

Research Article

Correlation Analysis between Rural Tourism and Agricultural Food Marketing

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Abstract: Rural tourism has much economic benefits, the development of rural tourism can fully utilize rural natural resources, optimizing the agricultural structure and expanding agricultural function. In this study, we make correlation analysis between rural tourism and agricultural food marketing by using time series model. The result shows that: First, rural tourism development will promote the agricultural food marketing in short time, but this effect will reduce gradually in the long time. Second, rural tourism is the granger reason to agricultural food marketing and there exist a long-term equilibrium relationship between them. From the VAR model, we can get that rural tourism will promote agricultural food marketing growth. LnRT at lag 1 period increased 1% can drive LnFPI growth by 0.48%; LnRT at lag 2 period increased 1% can drive LnFPI growth by 0.2%, so the effect of rural tourism on agricultural food marketing is obvious.

Keywords: Agricultural food marketing, economic benefit, rural tourism, time series model

INTRODUCTION

Rural tourism is the product of human social development, is a sign of progress of human society (Aliza and Anat, 2005). Today's society, with the flourishing development of rural tourism industry is showing a trend of any related the development of rural tourism, rural products business, the construction of the rural area, commercial trend of village culture is spreading every corner of society (Zhou, 2007). Leisure is closely related to everyone's life, with the continuous improvement of people's living standard and the increase in leisure time, a suitable public rural tourism era is coming and a new industry, rural tourism industry have emerged (Li and Geoffrey, 2008; Ning *et al.*, 2013). The rural tourism industry development in China's not so long, with the constantly improving standard of people's material and cultural consumption, leisure has become an important requirement in people's spiritual and material life, especially on how to give an impetus to the economic development in recent years, making an important contribution to enrich people's leisure life. Rural tourism and its related problem research are more and more important, by the people from all walks of life (Li, 2014; Pesonen and Komppula, 2010; Zhou *et al.*, 2012). Particularly in terms of food consumption in rural tourism, as a result of the rural tourism has such characters as green, leisure, rural tourism at the same time promote the agricultural and sideline products, especially the rural characteristics of food production and consumption (Donald and Jack, 2000).

Rural tourism is the use of rural infrastructure and space, the field of agricultural production, agricultural products, agricultural activities, natural ecology, agriculture and rural human resources, natural environment through planning and design, to play to the agricultural and rural tourism function, enhance the experience of people in rural areas and agriculture, enhance the quality of tourism and improve farmers' income, promote rural development of a new model (Zhou and Qing, 2014; Su, 2011). At the same time, rural tourism is based on agriculture, for the purpose of leisure, by means of service, leisure travelers, for the service object, through scientific planning and development in the countryside, for rural tourists provide leisure, sightseeing, recreation, travel demand management experience, fitness, etc., (Li, 2011). Rural tourism including rural products, services and activities provided also has four characteristics of rural tourism industry commodity: invisibility, perishable, heterogeneity, inseparable.

Gregory and Stephen (2011) pointed out that rural tourism can increase the farmers' income channels, increase the income of the farmers and meet the needs of tourists on rural food needs. Erick and Holly (2009) said that the rural tourism has the environmental protection function. Rural tourism can improve the natural resources, maintaining ecological balance; improve the quality of living environment (Arie and Oded, 2000). Filippo and Romei (2014) find out that rural tourism has social function; rural agriculture can promote the exchanges between urban and rural areas, to increase employment opportunities for farmers, promote the development of rural society, narrowing

the gap between urban and rural areas. Park *et al.* (2014) said that rural tourism can provide entertainment for visitors to places and services. Li and Ning (2012) pointed out that the rural tourism has the function of education. Rural tourism can educate visitors learn agricultural knowledge, let visitors understanding the agricultural production activities and help visitors participate into the outdoor natural classroom. Sharpley and Deborah (2011) pointed out that rural tourism has medical function, unique leisure agriculture area of the natural environment and living environment can ease the visitor's work, learning and life pressure, physical and mental relaxation is health care places. Lin and Kuo (2013) find out that the rural tourism has the function of cultural inheritance, rural tourism saves and passing on rural folk culture, it can promote the countryside culture promote spread.

