

Research on the Ecological Value of Theme Park Area based on Willingness to Pay

-- A Case Study of Shenzhen Overseas Chinese Town

Xin Peng

School of Economics, Jinan University, Guangzhou 510632, China

Abstract

This paper takes the theme park area of Shenzhen Overseas Chinese Town as an example to conduct a case study of ecological value determination. Based on the CVM payment card questionnaire survey, a stepwise multiple regression model is used to conduct empirical research on residents' willingness to pay. The results show that the per capita willingness to pay for the theme park area of Shenzhen Overseas Chinese Town is 16.08 million yuan, and the ecological value of the area is 964.8 million yuan. Through the study of the ecological value of the theme park area and the case analysis of the theme park area of Shenzhen Overseas Chinese Town, it can be seen that the theme park area has great ecological value.

Keywords

Ecological value; Theme park area; Willingness to pay; Shenzhen Overseas Chinese Town.

1. INTRODUCTION

Under the advocacy of today's green economy development mode, people not only have a strong ecological awareness, but also gradually incorporate ecological planning, ecological control management, ecological service compensation, and ecological civilization assessment into the government's target performance assessment. "Ecology" has had preliminary value recognition and behavioral emphasis.

Nowadays, theme parks have gradually shifted from the original single playground form to the development of districts, forming a comprehensive development model, not only focusing on economic and social benefits, but also focusing on the upgrading of human ecology. With the successful transformation and upgrading of theme parks such as Shenzhen Overseas Chinese Town and Guangzhou Chimelong Paradise, theme parks have ushered in a large-scale development of districts. The effect of industrial agglomeration has rapidly increased land prices and their ecological value has also grown rapidly.

Combining the above two hotspots, this article will take the Shenzhen Overseas Chinese Town theme park area as a case study, use the willingness to pay in the conditioned value assessment method to determine its ecological value, and use a stepwise multiple regression model to analyze the factors that affect the ecological value of the willingness to pay.

2. METHODOLOGY

2.1. Ecological Value Assessment Method of Theme Park Area

It is still difficult to achieve accurate assessment of ecological value. The main reason is market failure, which is reflected in the following three aspects:

In reality, there is always a lack of market for environmental goods or ecological services, so the existing market cannot accurately reflect or even completely ignore the value of environmental goods and ecological services, resulting in environmental goods or ecological services In the market, it is low-priced or even free

Due to the existence of the public goods characteristics and externalities of the ecological environment, the consequences and impacts of people's economic activities on the ecology are not entirely borne by the actors, resulting in the difference between personal value and social value. Therefore, people can have the idea and behavior of "free riding" and ignore the ecological value, and even meet their own needs by losing the ecological value.

All kinds of eco-environmental policies have few price tags. People do not include the destroyed ecological cost or the utilized ecological value into the market prices, and the role of ecological benefits is hardly reflected in the market prices. Therefore, the ecological value assessment is different from the general value assessment, which can not be simply measured by the general price and value theory.

Due to the lack of market data and the inability to observe through relevant markets, ecological value can only be assessed through the establishment of a hypothetical market, of which CVM is the most widely used. The principle of conditional valuation method is as follows: According to the principles of welfare economics, it is assumed that the utility function V of an individual is a function of ecological environmental resources q , personal income y and other socioeconomic attributes s , plus a random factor variable ε .

$$V=U(q, y, s)+\varepsilon \quad (1)$$

Assuming that y and s are unchanged, when the ecological quality q changes from q_1 to q_2 :

$$V_1=U(q_1,y,s)+\varepsilon_1 \quad (2)$$

$$V_2=U(q_2,y,s)+\varepsilon_2 \quad (3)$$

According to the principle of maximum utility in economics, during the transformation of formulas (2) to (3), personal income should have the following changes so that personal utility remains unchanged:

$$U(q_2,y-M,s)+\varepsilon_2 \geq U(q_1,y,s)+\varepsilon_1 \quad (4)$$

When formula (4) is satisfied:

$$U(q_2,y-M,s)+\varepsilon_2=U(q_1,y,s)+\varepsilon_1 \quad (5)$$

Then:

$$\sum M = \sum WTP \quad (6)$$

M represents the amount of money that needs to be paid to keep personal utility unchanged when the ecology changes.

The specific operation of CVM is to start from the consumer's perspective and standpoint, establish a hypothetical market by setting up questionnaires, and obtain consumers' personal willingness to pay through bidding and other methods under a series of questions. Average the willingness to pay of all consumers, and then extend it to the overall area to estimate the ecological value.

2.2. Questionnaire Design based on CVM

This paper will take Shenzhen Overseas Chinese Town (OCT) theme park area as an example to evaluate the ecological value of theme park area. The specific questionnaire design is as follows, which is divided into four parts:

The first part is about the interviewee's concern and understanding of the ecology of the OCT theme park area, including the interviewee's understanding of the OCT theme park area, attention to the ecology of the area, and the relevance of the ecology of the area to the interviewee's life, to tentatively elicit different interviewees' views on ecology through such questions.

