International Journal of Business Management and Economics Research.
ISSN 2349-2333 Volume 2, Number 1 (2015), pp. 1-10

http://www.irphouse.com

Research on Urban Residents' Green Happiness and its Influencing Factors in Yangtze River delta of China[1]

Rong Tingting and Zhao Zheng

School of Economics and Resource Management,

Beijing Normal University，100875

corresponding author:
Dr. Zhao Zheng
No. 19, XinJieKouWai St., HaiDian District,
Beijing 100875, P. R. China
Email: zhaozheng@bnu.edu.cn

Abstract

This paper empirically analyze the happiness and influencing factors of urban residents of the Yangtze River Delta based on the perspective of green development using data of China Green Development Index Project. The results show: The happiness of urban residents in the Yangtze River Delta is significant difference. The happiness of urban residents in the Yangtze River Delta is closely related to age, education level of the respondents; Among external factors that affect the characteristics of urban development, natural resource endowments, the urban environment and green government action all have important influence on the happiness of urban residents in the Yangtze River Delta.

Keywords: Green development Urban residents' happiness Yangtze River Delta of China

[1]supported by the Fundamental Research Funds for the Central Universities（SKZZY2013017）.

1. Introduction

Over the past thirty years' rapid expansion, urbanization has made remarkable achievements. However, along with the acceleration of urbanization, there are increasingly more imbalance among China's resources, environment and urban economic growth. Cities in the Yangtze River Delta take the lead in economic development in the nationwide but they are also facing great challenges in environmental resources. The Twelfth Five-Year-Plan has highlighted the significance of the quality of urbanization and put forward the concept of "green development' for the first time which charts the course of our city development. Promoting green development has become an important goal of our cities in the future and it is also the only way for cities in the Yangtze River Delta to maintain their edge and transfer to a pattern of overall, harmonious and sustainable development. And the utmost goal of green development is to put people first. Urban residents are both the beneficiaries and participants of urban green development. Therefore, the urban green development is closely bound up with residents' happiness. The fundamental way to boost urban green development is to solve the environmental problem which residents concern the most. In the long run, it's of high theoretical and practical importance to fully understand and know the city residents' feelings in the perspective of green development based on the real conditions of the cities in the Yangtze River Delta and analyze the happiness and influencing factors of urban residents.

According to the current obtained documents, we can see a large number of economists have done lots of researches on the economic influential factors on happiness since Easterlin (1974) first put forward the mystery between happiness and income [1]. Various relationships between economic factors and happiness have been demonstrated in many researches (Di Tellaet, 2001; Sanfey, 2007; Ram, 2009) [2-4]. Some foreign scholars have explored the influence of environment and climate change on residents' happiness and provided a green perspective for the study on city's economic development and residents' happiness.Welsch (2002) examined the relationship between happiness and environmental quality through data of subjective well-being. He used cross-sectional air pollution data in 56 countries and found that the nitrogen dioxide emissions produced significant adverse effects on subjective well-being [5]. According to the cross-sectional data of water pollution in 30 countries, Israel and Levinson (2003) found that there was significant negative correlation between water pollution degree and happiness [6]. Upon research on panel data of 67 countries, Rehdanz & Maddison (2005) found that the high temperature, cold and extreme weather will reduce subjective well-being given certain social economic variables such as expected life, literacy rate, religion, unemployment, inflation[7].

Many scholars have done lots of studies on green development and residents' happiness which provides us with much enlightens. But generally speaking, study on urban green development theory has just started, and research on residents' happiness

is also limited. As an important factor which influences urban residents' happiness, the relationship between urban environmental quality and residents' happiness still fails to get enough attention. In particular, under the context of booming global green economy, there is still no theoretic system concerning what's the relationship between urban growth and residents' happiness and how urban development improves residents'' happiness. Based on data from the questionnaire, and taking residents of Shanghai, Nanjing, Suzhou, Hangzhou, Ningbo and Hefei as the subject, this paper will examine the Yangtze River delta urban residents' happiness and its influencing factors from the perspective of green development. It is hoped that this paper can supply scientific evidence for urban green development strategy and implementation, and provide theoretical support for urban green development.

