

Analysis of the Relationship between Leisure Sports and Economic Growth in China

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ABSTRACT

The theme of the article is to talk about the relationship between leisure sports and economic growth and ways to cope with the big data era's sustainable development. Empirical analysis will be used in the article. As a part of one belt and one road, Zhuhai is planning on increasing its competitiveness by developing leisure and travel industry. It has hosted several international sports events already. So within the article, the situation of leisure sport in Zhuhai will be the main case.

Keywords: Leisure sports, economic growth, sustainable development

1. Introduction

Great changes have taken place in China during the last twenty years. From 1994 to 2014, Chinese economy kept a fast increasing rate: the GDP was 9.8% on average. Chinese people's income increased greatly as well. Our need to survive was satisfied, and now they want to have a better life. We want to eat healthier, live longer and maintain a high quality life. Under this background, people will pay more time and money on leisure, travel, and sports, which belongs to the third industry.

The theme of the article is to talk about the relationship between leisure sports and economic growth and ways to cope with the big data era's sustainable development. Empirical analysis will be used in the article. As a part of one belt and one road, Zhuhai is planning on increasing its competitiveness by developing leisure and travel industry. It has hosted several international sports events already. So within the article, the situation of leisure sport in Zhuhai will be the main case.

Leisure sport has great economic contribution to the developed countries. In Britain, leisure sport contributed 1.7% of GDP, in Russia, the number is 1.9%. In China, the rate of Leisure sport takes of Total GDP is relatively low, though it is in an increasing rate. (Lu Yuanzhen, 2010)

According to the official data of General administration of sport of China, the value of total sport industry takes 0.46% of GDP in 2006, 0.49% in 2007 and 0.52% in 2008. The importance of sports economy in national economy in UK is must greater than that in China; sport industry and consumption in China are mainly the manufacture and consumption of material commodities such as sports clothes, shoes and hats etc. (Qiu Shiliang,2012) In 2022, the winter Olympic games will be held by Beijing, which is an exciting event. The popularity of ice and snow tourism is increasing. The most famous ski center in China is Heilongjiang province. From 2010 to 2014, the number of tourists increased to 16 million, the income of ice and tourism increased from RMB9.5 billion to RMB15 billion. Therefore, ice and snow tourism industry has already become one of the main sources of GDP in Heilongjiang province.(Wang qianying, 2015)

Nowadays, the so called leisure sport means people attend in the sport activities in their spare time, like playing football, tennis and mountain climbing. (Chen Jingshu, 2014) It has following characteristics: first, leisure sport and competitive sport. Unlike that of competitive sports, the goal of leisure sport is to

relax, and let people enjoy their spare time. After intense study or work, people will take the activities such as outdoor sports, gym and golf to release their stresses. Of course, there will also be some matches and competitions in leisure sport as well, but the main focus is different. Besides, watching matches are also part of leisure sport. Second, leisure sport is a part of popular sport.. Same as popular sport, leisure sport means the activities by individual people or a group people. However, popular sport and competitive sport are mutually exclusive.

Leisure industry means the areas that are related to peoples' leisure life, leisure activities and leisure demand. Targeting on leisure, the leisure sport industry is the business system that offer consumers fun collection of sports, as well as industries that provide the means of production and services.(lv Siqu,2012) From the definition above, we can tell that the so called leisure industry not only includes the industries that directly related with leisure sport, such as manufacturing industries that produce sport wear, sport shoes and sport equipment, but also includes industries that are not directly related with leisure sport, such as hospitality industry and catering industry.

2. Empirical Case study

2.1 Background

The leisure sport industry can be separated into two sections: leisure sport products and leisure sport services. First, leisure sport products. For leisure sport products, it includes sport event industry, leisure sport venue and leisure sport commercial commodities. Like other product, sport event is a type of goods, people watch it and attend it, and for most of time, pay for it. The operation and management of leisure sport venue should be considered as product as well. Of course, the consumption of leisure sport product is directly related with leisure sport products. Second, there are two parts of leisure sport services: leisure fitness industry and leisure sport tourism. And leisure sport clubs is also included in the service sector.

According to the formal model of Gershuny, leisure sport product can be sold to households as commercial goods. Households are also sources of labor, and people get paid by working in leisure sport industry. The leisure sport industry in China is quite different from that of other countries. The main income of the industry is government funded.

