

Research on the Impact of Rural Tourism Integration on Farmers' Income Increase

Zixuan Zhang^{1, a}, Xiaoyu Niu^{2, b}

¹School of Economics, Yunnan Minzu University, Kunming, Yunnan, China

²School of Finance, Shanxi University of Finance and Economics, Taiyuan, Shanxi, China

^a18734148409@163.com, ^b1561932916@qq.com

Keywords: Rural Tourism; Farmers' Income; ARIMA; SWOT; Eviews

Abstract: Just relying on coal resources to stimulate economic growth is not a long-term solution for Shanxi. As a new development format, tourism has been integrated into the development of Shanxi. Jincheng City, Shanxi Province has many tourism resources, and tourism will be an essential support for future economic development. In 2016, the National Tourism Administration announced the list of “National Global Tourism Demonstration Zones,” and the Jincheng City of Shanxi Province was among them. Developing rural tourism has become an inevitable choice and an essential direction for tourism development in Jincheng. Under the background of rural revitalization, it is of great practical significance to explore the impact and development of tourism development on local farmers' income. Through field research visits, exploring a new model of rural tourism development in Jincheng City is indispensable in promoting the increase of farmers' income in Jincheng City.

1. Introduction

In the report to the 19th national congress of the communist party of China (CPC), it proposed to implement the strategy of rural revitalization and put "three rural issues" as the top priority of the party's work. How to promote the development of rural areas and increase the income of farmers is a key issue that needs to be solved urgently in rural areas in China. The coal market in Shanxi Province is weak, and the overall economy is continuing to decline. It is currently in a critical period of transformation and development. The State Council's Opinions on Supporting Shanxi Province to Further Deepen Reform and Promote the Transformation and Development of Resource-Based Economy clearly stated that “by 2020, Shanxi will initially establish a national tourism demonstration zone, and the transformation and development achievements will benefit urban and rural residents”. Jincheng City, Shanxi Province has a large number of tourism resources. In 2016, the National Tourism Administration announced the list of “National Global Tourism Demonstration Zones,” and the Jincheng City of Shanxi Province was among them. Developing global tourism is an inevitable choice and an important direction for the development of tourism in Jincheng. After rapid development in recent decades, Jincheng City has got rid of the situation of poverty and backwardness, but compared with the developed regions in China. The economic development level of Jincheng City is relatively backward. Therefore, how to increase farmers' income and narrow the regional gap has become an important economic issue concerning the future development of Jincheng City. This paper takes Jincheng as a typical case, and explores the impact of rural tourism on farmers' income through survey interviews, theoretical research, modeling, etc., in order to propose valuable policy recommendations, and provide suggestions for promoting tourism in Shanxi Province to increase farmers' income.

2. Basic Statistical Analysis

2.1 SWOT Analysis of Rural Tourism Development in Jincheng City

➤ Strengths

Jincheng City has abundant natural ecological resources as well as historical and cultural resources. It can be divided into four categories: one is the ancient castle represented by Huangcheng Xiangfu, ancient dwellings, and ancient building resources. The second is to focus on the Taihang landscape ecological resources in the southern mountainous areas. The third is the historical and cultural resources based on the ancient culture of Shangcheng Mountain and the Shangtang culture. The fourth is the human resources of the ministers, honesty, and scholars represented by Wang Guoguang and Chen Tingjing.

➤ Weaknesses

(1) Infrastructure construction is relatively lagging, and supporting capacity is not strong. Infrastructure construction is the core and prerequisite for the development of tourism. The imperfect infrastructure has become an important factor restricting the development of tourism in Jincheng. First, infrastructure such as transportation is weak, and the traffic is not smooth. Second, supporting facilities for the elements are not perfect, and the ability to provide services in the scenic spots is insufficient. Third, industry management needs further improvement.

(2) The main project has a weak driving ability and more significant development pressure. Rural tourism projects can effectively promote the economic and social development of Jincheng City, but the implementation of the project has many obstacles. First, the investment cycle of tourism projects is relatively long. Second, the project revenue channel is relatively simple. Third, the effectiveness of the project to help farmers increase their income is not enough.

(3) Single financing channel. The development of tourism in Jincheng City is constrained by insufficient funds and a single financing channel. Second, the county's tourism investment main body, the source of funds is mainly coal enterprises, affected by the development of coal; coal companies relatively reduced tourism investment. It can be seen that the county has not yet formed a diversified investment system, and the financing channels are restricted.