2. Research method & results analysis

The most commonly used method to measure residents' happiness is to obtain their feedbacks through questionnaire. In 2012, China green development index research group of Beijing Normal University, to our country and a key cities "urban green development public happiness survey", try to through the questionnaire to understand the city green development status and its residents subjective feeling. This survey mainly understands residents to live the urban environment, infrastructure and the government's green action of comprehensive evaluation. Among them, the urban environment evaluation mainly includes the city streets, city health drinking water, rivers, lakes contaminated degree, air quality and nearly three years environment change, etc.;Urban infrastructure evaluation mainly includes the greening situation, leisure entertainment quantity and distribution, life garbage disposal, public transportation convenience degree and smooth traffic situation, etc.; The government's green action evaluation including garbage classification equipment, food safety, environmental complaint popularity, enterprise pollution control effect and government to environmental protection value degree, etc. The sample population using random inspection method, the basic situation of the crowd as is shown in table 1.

Table 1 Descriptive statistics of the sample

Variables	Options	Frequency	Percentage（%）
Age	18-40	2566	70.65
	41-60	742	20.43
	61 or above	324	8.92
Education background	junior college or above	1731	50.75
	Senior high school &vocational school	968	28.38
	Junior school or below	712	20.87
Income (RMB)	3000 or below	824	23.64
	3000～7000	1314	37.69
	7000～12000	738	21.17
	12000 or above	610	17.50

According to the questionnaire results, this paper will carry out a concrete analysis in terms of the rank of residents' happiness in the Yangtze River Delta under urban green development and residents' overall happiness including environmental happiness, infrastructure happiness and government green action happiness.

As shown in Table 2, the average score of Yangtze River Delta urban residents' green development happiness is 0.126. The scores are totally different among cities. The green development happiness in Hangzhou and Ningbo is significantly better than that of other areas while that of Hefei and Nanjing is relatively low, ranking the last in the Yangtze River Delta. From the entire Yangtze River Delta region, residents' happiness on urban infrastructure rank the first, then is happiness on urban environment and finally happiness on government green action with a negative score (-0.092). In the future, local governments should further speed up the pace of green action to improve the residents' green happiness.

As regard to the environmental happiness, residents in Hangzhou marks 0.413, much higher than any other cities in Yangtze River Delta, which is benefited by advantaged natural environment of Hangzhou City, which need further protection in future, while the resident's environmental happiness in Shanghai and Nanjing is relatively lower, ranking in the last in the Yangtze River Delta. Of the urban infrastructure happiness, the whole Yangtze River Delta gets general high scores, with relatively higher scores in Hangzhou, Ningbo, and Suzhou, while lowest in Hefei. Residents' happiness on government green action is generally low in all cities with most negative scores, while residents' happiness in Shanghai, Nanjing and Hefei are

lower, with scores of -0.126、-0.176、-0.15 respectively.

Table 2 The green development happiness in Yangtze River Delta

	Green Development Happiness	Environmental Happiness	Infrastructure Happiness	Government Action Happiness
Shanghai	0.047	0.065	0.203	-0.126
Nanjing	0.039	0.070	0.222	-0.176
Suzhou	0.161	0.238	0.308	-0.064
Hangzhou	0.265	0.413	0.378	0.005
Ningbo	0.210	0.290	0.381	-0.041
Hefei	0.035	0.167	0.087	-0.150
Yangtze River Delta	0.126	0.207	0.263	-0.092

3. Influencing factors

The happiness of urban residents under the green development is influenced by many factors. This paper specifically analyses that from external and internal factors. The internal factors mainly analyses some self-conditions of the respondents, includes income, age, education level of the respondents; External factors that affect residents' happiness refers to comprehensive environmental condition of the city development, such as the characteristics of urban development, natural resource endowments, the urban environment and green government action all have important influence on the happiness of urban residents in the Yangtze River Delta.

3.1. Internal Factors

The Green development happiness of urban residents is closely related to age, income and education level of the respondents. Here is the statistic analysis.

Table 3 Relationships between Green Development Happiness and age, income and education level

Option	Age			Education level			Income (RMB)			
	18-40	41-60	≧61	≧ college	Senior High school or technical secondary school	≦ Junior high school	≦ 3000	3000 ~ 7000	7000 ~ 12000	≧ 12000
Total （%）	70.65	20.43	8.92	50.75	28.38	20.87	23.64	37.69	21.17	17.50
Satisfied （%）	50.51	64.42	66.67	53.15	57.02	59.83	59.22	54.95	56.37	49.84
Just-so-so （%）	44.97	30.73	27.78	42.81	39.05	34.83	36.41	39.27	39.84	44.59
Unsatisfied（%）	4.52	4.85	5.56	4.04	3.93	5.34	4.37	5.78	3.79	5.57

As can be seen from Table 3, of the age factor, with the age increasing, people's evaluation on the urban green development happiness are increasing, while the dissatisfied portion are also increasing(from 4.52% to5.56%). Of the education level factor, people with higher education levels feel lower green development happiness (from 59.83% to 53.15%). Of the income factor, people with income level lower 3000RMB has higher green development happiness, while whom with income above 12000RMB has lower green development happiness.

