Research Article
Evaluation on the Coordinated Development between New-type Urbanization and Green Food Tourism in Wuhan City Circle

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Abstract: With urbanization and green food tourism interactive coordinated development, Sustainable leapfrog development of social economy is to achieve. To do this, select the alternative indicators of urbanization and green food tourism, urbanization and green food tourism indicator variables of time series data during 2002-2012 in Wuhan City Circle. By correlation analysis, unit root test, Johansen co-integration test and Granger causality test analysis for the development of the variable time series of the development level urbanization and green food tourism. The test result shows that during the study period, second difference of urbanization and green food tourism indicator variables logarithmic is smooth, long-term co-integration relationship; One-way Granger causes between urbanization and green food tourism.

Keywords: Coordinated development, green food tourism, new-type urbanization, Wuhan city circle

INTRODUCTION

"The state council comments about accelerate the development of green food tourism" was publish on December 2009, which pointed out that it is very important to fully considering the green food tourism development needs when establishing and adjusting the overall urban planning, land-use planning, infrastructure planning and rural planning (The State Council Comments, 2009). Report to the Eighteenth National Congress of the Communist Party of China published on November 2012 suggested that the new path of urbanization with Chinese characteristics should be adhered to.

The new-type urbanization state plan (2014-2020) which published on March 2014 indicated that those small towns which owning the characteristic resources and location advantage should be constructed to a cultural green food tourism, trade logistics, resources, processing and transport hubs and other professional characteristic town by planning and marketing (National New-type Urbanization Plan, (2014-2020)). In June 2011, "two laps area" development strategy was put forward by Hubei provincial party committee and the provincial government which emphasis on green food tourism as the Wuhan city circle "two type" society construction important gripper (Hubei Provincial Green Food Tourism, 2011).

In recent years, the urbanization of Wuhan city circle developed rapidly, the urbanization rate reached 55.51% by 2012. With the advancement of urbanization in Wuhan city circle, how to coordinate the relationship with the development of green food tourism as in the construction of Wuhan city circle "two type society" became a confronting problem. On this background, the project tries to combing the new-type urbanization and the benign interaction between the green food tourism developments in the Wuhan city circle in recent years by using the correlation analysis, unit root test and Granger causality. Finally, decision-making basis of the Wuhan city circle "two type" society development strategy can be provided.

MATERIALS AND METHODS

Literature review of new-type urbanization and coordinated development of green food tourism: Huang and Ke (2001) thought that green food tourism was the comprehensive urbanization is irreplaceable by other industries; Zhang (2014) came up with the opinion that take advantage of suburban green food tourism industry cluster development, characteristics of leisure green food tourism product development, drive the new-type urbanization "smart growth" (Zhou, 2002; Chen, 2004). Eviews6.0 software has been used in the study to empirical test and analysis the relationship between the urbanization and coordinated development of green food tourism in Wuhan city area combining with the Wuhan city circle alternative index of the urbanization and the green food tourism industry in

2002-2012 annual data using the ADF unit root test, Granger causality test and correlation analysis. Furthermore, the problems existing in the development can be summarized and targeted policy Suggestions are put forward.

New-type urbanization and service industry coordinated development analytical model:

ADF unit root test: Unit root test is always used to test whether a time series data smoothly. *ADF* unit root test has been always used and the model is as follows:

$$\Delta y_t = \delta y_{t-1} + \sum_{i=1}^{m} \beta_i \Delta y_{t-1} + \varepsilon_t \tag{1}$$

In model (1), the y represents the time series data, t represents the time variable, the null hypothesis for the delta = 0, the alternative hypothesis for the delta < 0. If accept the null hypothesis that x is a unit root, for nonstationary sequence; Vice for stationary series. For nonstationary sequence, after d order difference if become stationary series, says that the sequence of d order single whole sequence, notes for the I (d).

Rejection of null hypothesis test model results, the sequence can be thought of as a smooth sequence; Accept the null hypothesis of discriminant model, the sequence can be thought of as nonstationary sequence.

Johansen cointegration test: Cointegration refers to a linear combination of multiple non-stationary economic variables is smooth, if multiple nonstationary variables with cointegration, these variables can be a smooth sequence synthesis. This series can be used to describe the equilibrium relationship between variables. If and only if multiple nonstationary variables with cointegration between set up by these variables regression model to be meaningful, Johansen cointegration test, the test method is mainly applied to the vector between the cointegration tests, test model for:

$$y_t = \sum_{i=1}^{p} a_i y_{t-i} + \varepsilon_t \tag{2}$$

Model, a y t d of endogenous variable vector, a for the corresponding coefficient matrix, P said endogenous variable lag order number.