2.2 Research methodology, data and analysis

The following data is based on empirical analysis of leisure sport industry in Zhuhai, results are come from the software of Eviews, using the method of regression and Granger causality test. There are two factors that will be measured in the model. The GDP of Zhuhai, and LS represents people's consumption on leisure sport industry. The relationship between GDP of Zhuhai and people's consumption of leisure sport is measured. Data is collected from 2001 to 2016 annually. Because the data of people's consumption on leisure sport industry is hard to collect, it is assumed that people's consumption on education, sport and entertainment equals to people's consumption on leisure sport industry.

2.3 Key Findings

2.3.1 Study of the tests and results

First, Description analysis and unite root test

Table-1: Description Analysis

	Maximum	Minimum	Mean	Std. Dev.
GDP(0.1billion yuan)	3392.972	1271.830	2108.509	709.8544
LS(yuan)	2226.370	367.2300	1123.896	598.7828

The range of the value of GDP is between 1271.830 and 3392.972, the average value is 2108.509, and standard deviation is 709.8544. The range is the value of spending on leisure sport industry is between 367.2300 and 2226.370, the average value is 1123.896, and the standard deviation is 598.7828.

Table-2: Unite Root Test of GDP

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.432004	0.0360
Test critical values:		
1% level	-4.297073	
5% level	-3.212696	
10% level	-2.747676	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 10

Table-3: Unit Root Test of LS

Null Hypothesis: D(LS) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=3)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.649947	0.0032
Test critical values:		
1% level	-4.004425	
5% level	-3.098896	
10% level	-2.690439	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 14

Table-2 and Table-3 is unit root test of GDP and LS respectively. Probability of GDP is 0.036, and that of LS is 0.0032, both are smaller than 0.05. From the data we can find that two factors are all relatively steady, because the data is the annual data.

Table-4: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
GDP does not Granger Cause LS	14	5.42175	0.0285
LS does not Granger Cause GDP		2.01813	0.1888

Table-4 is Granger causality test. In order to find the relationship between GDP and LS, The Granger causality test is used, the probability is 0.0285 smaller than 0.05, so the null hypothesis of GDP does not Granger because LS is rejected, which means GDP can be the factor that make LS change. The probability is 0.1888 bigger than 0.05, the null hypothesis of LS does not granger cause GDP is accepted, which means LS is not the factor that make GDP change. The test result shows that if GDP change, LS will change accordingly. However, LS will not be the reason of changing GDP.

Table-5: Regression Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.407699	0.295100	11.54760	0.0000
LOG(GDP)	0.608013	0.041888	14.51534	0.0000
AR(1)	0.292947	0.244326	1.199000	0.2537

R-squared	0.976948	Mean dependent var	7.630934
Adjusted R-squared	0.973106	S.D. dependent var	0.324974
S.E. of regression	0.053294	Akaike info criterion	-2.849141
Sum squared resid	0.034083	Schwarz criterion	-2.707531
Log likelihood	24.36856	Hannan-Quinn criter.	-2.850650
F-statistic	254.2820	Durbin-Watson stat	2.521343
Prob(F-statistic)	0.000000		
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Inverted AR Roots	.29		

Table-5 is the regression analysis. The data shows that the coefficient between GDP and LS is 0.6, which means 1% increase in GDP will increase the consumption in leisure sport industry by 0.6%. The R-squared is high at 0.976948. Durbin-Watson statistic is 2.521343, higher than 2, so the model is steady. The result of the model is acceptable.

2.3.2 Discussion on the finding

As mentioned above, we can find the result that the consumption on leisure sport product is highly correlated with GDP. The increase in GDP will increase the consumption as well, and the consumption of leisure sport product attributed little to GDP.

The relationship between people's income and people's consumption on leisure sport is another aspect that needed to focus on. It is assumed that people's spending on leisure sport industry equals people's spending on education, sport and entertainment.