For the income of rural tourism channel of economic benefits, the development of rural tourism can fully utilize rural natural resources, optimizing the agricultural structure and expanding agricultural function (Qing and Li, 2013). At the same time, it can extend the agricultural industrial chain, also the development of rural tourism service industry will promote the transfer of farmers employment, increase the income of farmers and create a good economic foundation for the new rural construction (Leiper, 1990; Zhou, 2013). Therefore, in this study, we try to test the effect through the development of rural tourism research for the characteristics of food production and consumption in rural areas and analyze the impact of rural tourism on the agricultural food marketing, especially the impact of agricultural and sideline food processing industry.

MATERIALS AND METHODS

Data collection: In order to analyze how the rural tourism effect on the food processing industry, we use STATA 12.0 software and make a statistical analysis of growth of rural tourism and food processing industry data from the year of 1990 to 2013. All data was collected from China statistical yearbook and Chinese tourism bureau website. We use the first letter to represent the variable as rural tourism and food processing industry and then we undertook log processing to all the data and noted them as LnRT and LnFPI.

Vector auto regression: Vector Auto Regression (VAR) is a statistical model used to capture the linear interdependencies among multiple time series. An estimated VAR model can be used for forecasting and the quality of the forecasts can be judged. VAR model is the simultaneous form of autoregressive model, A VAR (p) model of a time series $y(t)$ has the form:

$$A_0 y_{(t)} = A_1 y_{(t-1)} + \dots + A_p y_{(t-p)} + \varepsilon_{(t)} \quad (1)$$

Stability conditions: The stability of the VAR model means that when we put an impulse to the innovation of on formula in the VAR mode, the impact of the effect will gradually reduce. The basic condition of stability is that: all the eigenvalue of Π_1 should be located within the unit circle. According to the VAR formula, when $t = 1$, it should be:

$$Y_1 = c + \Pi_1 Y_0 + \mu_1 \quad (2)$$

And when $t = 2$, we calculate the formula with iterative method, as:

$$Y_2 = c + \Pi_1 Y_1 + \mu_2 = (1 + \Pi_1)c + \Pi_1^2 Y_0 + \Pi_1 \mu_1 + \mu_2 \quad (3)$$

So that, when $t = t$, it could be written as:

$$Y_t = (1 + \Pi_1 + \Pi_1^2 + \dots + \Pi_1^{t-1})c + \Pi_1^t Y_0 + \sum_{i=0}^{t-1} \Pi_1^i \mu_{t-i} \quad (4)$$

From the formula above, we can get that Y_t becomes a function to the vector μ , Y_0 and μ_t after the formula transformation. So we can analysis the impact result of these vectors to find out whether the VAR model is stable. If the VAR model is stable, it will satisfy the conditions as:

- If give one unit impulse to c at $t = 1$, when $t \rightarrow \infty$, the effect will have a Limit value as $(I - \Pi_1)^{-1}$.
- If give one unit impulse to Y_0 , the effect will be Π_1^t when $t = t$ and will be gradually disappeared with time has been increased.

From the analysis about VAR model, we can get that if the VAR model has the unit root, it will have the memory about impulse impact for a long time, so this VAR model is not stable. Also, the response of endogenous variables will not reduce with time increased in this case.

RESULTS

ADF unit root test: Data stable is the premise of establishing VAR model, an Augmented Dickey-Fuller test (ADF) is a test for a unit root in a time series sample. We use ADF unit root test to inspect LnRT and LnFPI, the result as is shown in Table 1. Through the test results we can see that LnRT and LnFPI are non-stationary and then we test on d.LnRT and d.LnFPI and demonstrate that they are stable, so we can build the VAR model and use granger test and cointegration test.

Table 1: Augmented Dickey-Fuller test (ADF)

Variable	Test statistic	1%	5%	10%	Result
		critical value	critical value	critical value	
LnFIR	-2.657	-3.750	-3.000	-2.630	Unstable
LnGDP	-1.789	-3.750	-3.000	-2.630	Unstable
D.LnFIR	-3.241	-3.750	-3.000	-2.630	Stable
D.LnGDP	-4.063	-3.750	-3.000	-2.630	Stable

Table 2: Selection-order criteria of VAR model

Lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	36.5350				0.00009	-3.63520	-3.61840	-3.53585
1	89.5991	106.1300	4	0.000	2.3e-07	-8.79991	-8.74943	-8.50167
2	101.4030	23.6070	4	0.022	1.9e-07*	-9.62135*	-9.53723	-9.12428*
3	104.6570	6.5083	4	0.164	2.6e-07	-9.54284	-9.42506	-8.84694
4	112.7380	16.1620*	4	0.003	5.2e-07	-9.47243	-9.82100*	-9.07770

