their specific rules making process will be very difficult.

"Output well-being index" is the key concept which we are talking about. The output well-being index is not a newborn concept; it has a very close relationship with the concepts of "Output Indicators" and "Input Indicators" in statistics. What some researchers in western countries are considering is emphasizing that "Input" could not be converted completely to the real quality of life of the residents, citizens, and the general public practically. That is saying that although many opportunities and conditions are offered, people might not commendably convert these favourable objective advantages into the abilities which could help to improve their quality of life. In this case, focusing on "Output" indicators is a good solution.

On this point of view, Veenhoven (1996), a researcher from the Netherlands working on life indicators, pointed out that we needed to pay attention to "Apparent quality-of-life" in the research, that is the quality of what we could see in our daily life and not just the hypothetical quality of life. Researches on quality of life should stress "flourishing" and "thriving" conditions, which stands for the relationship between ecological environment and self-development of animals and plants: if they already have obtained good environment and conditions to live, could they hence make a very good self-development? The answer is - it depends. So do our citizens. Nowadays, we stress that various kinds of public service systems should be offered to the citizens in China. This is a very important task we are facing, but whether these public service systems could ultimately convert into the real quality of life of our citizens or not is the vital question challenging our government. Noll (2002) from Germany, as a social researcher, proposed that "realized well-being" should take advantage of social opportunities. His views are generally the same as Veenhoven's. Amartya Sen (1993) proposed the concept of "Capabilities Approach" (CA) which attracted many quality of life researchers based on the view of "realized opportunity", which means the opportunities that could be realized instead of the opportunities that are offered. In Sen's Capability Approach, well-being can be defined as the freedom of choice to obtain the things in life that one has reason to value most in his or her personal life. Moreover, he stressed valuable functioning and insisted that estimating quality of life should be based on obtaining the capabilities of valuable functioning.

Life Situation Index constructed by the Social and Cultural Planning Office of the Netherlands offers an idea of an analysis framework. It was designed to monitor the differences and changes based on the concept of output quality of life.

See figure 1 below. There are 8 factors in Life Situation, they are health, housing, mobility, holidays, ownership of durable consumer goods, socio-cultural leisure activities, social participation, and sports. The other factors we thought should be monitored are outside of this framework, and happiness and satisfaction are presented as the controlled conditions. That means happiness is not a part of this Life Situation analysis framework. Beyond that, we also use Gross National Happiness (GNH) of the Kingdom of Bhutan for reference. These important points of view help us formulate our own researches in China, and they offered a very important background for us to make the discussion.



(Boelhouwer J., 2010)

**Figure 1.** Life Situation Index (Social and Culture Planning Office, SCP, 2008)

1.2. Structure of Output Well-being Index

There are two components that constitute the Output Well-being Index System - Life Situation and Surroundings.

The first component is Life Situation. We borrowed this concept from Life Situation Index of Netherland while giving it a different meaning and structure. Life Situation includes housing, health, sports, leisure, mobility (not the traffic, mobility refers to the travel conditions and the travel abilities, while the traffic belongs to the category of environment or surroundings), social capital, economic capability (ownership of durable consumer goods), and social participation (including political participation, we also designed political indicators in this system).

The second component is Surroundings, including security, traffic, consumption condition (surrounding consumption conditions), community condition (including communal facilities), and livable environment (emphasizing the environment). We consider such two important components as the indicators of Output Well-being Index. See Figure 2 below.