The second part is the impact of objective factors in the theme park area of OCT on the evaluation of ecological value. By asking the interviewees about their views and evaluations on the protection and development of natural resources, urban planning, greening facilities, population environment, livability and comfort in the theme park area, to analyze the impact of the development and use of objective factors on the ecological value.

The third part is the payment card questionnaire. Through real estate bargaining, the residents of OCT are asked about their willingness to pay for the three different housing uses to comprehensively reflect the ecological value changes from "raw land" to "prepared land". Among them, the bid value setting and interval are designed by comparing the average price difference between the real estate in the OCT theme park area and its surrounding real estate.

The fourth part is the basic personal information of the interviewee, that is, the variables of their socio-economic attributes. It mainly asks about the interviewee's gender, age, education level, occupation, and annual family income. The main purpose of this part is twofold: one is to analyze the impact of the interviewee's personal subjective factors on the willingness to pay through subsequent data statistics, and the other is to preliminarily judge the validity of the questionnaire based on the interviewee's annual income, such as whether the interviewee can afford the chosen willingness to pay.

The survey objects in this article are residents of the OCT theme park area, that is, people who live, live or work in the OCT theme park area in Shenzhen. A total of 520 questionnaires were retrieved. After careful review of the retrieved questionnaires, samples that were filled in incorrectly (such as incomplete information, less than 30 seconds, etc.) were removed, 492 valid questionnaires were obtained, with a recovery rate of 95.77%.

3. EMPIRICAL RESULTS AND DISCUSSION

3.1. Empirical Results

According to the results of the questionnaire, the residents in the OCT theme park area pay more attention to the ecological environment of OCT, which accounts for nearly 80% of the sample number, and nearly 85% of the respondents believe that the ecological environment of OCT has a partial or even greater impact on their own lives. From the above two points, it can be seen that the residents of OCT are more ecological conscious, and highly identify with the importance of ecology. They are also very concerned about the ecological status and change trend of OCT, which to a certain extent ensures that the residents subconsciously attach

importance to and identify with the ecological value, and ensure the accuracy of the subsequent willingness to pay.

According to the relevant contents of statistics and the above formula (6), the mathematical average of the willingness to pay of payment card is obtained through the mathematical expectation of discrete variables, namely:

$$E(WTP) = \sum_{i=1}^n X_i W_i \quad (7)$$

$E(WTP)$ represents the willingness to pay per capita, X_i is the bid value, W_i is the probability that the respondent chooses the bid value, and n is the number of bid values available. According to formula (7), residents in the OCT theme park area have a willingness to pay for residential purchases of 48,230 yuan per square meter, a willingness to pay for home leases of 4.030 thousand yuan per month, and a willingness to pay for office buildings of 6.610 thousand yuan per month. Based on the three indicators of willingness to pay, the final calculation of willingness to pay per capita in the OCT theme park area is 16.08 million. Combined with the resident population of 60,000 in the area, the ecological value of the OCT theme park area can be calculated to be about 964.8 million yuan.

It can be seen from Table 1 that the reliability and validity of the relevant index values of the whole questionnaire and its sub-parts (except for the personal information part of the fourth part) are greater than 0.7. It can be seen that the questionnaire and its data in this paper have strong reliability and validity.

Table 1. Questionnaire reliability and validity analysis results

YEAR	Questionnaire (except the fourth part)	The first part	The second part	The third part
Cronbach's Alpha	0.847	0.705	0.755	0.809
KMO	0.849*	0.713*	0.755*	0.707*

*: sig=0.000

Use SPSS22 statistical software to get the statistical results of multiple stepwise regression, see Table 2.

Table 2. Parameter summary of regression analysis on Influencing Factors of willingness to pay of OCT residents

	R	R ²	△R ²	F	B	β
Intercept					0.156	
Family income	0.646	0.418	0.418	351.576*	0.268	0.405
Degree of ecological concern	0.726	0.527	0.109	272.379*	0.258	0.306
Age	0.736	0.541	0.014	191.786*	0.127	0.141
Occupation	0.744	0.553	0.012	150.686*	0.046	0.103
Evaluation of population environment and public space	0.750	0.563	0.010	125.348*	0.113	0.102
Education level	0.753	0.568	0.004	106.085*	0.096	0.071

*:P ≤ 0.001

Finally, in the model composed of their own variables, the variables with the most significant explanatory power for the dependent variable of "willingness to pay assignment average" are in the order of "family income", "degree of ecological concern", "age", "occupation", "evaluation of population environment and public space" and "education level", and all of them have positive effects .

"Family income" has a positive impact of nearly 50% of residents' willingness to pay. The higher the annual household income, the stronger the willingness to pay for ecological value. This also explains the dynamic, cumulative and time-sensitive characteristics of ecological value. People's awareness, emphasis and willingness to pay for ecological value are gradually accumulated with the development of social economy and the improvement of living standards. OCT is the first enterprise in China to form a natural division by culture and consumption power, and to centralize the social people of the same class in a residential area on a large scale. It uses the formed and obvious stratification characteristics to reach a "residential consensus". Therefore, these people and their families specifically gathered in the OCT theme park area not only contribute to the higher ecological value demand, but also provide a higher ecological value guarantee.