Table 3: R test of VAR model

Equation	Parms	RMSE	R ²	χ ²	p>χ ²
LnTR	5	0.014806	0.7420	60.39153	0.0000
LnFPI	5	0.027789	0.9962	5508.66600	0.0000

Table 4: Result of vector auto regression model

LnFPI		Coef	S.E.	z	p> z	(95% conf. interval)	
LnRT	L1.	0.4867	0.1895	2.57	0.010	0.1151	0.8583
	L2.	0.2072	0.1788	1.16	0.247	-0.1434	0.5578
LnFPI	L1.	0.3868	0.0938	-3.75	0.000	-0.5361	-0.1680
	L2.	-0.0520	0.0988	3.91	0.000	0.1930	0.5806
cons		-0.1929	0.1815	-0.67	0.502	-0.4776	0.2339

S.E.: Standard error

VAR model: In VAR model, lag length selection have great influence for VAR model, if we establish two models, it is unable to determine the relationship between variables without the lag length. Therefore, the structure of VAR model is determined by the variables and lag length. I use STATA to measure the lag length; the result is shown in Table 2.

In this study, I use AIC, SC criterion to identify the lag length. From Table 2, we can get that the minimum AIC is -9.62135 in lag 2, so we choose 2 lag as the lag length. According to the analysis above, we construct the VAR regression model of LnRT and LnFPI and choose lag length as 2. Through the STATA 12.0, we get the VAR model as Table 3 and 4.

From the Table 4, we can get the formula of VAR model, as:

$$LnFPI = -0.192 + 0.48LnRT_{t-1} + 0.20LnRT_{t-2} + 0.38LnFPI_{t-1} - 0.05LnFPI_{t-2} \quad (5)$$

According to this formula, it can be seen that the effect is rural tourism promotes food processing industry growth. LnRT at lag 1 period increased 1% can drive LnFPI growth by 0.48%, LnRT at lag 2 period increased 1% can drive LnFPI growth by 0.2%, so the effect of rural tourism on agricultural food marketing is obvious. Rural tourism will promote the food processing industry in short time, but this effect will reduce gradually in the long time. Therefore, rural tourism and agricultural food marketing have direct mutual promotion effect.

In order to analyze the relations between rural tourism and agricultural food marketing, we use granger causality test to analyze this VAR model, the result is shown in Table 5. From Table 5, we can get that LnRT is the reason to LnFPI, which means rural tourism is the reason to agricultural food marketing

Table 5: Granger causality test

Equation	Excluded	χ ²	df	Prob>χ ²
LnRT	LnFPI	17.716	2	0.213
LnFPI	LnRT	32.897	2	0.002

increase. At the same time, LnFPI is not the reason to LnRT, so that agricultural food marketing is not the reason to rural tourism; this is also same to the conclusion above.

According to the results, there exist at least one direct co-integration relationship between rural tourism and agricultural food marketing, which means that there exist a long-term equilibrium relationship between rural tourism and agricultural food marketing.

Impulse-response analysis: According to the results above, we can get that there exist a long-term equilibrium relationship between rural tourism and agricultural food marketing; and rural tourism is the reason to agricultural food marketing growth, also the VAR model is stable. In order to analyze the VAR model, I use Impulse-response function and cholesky variance decomposition, the results is shown in Fig. 1 and 2.

From Fig. 1, we can get that when LnRT received one unit impact, it will lead LnFPI increase currently, LnFPI will reach the max at t = 4 period and begin to be stable then. It illustrates there is long-term effect between rural tourism and agricultural food marketing. At the same time, when LnFPI received one unit impact, it will lead LnFPI decrease currently and return to the basic situation at t = 4 period. According to the impulse analysis results, we can get that rural tourism will significant influence agricultural food marketing, so that it is important to enhance the development of rural tourism. The cholesky variance decomposition also shows the same result, the contribution degree of LnRT to LnFPI is gradually increased. From Fig. 2, we