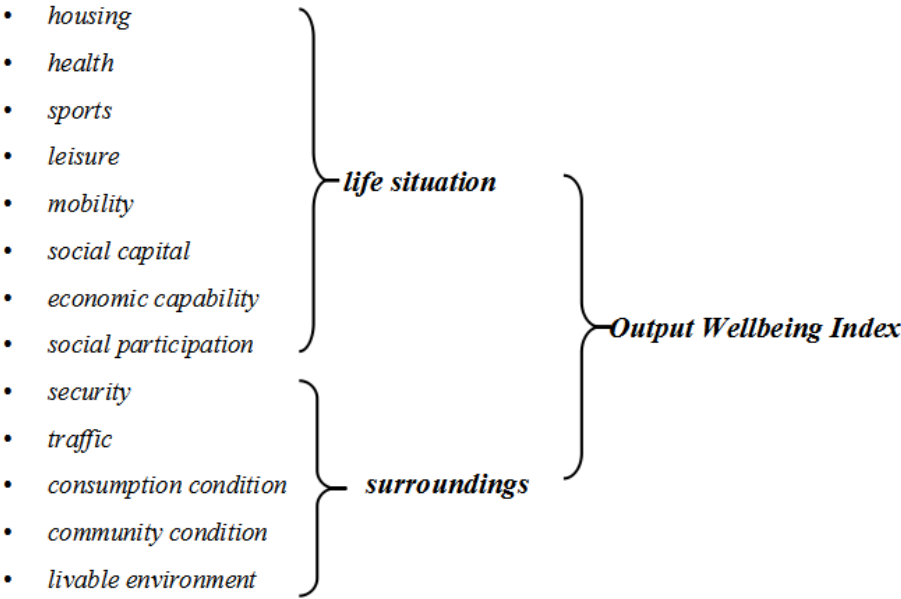
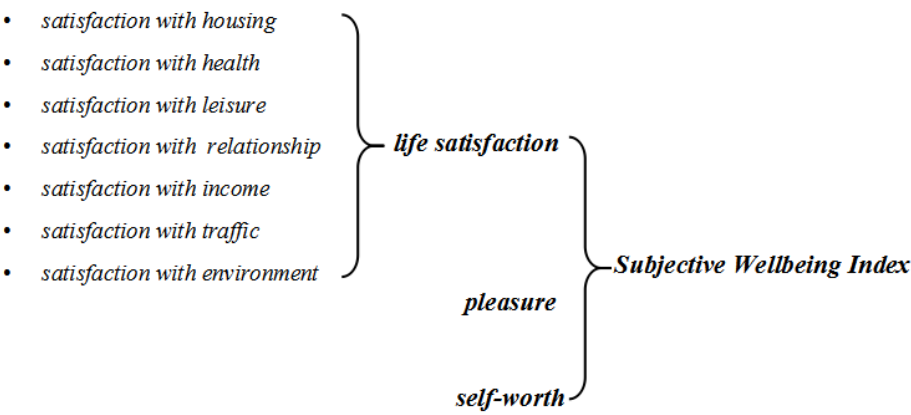


Figure 2. Output Well-being Index structure

1.3. Structure of Subjective Well-being Index

As for the Subjective Well-being Index, we stripped it away from Output Well-being Index because it was used as a detective variable. According to our definition of happiness (subjective well-being), there are three components included in the important item, life satisfaction, pleasure, and self-worth. Among

these factors, life satisfaction is very distinct and explicit, it includes seven different components which are all referring to the satisfaction in people’s life experience, they are satisfaction with housing, satisfaction with health, satisfaction with leisure, satisfaction with relationship, satisfaction with income, satisfaction with traffic, and satisfaction with environment. The seven components are corresponding with Life Situation indexes we have mentioned before. Here we use domain satisfaction instead of using overall or general satisfaction. There are two items to reflect pleasure, which is the second component of Subjective Well-being Index. The two items could stand for pleasure very well. These two items are picked from Subjective Well-being Scale of Chinese Citizens which was set up before. The third component of Subjective Well-being Index is self-worth, we also picked four items which could reflect self-worth well from our existing Subjective Well-being Scale of Chinese Citizens. Life satisfaction, pleasure, and self-worth constitute Subjective Well-being Index. See figure 3 below.



**Figure 3.** Subjective Well-being Index structure

**2. Methods**

**2.1. Research objectives**

The specific aims of the research are to (a) Examine the measurement properties of output well-being index. (b) Investigate the differences in quality of life (QOL) between town and rural residents. Here, we did not refer to urban but county town, which is not representative of all types of cities, therefore some of the conclusions are certainly different. In fact, the main difference between town and village residents is the census register. This means that the residents are distinguished mainly by the census register. (c) Explore the relationship between subjective and objective well-being indicators.

## 2.2. Participants and procedure

The investigation was carried out in May 2011. The sample was selected through the method of quota sampling because we did not consider generalizing the conclusions to the overall population and planned to do a preliminary study. In this case, according to the soliciting opinion from the experts of related disciplines, three wealthy counties in Shandong province, Zhangqiu, Shouguang and Laizhou were selected. From the historical and developmental point of view, the selected counties are quite characteristic in China. The private economy develops fast in Laizhou; Shouguang abounds in vegetables, it is honoured as the Town of Vegetables in China; Zhangqiu has developed very fast in recent years. In the past three years these three counties were monitored always within the top 50 in the comprehensive competitiveness ranking of the top 100, carried out by Chinese academy of social sciences. The geographical locations of these three counties are the east and middle area in Shandong province.