"Degree of ecological concern" is second only to "family income" and has a strong influence on willingness to pay. The more residents pay attention to ecology, the more they can increase their willingness to pay, which shows that residents have a clearer awareness and understanding of ecological value, reflecting the residents' awareness of ecological property rights.

"Evaluation of population environment and public space" is the only index in the regression model of residents' evaluation of many objective factors embodied in the ecological value of Oct. It is the most intuitive and strong objective factor influencing residents' evaluation of OCT ecological value and their willingness to pay. This is related to the fact that the residents of big cities live in the scene of high-density and intensive buildings for a long time. Although the area of OCT theme park covers a small area, its planning is not very congested and dense. The residential space is developing towards high altitude. The building density ensures certain comfort, plot ratio, green space rate and open space rate, and expands the building spacing and outdoor activity space, which makes the public space in the theme park area larger than that in the general urban area. This feature of humane and ecological design has also become one of the important factors affecting residents' willingness to pay.

3.2. Discussion

3.2.1 Reasons for the formation of the ecological value of the theme park area

Nowadays, the development of large-scale theme parks often appears in the form of complexes, appearing at the same time as hotels, real estate, conference centers, shopping malls and other industries, which intensively promote the development of tourism-based tertiary industries. The service industry generally takes the form of agglomeration or composite form of functions and formats, and theme parks integrate various service industries, not only forming a district-style format competitiveness, but also allowing various life comfort values and use values to be generated and developed. This is the basis and reason for the formation of the ecological value of the theme park area.

3.2.2 Ecological Value Monetization Evaluation of Theme Park Area

The theme park has improved the ecological environment of its area, turning the "raw land" into "prepared land". The ecological value is generated and developed in a series of comfortable service values brought by the theme park industry gathering. People's preference for ecology has been internalized into the price difference of real estate, which is finally reflected in the high price and high value-added of surrounding real estate.

3.2.3 Significant factors affecting ecological value under willingness to pay

This paper finds that "family income" has the greatest impact on willingness to pay. Under the premise of keeping other conditions unchanged, the higher the annual household income, the stronger the willingness to pay for ecological value. With the improvement of living conditions, residents' attention and awareness of ecological environment will gradually increase, their willingness to pay will be stronger, and ecological value will continue to grow.

4. CONCLUSION

The causes of environmental problems largely depend on people's value orientation and behavioral concepts. The recognition of "high commodity prices, low resource prices, and free environment" has led people to use the consumption environment to gain profits, resulting in resource scarcity, environmental pollution, and ecological degradation. But protecting the environment and maintaining the ecology are not only the social responsibilities of citizens and enterprises, but also important public products and services that the government should provide and guarantee. Under the guidance of the concept of "lucid waters and lush mountains are invaluable assets", promoting the measurable and tradable ecological value, establishing a standardized ecological compensation mechanism, and bringing the construction of ecological civilization into the institutionalized and standardized track are one of the important indicators for the overall and comprehensive evaluation of the performance of public services provided by the government.

REFERENCES

- [1] Hyoung-Gon Kim, Soo-Jin Lee. Period Theme Parks, Tourism, and Postmodernism [J]. *International Journal of Tourism Sciences*, 2015, 5(1):19-35.
- [2] Gómez-Baggethun E., Gren A., Barton N.D., et al. Urban Ecosystem Services [M]//*Urbanization, Biodiversity and Ecosystem Services: Challenges and Opportunities*, 2013:175-251.
- [3] Castro A. J., Vaughn C. C., Garcia-Llorente M., et al. Willingness to pay for ecosystem services among stakeholder groups in a South Central U.S. watershed with regional conflict [J]. *Journal of Water Resources Planning & Management*, 2016, 142(9).
- [4] Wang Xiaodong, Wei Ling. Empirical Study on Influencing Factors of willingness to pay for ecological value of cultivated land -- Based on field survey in Wuhan [J]. *Ecological economy (Chinese version)*, 2015,31 (8): 121-124.
- [5] Wen Qing, Yin Ning, Lu Ming, et al. Analysis on influencing factors and differences of farmers' willingness to pay for ecological compensation in Yunnan forest ecological function zone [J]. *Resources and environment of Yangtze River Basin*, 2017,26 (8): 1260-1273.
- [6] Meng Yuwei. Environmental impact assessment of park construction projects [J]. *Resource conservation and environmental protection*, 2014 (1): 145-145.
- [7] Zhou Chen, Li Guoping. Willingness to pay for basin ecological compensation and its influencing factors: a case study of Zhengzhou City, the receiving area of the Middle Route Project of South to North Water Diversion [J]. *Economic geography*, 2015,35 (6): 38-46.
- [8] Chen Haiming, Chen Fang. Research on the development of new theme park based on tourism complex model: a case study of Zhuhai Changlong International Marine Resort [J]. *Jingchu academic journal*, 2014,15 (3): 91-96.
- [9] Liang Zengxian, Bao Jigang. The influence of cultural transformation on the change of local meaning: a case study of spatial cultural production in Shenzhen Overseas Chinese town [J]. *Geographic science*, 2015,35 (05): 544-550.