➤ Opportunities

Jincheng has a large number of tourism resources. In 2016, the National Tourism Administration announced the list of "National Global Tourism Demonstration Zones," and the Jincheng City of Shanxi Province was among them. At present, Jincheng City has formed a new tourism development mode of "tourism + agriculture, tourism + sports, tourism + Chinese medicine, tourism + film, and television, tourism + culture." The company has held two international sports events for four times in a row, and brand awareness has been continuously improved, and it has entered the world. Two-time "Agricultural Carnival" correctly interprets modern agriculture and farming culture. Tourists deeply love popular science and interest and become a model for the development of "tourism + agriculture." The scenic spots in the city have successively become the film and television shooting bases, telling and displaying the rich culture and scenery of Jincheng on the screen.

➤ Threats

As the development of rural tourism in China is very mature and faces serious homogenization problems, Jincheng City has a low level of integration and development of rural tourism development and a poor multi-model, so it faces more enormous development pressure. Jincheng City still focuses on rural tourism, and its tourism development model needs further improvement. The first is the low level of tourism product development. Second, the way of rural tourism is relatively simple. It is easy to copy over a large area, resulting in low novelty. Third, the degree of exploitation of historic and cultural resources is insufficient. Most rural tourism projects in Jincheng did not create local characteristic brands. The repetition of general scenic spots was high, and the featured projects were scarce. The visibility of scenic spots needed to be improved, and the radiation impact was not enough.

2.2 Statistical Analysis of Rural Tourism Survey in Jincheng City

The survey mainly conducted questionnaire surveys and interview surveys, focusing on residents and tourists to conduct a series of surveys on the development of rural tourism in Jincheng and the needs of rural tourism. Below I will analyze the results from the three aspects of the demographic characteristics, consumption characteristics, and demand differences of tourists.

A total of 100 questionnaires were sent to tourists, of which 86 were recovered, and 78 were valid. The recovery rate was 86%, and the effective rate was 91%. The specific data and analysis are as follows:

➤ Characteristics of tourists' consumption

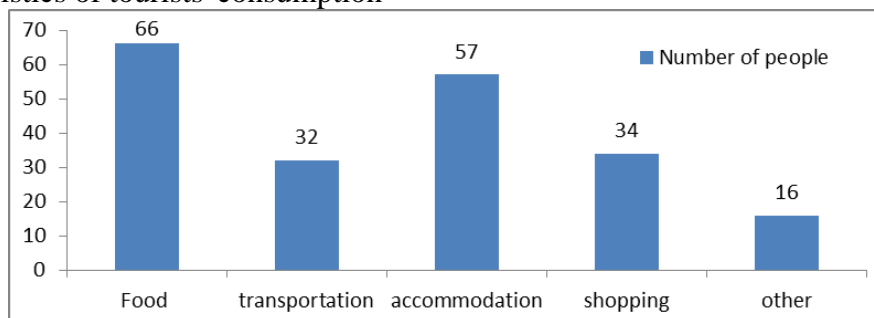


Fig.1 Main consumer spending directions

It is not difficult to see that the tourists surveyed by the visitors mainly focus on food and accommodation, although they are also reflected in transportation, shopping, and other activities, but only 40%. In the survey, we also found that the consumer service industries such as accommodation, catering, and leisure in Jincheng have problems such as insufficient quantity, small scale, and low grade. In response to these problems, Jincheng city not only needs to improve the quality and quantity of consumer services such as accommodation, catering, and leisure but also further enhance the service and hospitality awareness.

Visitors are more willing to choose a joint ticket for the scattered scenic spots than for a single ticket tour. The joint operation promotion in the vital scenic spots of the county and the attempt to implement the “passing ticket system” for the county's tourist tickets has become one of the promotion and marketing programs of Jincheng City. The main obstacle faced by this program is the imperfect tourist transportation facilities in Jincheng.