Hereinafter a chi-squared test is carried out to testify the independent or related correlation between statistics variables and environmental awareness.

Table 4 chi-squared test on green development happiness and age, income and education

	age		Education level		Income	
	probability values	Correlation coefficient	probability values	Correlation coefficient	probability values	Correlation coefficient
Shanghai	0.008	-0.112	0.029	-0.094	0.000	0.104
Nanjing	0.000	-0.181	0.000	-0.068	0.399	-0.029
Suzhou	0.001	-0.127	0.290	0.058	0.357	-0.005
Hangzhou	0.000	-0.037	0.015	-0.035	0.201	0.017
Ningbo	0.002	0.064	0.615	-0.004	0.213	0.025
Hefei	0.026	-0.093	0.108	-0.036	0.151	0.035

As shown in Table4, urban green development happiness in Yangtze River Delta has a significant negative correlation with the age of respondents. In one hand, it shows that older people gains less information about environmental policy and government's environment-protecting action because of lacking information-receiving means. The other reason may be because of the older groups have higher sensitivity to environmental issues and lower tolerance so that they make lower evaluation to the same environment situation than other age groups. It also reveals that urban green development happiness has no significant correlation with the income of respondents with both positive and negative correlation which indicates that income is not the primary factor influencing the happiness.

The certain relationship between education levels and awareness of environmental protection has been confirmed by almost all the scholars in their research. The higher the education level, the higher the awareness of environmental protection. This is not only because education content contains some information and elements related to environmental issues including direct and indirect environmental protection knowledge, but also because the education will improve individual understanding level of environmental issues. Environmental protection satisfaction has a negative correlation with the education level of respondents. As regard to environment happiness, the higher the education level, the low of the happiness of Green environment. People with higher level have more means to acknowledge government and the international environmental current situation, paying more attention to the environmental protection work of the city government, having clearer understanding of environmental issues, so that their evaluation are more comprehensive. People with low education level are more likely to give superficial evaluation according to their surrounding situation.

3.2. Analysis on external influencing factors

With many exogenous influencing factors affecting the urban green development happiness, the article makes an investigation from four aspects including city development characteristics, city endowment of resources, city environment condition, and the government's actions. Specific selection indexes as follows: the gross regional product selection and the actual use of foreign capital amount represent city development characteristics (called Dev), per capita green area represents regional resources endowment (called Res); the proportion of the number of days with air quality above the secondary level by days of the whole year, sewage treatment rate of urban life, industrial SO2 removal rate, and industrial waste water COD removal rate represent the urban environment condition (called Env); environmental expenditure index represents the government's actions on the green development (called Act).

A regression model is shown below,

$$Y_i = \beta_0 + \beta_1 Dev + \beta_2 \mathrm{Re}s + \beta_3 Env + \beta_4 Act + \mu_i$$

$$i = 1,2,...,n$$

This article uses SPSS software for data linear regression, and the model's goodness of fit R2=0.6468, means the model's goodness of fit is good. The statistical results are shown in table 5.

Table 5 Regression model results of green development happiness

Explanatory Variables		Impact Factor
City development characteristics	Gross Domestic Product	-0.176 (**)
	The actual use of foreign capital amount	-0.390 (*)
City endowment of resources	Per capita green area	-2.147
City environment condition	the proportion of the number of days with air quality above the secondary level by days of the whole year	0.152 (*)
	urban life sewage treatment rate	-3.458 (*)
	industrial waste water COD removal rate	-3.448
	industrial SO2 removal rate	-0.131 (*)
The government's actions	the government's environmental expenditure	0.154 (*)

The table above shows the various influencing factors and the regression result value of the development of urban green happiness, interpreting the economic meaning and significance of each factor coefficient specifically:

(1) City development characteristics The results showed that the urban development features had a significant negative influence on improving urban green happiness. With the changes of urban economy, urban green happiness will reduce to some degree.