The final effective sample size is 855 people. The summary of the demographic and socioeconomic characteristics of the participants were as follows. For the gender, male, 51.5%; female, 48.5%. For the age, 24 and below, 9.7% participants; 25–34, 20.5% participants; 35–44, 25.1% participants; 45–54, 20.8% participants; 55 and above, 23.8% participants. For the education background, junior middle school educational level and below, 41% participants; senior middle school, 27.3% participants; college and university, 16.3% participants; postgraduate, 15.6% participants. For the place of residence, county town, 57.4% participants; rural area, 42.6% participants. See table 1 below.

**Table 1.** Demographic characteristics of participants ( $n = 855$ )

Variable	Meaning of variable	Frequency	Valid Percent (%)
<b>Gender</b>	Male	436	51.5
	Female	410	48.5
<b>Age</b>	24 and below	83	9.7
	25—34	175	20.5
	35—44	214	25.1
	45—54	177	20.8
	55 and above	203	23.8
<b>Education</b>	Junior and below	350	41.0
	Senior	232	27.2
	College	139	16.3
	Postgraduate	133	15.6
<b>Place of residence</b>	County town	491	57.4
	Rural	364	42.6

## **2.3. Measures**

### **2.3.1. Measuring instrument**

Output Well-being Index (OWI) and Subjective Well-being Index (SWI) constitute our measuring instrument. As we mentioned above, Output Well-being Index includes two domains and 13 indicators in total. Subjective Well-being Index (SWI) includes 3 domains and 11 indicators.

### **2.3.2. The measurement properties of OWI and SWI**

The measurement properties of OWI and SWI based on investigation sample were as follows.

#### **2.3.2.1. Reliability analysis**

Using the data collected from this sample, we examined the internal consistency reliability of OWI and SWI. It has been shown that they both had favourable reliability. The Cronbach's alpha coefficient of OWI is 0.77, and the Cronbach's alpha coefficient of SWI is 0.85.

#### **2.3.2.2. Structural validity analysis**

Based on our former theoretical hypothesis and empirical exploration, we put forward OWI model and SWI model. OWI model consists of two basic components. The first one is life situation (including housing, health, sports, leisure, mobility, social capital, economic capability and social participation), and the second one is surroundings (including security, traffic, consumption condition, community condition and livable environment). According to the view of experience, subjective well-being could be regarded as an organic whole composed of life satisfaction, pleasure and self-worth. The two models were verified by the sample data. See figure 4, figure 5, and table 2 below.