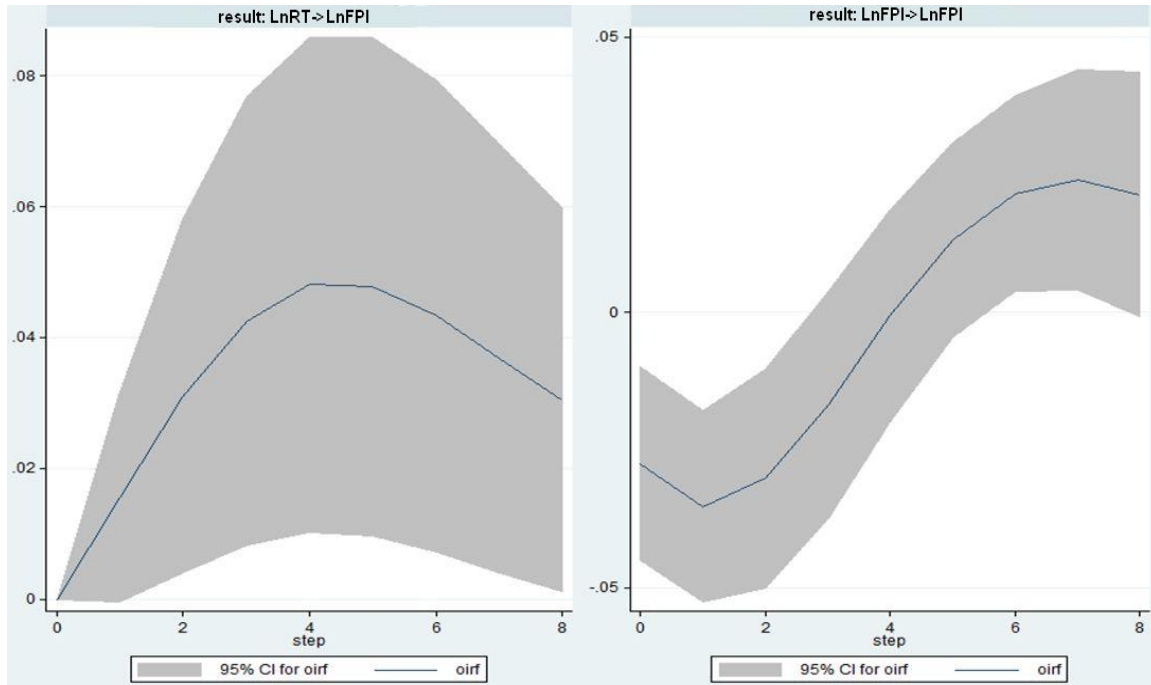


Fig. 1: Impulse-response analysis

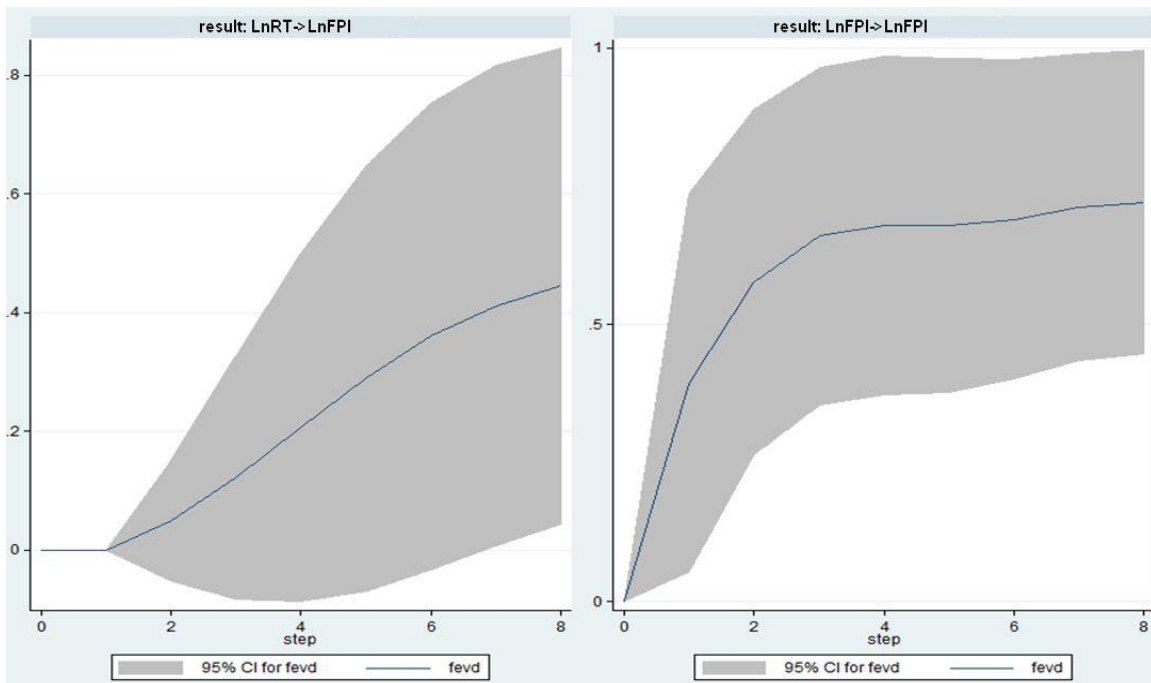


Fig. 2: Cholesky variance decomposition

find the contribution degree of LnRT to LnFPI at $t = 1$ period is 0 and then increased gradually from setp 2, finally increased to 44.2% at $t = 8$ period. At the same time, the contribution degree of LnFPI to LnFPI is 38.1% at $t = 1$ period, then increased and become stable from step 2, the contribution degree in $t = 8$ period is 73.25%. This means that rural tourism has a important contribution degree to food processing industry and can

be used to explain the agricultural food marketing growth

DISCUSSION

At the present stage, the rural tourism in our country is basically to farmers and rural enterprises independent development, the lack of a reasonable

scientific planning, project design generally identical. Layout is not reasonable and the function is not perfect, market positioning, in the development and construction on randomness, disorder and blindness exists certain. In addition, although the total amount of agricultural resources in China ranks world front row, but because population is numerous, so the amount of resources per capita, less unequal distribution has become a limiting factor in the development of leisure agriculture. To analyze from the government policy level, one is the financial support is not enough, the financing strength is not strong, is not more than two preferential policies. The country is mostly has not yet been set up special support funds, in taxation, land, health, safety assurance policy also no clear specification. To analyze from the angle of sustainable development of rural tourism, a lot of projects by land, capital and other elements of the "bottleneck" constraints. This unable to further expand the scale, improve grades and even midway stranding, resulting in rural tourism development aftereffect.

From the microscopic point of view, the rural population educational level is low. It can't keep up with the needs of the service quality, which makes the tourism management of agricultural garden and services for the integration of. At present, most of the leisure agriculture management personnel is the shift from the original engaged in agricultural production, processing and marketing of farmers and come, they have not been trained, so the service industry the lack of management experience, quality and low cultural level directly affects the leisure agriculture provides the service, to meet the needs of tourists to the city. At the same time, the people understanding to leisure agriculture is not clear, leading to the leisure agriculture to emerge from the agricultural business phenomenon, the existing leisure agriculture form a single, repeat construction phenomenon is serious. Our country leisure agriculture sightseeing and generally take the form of peasant. Sightseeing includes sightseeing farm and botanical garden, visit orchards, farms and buy local specialties; Happy Farmhouse, emphasize let visitors in food, drink, experience the leisurely life of entertainment, but rarely allows visitors to truly participate in the rural life and production project.