(2) City endowment of resources The results showed that the city resources endowment index and urban residents happiness didn't pass the significance test. It showed that the happiness of city residents is not sensitive to the change of per capita green area representing the resources endowment condition. With the increase of urban green areas, urban green happiness didn't grow correspondingly, resource advantage didn't play a proper role in improving urban green happiness.

(3) Urban environment condition The results showed that the city weather quality index and urban green happiness are obviously positive correlated, and city residents are very sensitive to the improvement of the quality of the city weather. the index can well interpret the space difference of the urban green happiness. The urban environment index of industrial pollution treatment and urban sewage treatment are negatively correlated with urban green development happiness, indicating the improvement of industrial pollution didn't play a proper role in green development, the improvement of pure industrial pollution didn't obviously improve the urban green development happiness. This is mainly resulted from the following several aspects: first, urban industrial pollution condition itself has been serious, and the force of current pollution treatment is not strong enough, therefore the effect is smaller; second, the management of the city pollution has a certain hysteresis, and the governance efficiency often requires a long time to reach; finally, green development happiness is a kind of subjective feeling, because of information asymmetry, the common urban residents didn't have an obvious feeling to industrial pollution control.

(4) The government's actions The results showed that the city government had an obvious positive relationship with the improvement of urban residents happiness. The action and determination of the city government in promoting the green development is one of the most essential factors affecting the urban residents green happiness.

4. Conclusion

In the process of the rapid economic development, the Yangtze river delta cities faced severe pressure on resources and environment, and the transformation of the economic development mode. Developing the green economy vigorously and promoting the urban residents happiness are extremely urgent. Based on the investigation data, the study found obvious differences of urban green development happiness exist among the Yangtze river delta cities. The green development happiness in Hangzhou and Ningbo is relatively high, while that in Hefei and Nanjing is relatively low.

The Yangtze River delta can be divided into two regions according to the level of green development happiness, the green development happiness of residents in Suzhou, Hangzhou, Ningbo is relatively high, while that in Shanghai, Nanjing, Hefei is relatively low. The score difference of the three parts of green development happiness in each city is very significant. The happiness to city environment and the government's green actions of residents in Shanghai, Nanjing and Hefei is significantly lower. The happiness to urban infrastructure of residents in Hangzhou, Ningbo is in the forefront of the Yangtze river delta regions, while that in Hefei is relatively low.

At the same time, from the perspective of the influencing factors, the green happiness in the Yangtze river delta is closely related to the features of investigation objects. The empirical analysis showed the city green development happiness is

negatively correlated to age, positively correlated to the education level of urban residents, and not closely correlated to income level. Urban development characteristics, the natural endowment of resources, the urban environment and the government's green actions had an important impact on the urban green development happiness of residents in the Yangtze river delta.

In the future, Yangtze river delta cities should mainly focus on improving urban green happiness, based on their own resources, to improve urban quality, perfect the urban function, enhance the comprehensive carrying capacity of cities, and realize the urban development ideas , which are changing from simply pursuing output capacity and scale development to improving the quality and efficiency of transformation, from simply pursuing economic growth to multiple progress goals of population, resources, environment. These cities should also vigorously develop the green industry, carry out environmental management, improve the scale and quality of environmental protection investments, to economize energy, land, water and raw materials, protect the environment and reduce pollution, provide a safe, environmentally friendly, healthy, applicable and efficient work and living space for urban residents.

References：

1. Easterlin,R.A.,Does.1974:Economic Growth Improve the Human Lot? Some Empirical Evidence. In Economic Growth:Essays in Honour of Moses Abramovitz. New York: Academic Press.
2. Di Tella, R., MacCulloch, R., Oswald, A.2001:Preferences over inflation and unemployment: evidence form surveys of happiness.The American Economic Review, Vol. 91,pp.335– 341.
3. Peter Sanfey,Utku Teksoz.2007: Does transition make you happy. Economics of Transition,Vol. 15,pp.707–731.
4. Ram, R.2009:Government Spending and Happiness of the Population: Additional Evidence from Large Cross-Country Samples. Public Choice, Vol. 138,pp.483–490.
5. Welsch, H.2002:Preferences over Prosperity and Pollution: Environmental Valuation Based on Happiness Surveys. Kyklos, Vol.55,pp.473-494.
6. Israel, D., Levinson.2003:A.Examining the Relationship between Household Satisfaction and Pollution. Manuscript, Indiana State University.
7. Rehdanz & Maddison.2005:Climate and happiness, Ecological Economics,Vol. 52,pp.111-125.