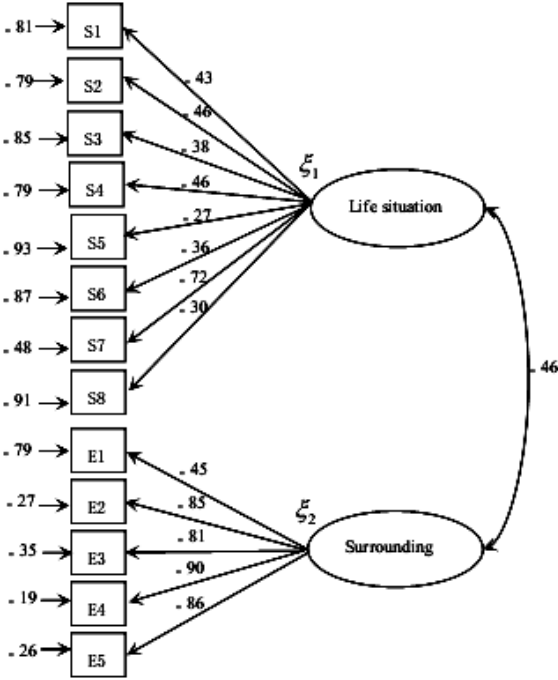


Figure 4. Estimates of OWI's parameters

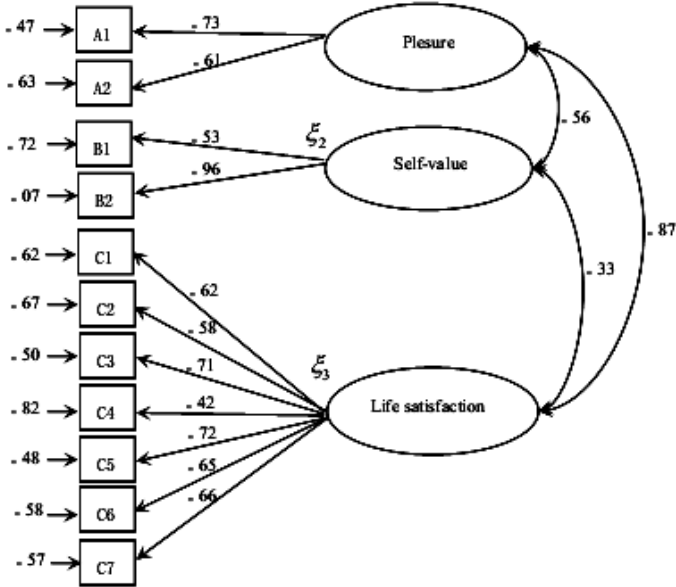


Figure 5. Estimates of SWI's parameters

**Table 2.** Goodness-of-fit statistics

	$\chi^2/df$	GFI	AGFI	NFI	NNFI	CFI	IFI	RFI	RMR
OWI	1.42	0.93	0.90	0.92	0.93	0.94	0.94	0.91	0.08
SWI	5.14	0.93	0.88	0.94	0.93	0.95	0.95	0.91	0.06

### 3. Results

#### 3.1. Differences in Life Situation Index between town and rural residents

Table 3 presented mean scores on Life Situation Index according to the place of residence. It showed that the rural residents scored higher than the town residents on housing, health, sports, and economic capability; there was little difference between town residents and rural residents on leisure and mobility; and the town residents group scored higher than the rural residents group on social capital and social participation. See table 3 below.

**Table 3.** Differences in Life Situation Index by place of residence

Life Situation Index	Place of residence	Mean	Std. Deviation
<b>Housing</b>	town	55.0772	22.01873
	rural	60.9040	9.94929
<b>Health</b>	town	65.9147	19.87696
	rural	69.5018	17.28095
<b>Sports</b>	town	66.3421	36.34438
	rural	73.1145	33.73265
<b>Leisure</b>	town	30.1009	26.37962
	rural	24.1216	24.71030
<b>Mobility</b>	town	50.4131	27.44961
	rural	39.9008	26.15156
<b>Social capital</b>	town	68.0556	18.20047
	rural	67.7794	17.29996
<b>Economic capability</b>	town	46.8474	29.61923
	rural	52.8307	26.80025
<b>Social participation</b>	town	25.3138	22.87733
	rural	25.0939	25.36471

### 3.2. Differences in Surrounding Index between town and rural residents

Table 4 presented mean scores on Surrounding Index according to the place of residence. It showed that the rural residents group scored higher than the town residents group on security, traffic, consumption condition, community condition, and livable environment.

**Table 4.** Differences in Surrounding Index by place of residence

Surrounding Index	Place of residence	Mean	Std. Deviation
<b>Security</b>	town	82.3410	17.83378
	rural	89.5248	12.75951
<b>Traffic</b>	town	60.8178	21.22735
	rural	73.7748	19.09448
<b>Consumption condition</b>	town	56.5824	21.07834
	rural	70.8854	16.58042
<b>Community condition</b>	town	64.0067	18.88507
	rural	76.2818	17.31514
<b>Livable environment</b>	town	57.3840	20.59211
	rural	71.6593	17.37469

### 3.3. Differences in Life Satisfaction Index between town and rural residents

Table 5 presented mean scores on Life Satisfaction Index according to the two groups of town residents and rural residents. It showed that for all of the indicators the rural residents group scored higher than the town residents group.

**Table 5.** Differences in Life Satisfaction Index by place of residence

Life Satisfaction Index	Place of residence	Mean	Std. Deviation
<b>Satisfaction with housing</b>	town	58.7755	29.00057
	rural	72.4100	23.21418
<b>Satisfaction with health</b>	town	64.2437	24.78657
	rural	69.6812	23.77614
<b>Satisfaction with leisure</b>	town	49.8361	26.29742
	rural	65.4444	24.46810

**Table 5.** Differences in Life Satisfaction Index by place of residence (cont.)

<b>Life Satisfaction Index</b>	<b>Place of residence</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Satisfaction with relationship</b>	town	80.7803	14.45181
	rural	85.5220	14.95639
<b>Satisfaction with income</b>	town	44.5643	28.26804
	rural	58.0282	26.88224
<b>Satisfaction with traffic</b>	town	54.2562	27.46849
	rural	71.5254	23.08847
<b>Satisfaction with environment</b>	town	63.6667	25.15699
	rural	76.2319	18.13238

### 3.4. Differences in Well-being Index between town and rural residents

Table 6 presented the differences in Well-being Index between town and rural residents. According to the mean scores, the rural residents group scored higher than the town residents group for all of the indexes belonging to Well-being Index.