Granger-causality test: *Granger* causality test based on time series is the cause of the time series y x when using this method: Estimate the current y value by its lag values can explain the extent of validation by introducing lag value of the sequence x can be explained more y. If so, then according to sequence x is the *Granger* Cause of y (*Granger* Cause), at this time

the lag coefficient of x is statistically significant. In general, you should also consider problem, on the other hand, namely the sequence y is the granger cause of x. For the following two regression models were estimated:

Unrestricted conditions return:

$$y_t = \sum_{t=1}^{m} a_t y_{t-1} + \sum_{t=1}^{m} b_t x_{t-1} + \varepsilon_t \tag{3}$$

Restricted conditions return:

$$y_t = \sum_{t=1}^{m} a_t y_{t-1} + \varepsilon_t \tag{4}$$

In the model (3) and (4), if the test of coefficient $b_1, \ldots, b_m$ is not significantly to 0, the null hypothesis is rejected, suggesting that x is the Granger cause of the change of the y. When the null hypothesis is "not the *Granger* cause of the change of the x y", only the above two regression model of the x and y swaps.

RESULTS AND DISCUSSION

Empirical analysis of new-type urbanization and service industry coordinated development in Wuhan city circle:

Data sources and processing: Wuhan city circle of new-type urbanization and service sector data from 2002 to 2012 were involved in the article. *COU* stands for the proportion of urban population which seen as new-type of urbanization level indicators. *TOU* stands for green food tourism revenues as a share of GDP which seen as green food tourism development. Initial data come from "Statistical yearbook of Hubei province 2013" and "Hubei province service industry development report 2013".

Data from 2002 to 2012 about population of Wuhan city circle, urban population, gross regional domestic product, domestic green food tourism income and international green food tourism receipt are used in the study. According to calculation, *TOU* and *COU* can be worked out, shown as Table 1.

Figure 1, we can make the conclusion that Wuhan city circle of urbanization in Wuhan city circle "two type" has achieved rapid development under the background of social construction. Wuhan city circle in the green food tourism industry in the national economy status has improved in recent years. Wuhan city circle of green food tourism development and urbanization process has the characteristics of the moving in tandem.

Wuhan city circle of new-type urbanization and green food tourism related analysis: In this study, related analysis green food tourism and urbanization the Wuhan city circle from 2002 to 2012 of green food

Table 1: Wuhan city circle of green food tourism-the urbanization development level

Year	GDP (10billion)	Total Population (10thousand)	Urban population (10 thousand)	Domestic green food tourism revenue(10billion)	International green food tourism Receipt (10thousand dollars)	TOU (%)	COU (%)
2002	2977.54	3052.71	1026.72	231.07	16611.81	8.22	33.63
2003	3295.76	3074.26	1023.58	207.31	9990.37	6.54	33.30
2004	3790.56	3064.79	1117.05	249.94	13094.34	6.88	36.45
2005	3999.75	3075.79	1122.14	275.36	17990.73	7.25	36.48
2006	4599.78	3114.74	1085.06	312.92	20413.74	7.15	34.84
2007	5557.08	3134.84	1165.70	390.13	24320.02	7.35	37.19
2008	6972.11	3111.58	1184.50	486.33	27055.57	7.25	38.07
2009	8000.42	3114.78	1466.76	641.78	34942.65	8.32	47.09
2010	9635.76	3199.82	1586.27	944.06	50402.47	10.15	49.57
2011	11865.52	3107.22	1667.30	1336.35	63916.25	11.61	53.66
2012	13883.58	3113.01	1728.11	1692.36	87874.59	12.59	55.51
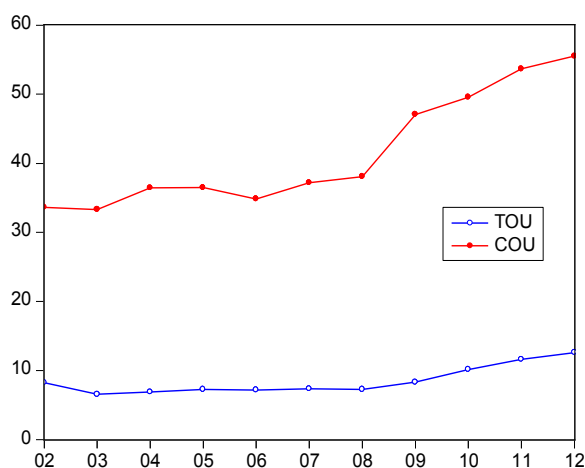
Fig. 1: Variation trend of *TOU* and *COU*