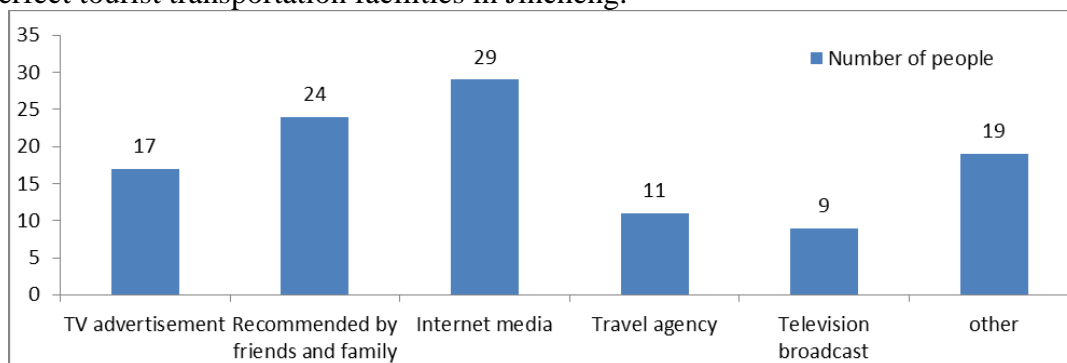


Fig.2 Visitors understand the scenic channel

The channels for tourists to learn about tourism information mainly come from the introduction of the network and friends and relatives. This is not only reflected in the advantages of Jincheng's tourism resources, but also an excellent reputation for Jincheng, CCTV, People's Daily, Xinhuanet and Traditional and modern media such as local TV stations, the results of publicity and promotion in the surrounding highways, high-speed rail stations, Zhengzhou, Taiyuan, Xi'an and other places.

In contrast, there are fewer channels for obtaining information through travel agencies. On the one hand, Jincheng has an insufficient investment in the promotion of travel agencies, and on the other hand, because Jincheng tourism has not yet formed its characteristics and brands, we are increasing publicity. At the same time, we must also pay attention to developing our characteristics

and forming our brand.

➤ Differences in tourists' needs

Among the surveyed tourists, the most significant number of tourists are those with incomes ranging from 3,000 yuan to 4,999 yuan, accounting for 36%, followed by tourists with incomes of 5,000-7,999 yuan, reaching 21% of all tourists, and income. Tourists accounted for 19% between 1499 yuan and below, and the lesser ones were tourists with the income of 8,000 yuan and upper (7%) and income between 1,500 yuan and 2,999 yuan (17%).

In summary, tourists with different incomes have only subtle differences in tourism demand. In general, tourists are more inclined to feel the joy of pastoral work, eating non-polluting farmhouse dishes, and casually picking fruit and vegetables, which also reflects the development potential of tourism in rural areas is enormous.

3. Empirical Analysis

3.1 Variable Selection

This paper studies the correlation between tourism development in Jincheng City and disposable income of farmers. This paper selects two indicators as variables. X represents the total annual income of Jincheng City (100 million yuan), and Y represents the disposable income of farmers in Jincheng City (yuan). The data in this paper select a total of 16 years of data from 2003 to 2018 in the Yangcheng County Government Network.

3.2 Empirical Research

➤ Stability test of time series

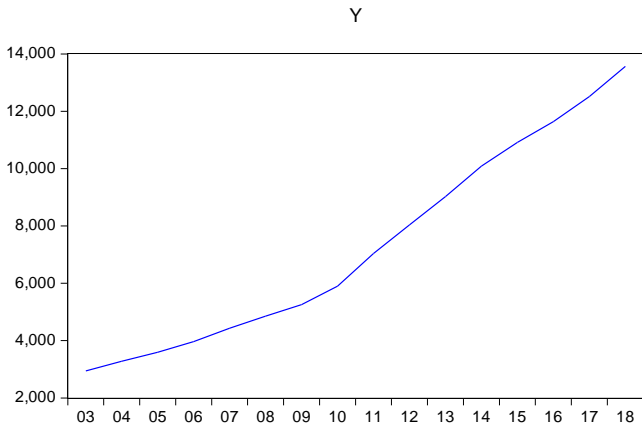


Fig.3 Autocorrelation plot and partial autocorrelation plot

The disposable income of farmers has increased year by year and has a clear upward trend. As can be seen from the timing diagram, the y-sequence has a slightly unstable feature that needs to be further determined.

Autocorrelation		Partial Correlation		AC	PAC	Q-Stat	Prob	
				1	0.824	0.824	13.026	0.000
				2	0.648	-0.095	21.661	0.000
				3	0.470	-0.113	26.557	0.000
				4	0.289	-0.132	28.558	0.000
				5	0.113	-0.123	28.891	0.000
				6	-0.047	-0.104	28.954	0.000
				7	-0.189	-0.112	30.098	0.000
				8	-0.305	-0.091	33.445	0.000
				9	-0.371	-0.016	39.117	0.000
				10	-0.405	-0.044	46.979	0.000
				11	-0.411	-0.051	56.726	0.000
				12	-0.387	-0.023	67.488	0.000

Fig.4 Autocorrelation plot and partial autocorrelation plot

It can be seen from this autocorrelation plot and partial autocorrelation plot that the rate decay to

zero is prolonged, so it is concluded that the y sequence is not stationary. In order to confirm this conclusion, the ADF test was further carried out.