**Table 6.** Differences in Well-being Index by place of residence

<b>Well-being Index</b>	<b>Place of residence</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Life situation Index</b>	town	49.7042	19.86471
	rural	52.5267	15.78220
<b>Surrounding Index</b>	town	61.8097	17.33926
	rural	76.6356	14.11514
<b>Pleasure Index</b>	town	60.8903	21.40875
	rural	69.7465	18.20141
<b>Self-worth Index</b>	town	67.4948	20.97562
	rural	70.1681	20.02736
<b>Life satisfaction Index</b>	town	53.6271	19.53198
	rural	68.5069	15.80865
<b>Output Well-being Index</b>	town	53.5221	19.03231
	rural	65.7426	12.11949
<b>Subjective Well-being Index</b>	town	56.4214	18.74110
	rural	66.3760	14.54758

## **4. Discussion**

The measuring results of Output Well-being Index of town residents and rural residents above showed that rural residents presented a clearly superior level to town residents. This result is almost completely opposite to the result which was already published in the *Journal of Society* in 2006. Why is there such a difference?

### **4.1. Sampling strategies**

Firstly, it might be affected by the sampling strategy. As mentioned above, random sampling was not used as the main sampling strategy while using the quota sampling. Quota sampling usually is used under condition that a researcher understands certain features about the overall population, and the sample size is large. It has specific advantages such as lower cost, easy to be carried out, and being qualified to meet the requirements of the population proportion. But quota sampling often covers up and hides the deviation factors that cannot be ignored. Therefore, the influence of sampling strategy will be given careful consideration in the following research stage, and a more rigorous sampling process will be taken out combining with interviewing method to further investigate this conclusion.

### **4.2. Income difference and quality of life**

Secondly, we are considering the fact that the result might be affected by the economic conditions of the sample counties. Urban-rural income difference has an important effect on quality of life. It is usually considered to reflect the nature of negative public goods, because the larger the income difference gap the greater the negative impact people are suffering, and the lower the happiness level. Hagerty (2000) pointed that the range and skew of the income distribution in a community affected a person's happiness, as predicted by range-frequency theory, and decreasing the skew (inequality) of the income distribution in a country increases average national SWB. His studies strongly supported social comparison effects of income within a community. Graham (2006) found that inequality has negative effects on happiness in Latin America, where it seems to be a signal of persistent unfairness. Morawetz et al. (1977) found that the more unequal the income distribution the lower the individual's self-rated happiness. Takashi Oshio etc. (2010) found that individuals who lived in areas of high income inequality tended to report themselves as being less happy, even after controlling for various individual and area-level factors. According to their results the association between inequality and happiness was modestly significant,

regardless of the choice of covariates at an individual level, and stronger at a lower level of perceived happiness. Although the above studies were discussing subjective well-being from the general population without grouping urban-rural residents and without including the objective indicators of quality of life, they still illustrate some of the problems, at least the relationship between urban-rural income difference gap and subjective indicators of quality of life indeed exist, which also demonstrates the interpretation of our result is in the right direction.

**Table 7.** Descriptive statistics on the quality of life (monthly figures in €) (Thiess Buettner & Alexander Ebertz, 2009)

Sub-sample	Mean	S.D.	Min	Max
Rural counties (West)	170	22.7	120	245
Urban counties (West)	159	24.7	76	230
Rural counties (East)	126	12.5	98	175
Urban counties (East)	124	18.1	90	158

Table 7 summarizes the results of the research of Thiess Buettner & Alexander Ebertz (2009) on quality of life index for each of the four groups of German regions. It shows that rural counties scored higher than urban counties in both West and East Germany on quality of life index. This is the same as our result, rural residents scored higher than county town residents in Objective and Subjective quality of life.

Peng Wang (2011) reported the influence of income difference on subjective well-being in China taking the year of 2006 from CGSS database as an example. According to his study, the influence of income difference on subjective well-being presented an inverted U-shape curve. The critical point was Gini coefficient amounting to 0.4. Subjective well-being of the residents was constantly increasing as income difference gap was widening when Gini coefficient was less than 0.4; but if Gini coefficient was greater than 0.4, the widening income difference gap would lead to decrease in subjective well-being of the residents. With the enlargement of the income gap, subjective well-being presented lower level especially in the population group of city residents, non-agricultural household register residents, and the residents of higher education level. This result is opposite to the result we discussed, which implies a smaller gap between urban and rural income difference would lead to higher quality of life of rural residents. The specific situation is as follows.