CONCLUSION

Above all, there are long-term interaction effects between rural tourism and agricultural food marketing. Rural tourism can promote the growth of agricultural food marketing and they have long-term stability of mutual promotion relationship. Also, rural tourism has a certain lag effect to agricultural food marketing. Considering the importance of rural tourism, it is necessary to pay more attention to the development of rural tourism. On the one hand, rural tourism will first bring including direct economic income and

merchandise sales, advertising effect for the food enterprises. On the other hand, the rural tourism development can effectively enhance the local well-known enterprises; create a good corporate image of the company. In today's economy is white hot in the market economic environment, many of the local advantage brand market often be shielding an industry monopoly and extrusion. The development of rural tourism, can make the enterprise products, culture has more direct and comprehensive display to tourists and thus make the enterprise products and cultural communication, thus for the enterprise products, brand communication, expand its visibility and reputation, will also expand the local social influence.

From the perspective of tourists, tourism development can be very good to meet the needs of tourists shopping, especially for the leisure food and related food buying needs. Tourists in the process of participation in tourism in the explanation of what one sees and hears through personal or related personnel, can better understand the food production of various products and can be lower than the market price to buy to assure the safety of various types of food or drink, even on the market have not had sales of the product, get after shopping satisfaction. Second, knowledge of the characteristics of rural tourism can satisfy the desire of tourists seeking knowledge. Industrial tourism to visitors to the display of many kinds of we often eat food or drink to the production process, production process, industrial products production scene, which contain the knowledge of science and technology, historical knowledge. Especially for the students especially in terms of food and chemical related majors, industrial tourism food features not only to increase their professional knowledge, also can significantly improve their ability of social practice.

ACKNOWLEDGMENT

The work of this study is supported by National Social Science Youth Fund Project "Research on Rural Tourism Sustainable Development Strategy based on Urban-rural Integration" (No: 13CJY106).

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