Table1 Unit root test results

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.808975	0.9900
Test critical values:	1% level	-4.004425	
	5% level	-3.098896	
	10% level	-2.690439	

In the process of judging the stationarity, using the unit root test to determine the stationarity of the sequence is the most reliable method. By analyzing the above results, we found that the ADF statistic of the sequence y is 0.808975, the adjoint probability is 99%, and the original hypothesis that the sequence y has a unit root is accepted, and the sequence is considered to be unstable. So we make a first-order difference to the sequence and see if it is stable after the difference.

➤ Differential Process

According to the detailed statistical analysis results, in order to accurately eliminate the trend of the sequence and turn the sequence into a stationary sequence, the sequence y is subjected to first-order difference and second-order difference to form new sequences dy1 and dy2, and the sequence is made by using the sequence after the difference. The picture is as follows:

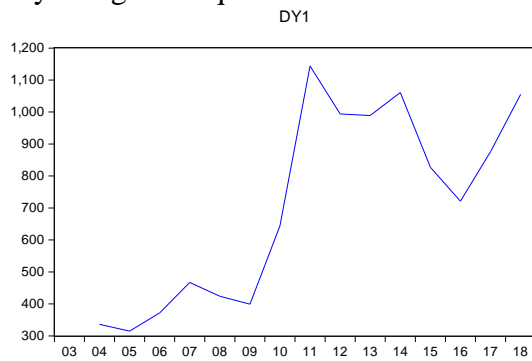


Fig.5 Timing diagram DY1

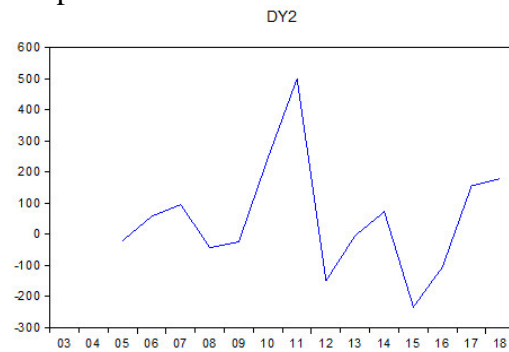


Fig.6 Timing diagram DY2

As can be seen from the above figure, the value of dy2 fluctuates up and down in Figure 3-4, the trend is eliminated, becomes smooth, and the data are not presented. The rules fluctuate and conform to the nature of the stationary sequence. Use the ADF test to analyze its stationarity, and summarize the results at the following table:

Table 2 Summary of Stationarity Test Results

Variable	Test Type(c,t,p)	ADF Statistics	5% Critical Value	Prob	Conclusion
y	(c,0,0)	0.808975	-3.098896	0.9900	non-stationary
dy1	(0,1,0)	-1.177938	-3.098896	0.6522	non-stationary
dy2	(0,2,0)	2.903354	-1.970978	0.0073	stationary

According to the ADF unit root test results in the above table. Sequence dy2 is accompanied by no intercept test the probability is less than 0.05, and the dy2 of the rejection sequence has the original hypothesis of the unit root, and the sequence dy2 is considered to be stable.

➤ Identification of the model

The autocorrelation and partial correlation graph analysis are performed on the differential sequence dy2, and the residual sequence does not have pure randomness. About the censoring characteristics of the autocorrelation and partial autocorrelation, the model can be set to the AMIMA(p, 2, q) model.

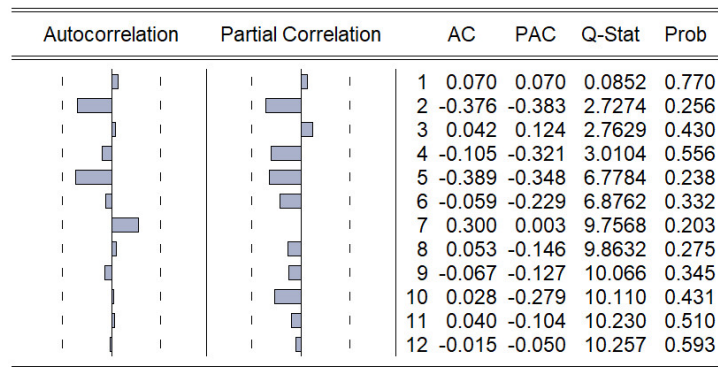


Fig.7 Autocorrelation and partial autocorrelation of sequence dy2

➤ The order of the model

According to the autocorrelation diagram and the partial autocorrelation diagram shown in Figure 3-5, the model is first set. Firstly, the model is set to ARIMA (0, 2, (2)), and the parameters are degraded based on the parameters:

Table 3 Model regression results of the ARIMA (0, 2, (2)) model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	52.45181	14.04955	3.733344	0.0029
MA(2)	-0.973502	0.069584	-13.99031	0.0000
R-squared	0.393452	Mean dependent var		51.35714
Adjusted R-squared	0.342907	S.D. dependent var		183.5662
S.E. of regression	148.8012	Akaike info criterion		12.97466
Sum squared resid	265701.4	Schwarz criterion		13.06596
Log-likelihood	-88.82264	Hannan-Quinn criteria.		12.96621
F-statistic	7.784097	Durbin-Watson stat		1.955998
Prob(F-statistic)	0.016345			
Inverted MA Roots	0.99	-0.99		

The above table shows that the adjoint probability of the estimation coefficient t of the MA(2) term in the estimation result is less than 0.05, which satisfies the parameter significance requirement. The reciprocal of the autoregressive coefficient polynomial and the moving average coefficient polynomial root are all within the unit circle, satisfying the reversibility claim.

➤ Heteroskedasticity Test

In general, the ARIMA model, which is characterized by parameter significance, stationary reversibility, and extra randomness, has been able to reveal the law of time series development better. However, China's M2 growth rate sequence often has visible volatility in aggregation characteristics, so it is necessary to test further.

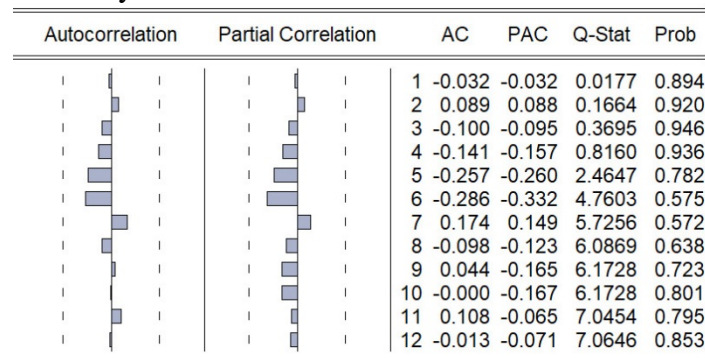


Fig.8 Residual square sequence autocorrelation graph of the mean model

The above figure shows that the Q statistic probability of the residual square sequence is substantial. At the 1% significance level, the null hypothesis that the model residual square

sequence does not have sequence correlation cannot be rejected, indicating that the residual sequence does not have heteroscedasticity. Sex, which in turn indicates that sequence dy2 has sequence correlation and no heteroscedasticity.

4. Conclusions

Based on the historical data from 2003 to 2018, this paper empirically analyzes the relationship between the total annual tourism income of Jincheng City and the disposable income of farmers in Jincheng City and establishes the ARIMA (0, 2, (2)) model of the disposable income of farmers in Jincheng City. Due to the current imperfect information of farmers' income data in Jincheng City, some data can not be obtained, so the selected variable data is less, which may make the model structure have some deviation, but in general, it can respond to certain conditions. The model has passed the parameter significance. The stationary reversibility and residual randomness test were further tested by heteroscedasticity. It finds that the sequence dy2 had sequence correlation and no heteroscedasticity. It can be seen that the development of tourism can drive the development of rural areas and increase farmers' income.

References

- [1] Antonia B, Lee M E, McCormick P J. Residents' Perceptions of the Cultural Benefits of Tourism[J]. *Annals of Tourism Research*, 2002, 29(02): 303-319.
- [2] Williams J, Lawson R. Community Issues and Resident Pinions of Tourism[J]. *Annals of Tourism Research*, 2001, 28(02): 269-290.
- [3] Sharpley R. Rural Tourism and the Challenge of Tourism Diversification: The Case of Cyprus[J]. *Tourism Management*, 2002, 23(03): 233-244.
- [4] Gartner W C. Rural Tourism Development in the USA[J]. *International Journal of Tourism Research*, 2004, 6(3): 151-164.
- [5] Hall D. Rural Tourism Development in Southeast Europe: Transition and Search for Sustainability[J]. *International Journal of Tourism Research*, 2004, 6(3): 165-176.
- [6] Mato Bartoluci, Zvezdana Hendija, Mateja Petračić. Prerequisites of Sustainable Development of Rural Tourism in Continental Croatia[J]. *Acta Economica Et Turistica*, 2016, 2(1).
- [7] Mthembu, M.B. Rural tourism development: a viable formula for poverty alleviation in Bergville. *Inkanyiso, Jnl Hum & Soc Sci*, 2012, 1: 63-74.
- [8] Jana Jarábková, Ľubica Majstríková, Tomáš Kozolka. Financial Supporting Tools of Rural Tourism Development in Nitra Self-Governing Region[J]. *European Countryside*, 2016, 8(2).