The three sample places are all wealthy counties, and what is the most different from the others is the small urban-rural difference. Take the year of 2012 as example, Urban per capita disposable income (25755CNY) is 2.7 times higher

than Rural per capita net income (9446CNY) from the perspective of Shandong province, while the urban-rural income difference of these three sample counties (Laizhou, Shouguang, Zhangqiu) is obviously smaller than the average level of the entire province – (by about twice - see table 8 below). This may indicate some problems and at least at the present stage there are no identical conclusions about this topic in China and abroad because of the different research approach and techniques.

**Table 8.** The provincial and three counties’ urban-rural difference (CNY)

	Urban per capita disposable income	Rural per capita net income
Laizhou	29485	14387
Shouguang	23130	17963
Zhangqiu	23130	13587
Shandong Province	25755	9446

**4.3. Well-being and Deprivation state**

Finally, we consider the existence of happiness chasm within a group as an important factor for discussion, which magnified the difference between urban and rural residents. According to Zapf’s (1987) opinion, when living conditions are combined with subjective evaluations and differentiated only in terms of “good” or “bad”, a 2×2 table results, which distinguished between four “welfare levels” or categories of quality of life. The combination of good/good is termed “well-being”, the combination bad/bad is called “deprivation”, and the two mixed responses, “dissonance” or “adaptation”. (See table 9). The quality of life in a life domain is considered to be the higher the more citizens are found on the level of “well-being”. The “deprived” constitute the classic target group of social policy. The “dissonants” represent the potential for protest and change. This group is also described as being in a dilemma of dissatisfaction. Those in the “adaptation” category frequently represent the reality of powerlessness and social withdrawal.

The distribution of Well-being and Deprivation states of urban and rural residents is obviously asymmetric with respect to our result presented in table 10. Does it imply existence of certain kind of a gap which leads to our result in hand? This is another research focus which will be addressed in our further studies.

Table 9. Welfare levels (Wolfgang Zapf, 1987)

Objective life conditions	Perception and Evaluation	
	good	bad
good	Well-Being	Dissonance
bad	Adaptation	Deprivation

Table 10. The happiness chasm within group

		Low LSI	High LSI	
town	Low SWB	38 11.3%	2 0.6%	Deprivation
	High SWB	1 0.3%	19 5.7%	Well-being
rural	Low SWB	2 0.8%	2 0.8%	
	High SWB	2 0.8%	7 2.8%	

5. Conclusions

- The major results can be summarized as below:
- The Output Well-being Index (OWI) showed ideal metric characteristics when being applied to the sample from wealthy counties;
  - The quality of life of rural residents was higher than that of the county town residents, but the level of some indicators was imbalanced;
  - The participants’ performance on the subjective and objective index was roughly consistent;
- The OWI could be used as an important policy instrument for the policy makers.



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**APPENDIX****Subjective Well-being Scale for Chinese Citizens (SWBS-cc)**

The following items are related to something you have encountered in life or your attitudes towards life. Please read each question carefully and give an answer to it as soon as possible according to your intuition. Six options (from “strongly disagree” to “strongly agree”) are provided.

1. The society is providing us with more and more opportunities.
2. My wisdom grows with my age, and this makes me stronger and more capable.
3. Most of my life goals keep me feel refreshed, instead of making me depressed.
4. I often feel I am just being alive, not living a life.
5. I don't know the meaning of my life.
6. I often feel there must be something wrong with some of my physical organs.
7. I feel contented with my life when I compare myself against the others around.
8. I am satisfied with my family income.
9. I am often annoyed by trifling matters.
10. I am a lot worried about my own health.
11. I often find it very difficult for me to make friends with someone else.
12. I like myself.
13. I think most people have more friends than I do.
14. I really enjoy being with my family.
15. I am not as lucky as the people around.
16. I have great confidence in the development of the society.
17. I feel I did not get what I deserve, when comparing myself against the other people around.
18. It takes me a long time to get over unhappy experiences.
19. I am happy to find that I'm becoming more and more mature.
20. Sometimes I find it is very hard to communicate with other family members.