Table 2: Correlation analysis

		TOU	COU
TOU	Pearson Correlation	1	0.927**
	Sig. (2-tailed)		0.000
	N	11	11
COU	Pearson Correlation	0.927**	1
	Sig. (2-tailed)	0.000	
	N	11	11

**. Correlation is significant at the 0.01 level (2-tailed)

tourism and related analysis of urbanization. The result turned out to be that the correlation coefficient between *TOU* and *COU* was 0.927 (Table 2). The result showed high correlation degree between two variables which means the higher the urbanization rate, the greater the green food tourism revenues as a share of GDP.

ADF unit root test: This study USES the *ADF* test for unit root test variable *TOU* and *COU*. To eliminate the variance due to the sharp fluctuations in the data, we take logarithm *TOU* and *COU* shown as *LnTOU* and *LnCOU*. Test results as shown in Table 3.

Through time series of *LnTOU* and *LnCOU ADF* test samples, time series variable *LnTOU* and LnCOU samples are greater than the 5% threshold level. But after the second order difference, find *LnTOU* and

LnCOU difference is less than 5% level of significant value. So you can see, TOU and COU logarithm of second-order difference is smooth that is I (2).

Johansen cointegration test: Table 4 shows the Johansen cointegration test of urbanization rate and green food tourism contribution.

The null hypothesis of urbanization rate and green food tourism contribution of Wuhan city circle showed that there was no cointegration relationship. With the hypothesis, trace test statistic is 18.11847, 5% critical value is 15.49471 and probability value is 0.0197. So the null hypothesis can be refused. On the contrary, when null hypothesis is "At most 1", trace statistical quantity is 0.03259, 5% critical value is 3.84147, so the null hypothesis can be accepted. We can make a conclusion that Wuhan city circle green food tourism urbanization rate and contribution rate exists and there are only one whole relationship collaborators.

Granger causality test: The results of unit root test indicates that *LnTOU* and *LnCOU* are both I (2) which means two variables are stationary series. Johansen co-integration test makes it clear that the Wuhan city circle urbanization rate have long-term cointegration relationship with green food tourism contribution which cannot explain the causal relationship between two variables. *Granger* causality test method has been used to further illustrate the logical relationship between them, as shown in the Table 5.

Granger causality tests indicate that under the situation of lag 2 and significance level of 5%, *LnTOU* is not but *LnCOU* is the *Granger* reason of *LnCOU*. One-way causation exists from *LnTOU* to *LnCOU*.

The development of the urbanization on the promotion of green food tourism has a promoting effect; however, green food tourism growth did not directly lead to the improvement of urbanization level. Wuhan city circle of green food tourism development did not play its role to the promotion of urban service function.

Table 3: Roots of unity *ADF* inspection result

Variable	*ADF* test value	5% Critical value	DW value	Inspection result
LnCOU	-1.651928	-4.008157	2.119342	Not steady
LnCOU-1	-3.293325	-4.107833	1.784396	Not steady
LnCOU-2	-4.964379	-4.246503	2.072691	steady
LnTOU	-2.434249	-4.008157	1.434256	Not steady
LnTOU-1	-2.624935	-4.246503	2.277406	Not steady
LnTOU-2	-3.915358	-3.320969	1.883128	Steady

PS: Corner mark" -1" Means first difference, corner mark" -2" Means second difference

Table 4: Johansen cointegration test

Null hypothesis	Characteristic value	Trace test statistic	5% Critical value	The probability p values
None *	0.865950	18.11847	15.49471	0.0197
At most 1	0.003615	0.03259	3.84147	0.8567

PS: None: there was no cointegration relationship; At most 1: there was one cointegration relationship

Table 5: The results of *Granger* causality test

Causality hypothesis	*F* value	*p* value	Conclusion
Lntou is not the reason of *lncou*	2.44788	0.2022	Accept
Lncou is not the reson of *lntou*	16.2658	0.0120	Refuse

PS: Lag 2

CONCLUSION

This study analysis results indicate that the relationship between urbanization development and green food tourism development of Wuhan city circle shows strong positive correlation and two variables logarithmic second-order difference are stationary time series. The development of green food tourism in the urbanization development level is one-way *Granger* reason. However, green food tourism development does not constitute a *Granger* cause of urbanization. The improvement of urbanization Wuhan city circle service function helps provide basic conditions for the development of green food tourism. However, the development of green food tourism failed to enhance residents' quality of life.

ACKNOWLEDGMENT

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