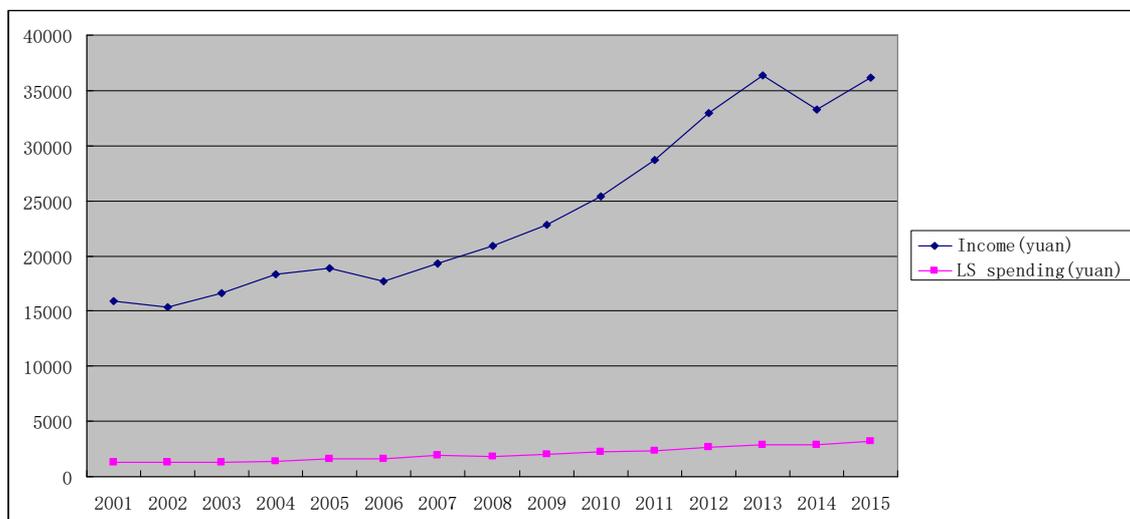


Figure-1: Relationship between Income and LS spending

Figure-1 represents the relationship between people's income and people's spending of Zhuhai from 2001 to 2015. The results show the positive relationship between the two factors. The main reason for this is because labor, capital and land are the main driver of GDP, the increasing GDP will enlarging people's income. When people become richer, they tend to spend more money on health industry.

3. Conclusions

The thesis works from Granger causality test Model to Regression Model, and as we have expected, there is positive relationship between GDP and the development of leisure sport industry. People in developed areas in China must have higher consumption in leisure sport in the future. The goal of the firm in leisure sport industry is to serve the consumers by providing goods and services, thus to increase its social value. Social responsibility should be the number one goal of the firm. Same thing happens to the cities who

hosted all sorts of sport events and clubs who supports the government. The development of leisure sport industry is a long run issue; we should extensively carry out public fitness and promote the industries that are related with it. Leisure sport industry in China has great potential, with a total scale of 900 billion yuan, at the same time, there are 0.45 people who take exercise frequently. While facing this challenge, more supply should be given to meet the excess demand in leisure sport industry.

References

Chen Jingshu and Min Jian (2014) “City life and recreational sport”, *Sichuan Sports Science*, Vol33, No.2, pp81-84

Chris Gratton and Peter Taylor (2007), *Economics of Sport and Recreation*, The Breathe Trust.

Gershuny,J. (1997) “Time for the family”, *Prospect*, Jan., pp56-57.

General Administration of Sport of China (2008), *2006-2008 National Sport Industry Report*[Internet], Available from:<http://www.sport.gov.cn/n316/n340/c211955/content.html> [Accessed 20 Feb.2017]

Lu Yuanzhen (2010), *Sport Sociology*, Higher Education Press.

Lv Siqi and Wangwei (2012), “Economic Development and Sports & Leisure Industry”, *Journal of Value Engineering*, pp. 268-269

Qiu Shiliang and Chu Yinglan(2012), “A comparison of sport economic development in UK and China”, *Journal of Physical Education*, Vol.19, No.4, pp39-42

Wang Qianying(2015), “Economic Strategy of the Sustained Development of Ice and Snow Tourism in Heilongjiang Province”, *China Winter Sports*, Vol37, No.2, pp76-79.

Zhuhai Statistics Information Network (2001-2016), *2001-2015Zhuhai National Economy and social development Report* [Internet], the 3Q of 2016 Zhuhai National Economy and social development Report Available from: http://www.statszh.gov.cn/tjzl/tjgb/201603/t20160330_325988.htm [Accessed 20 Feb.2017]

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