

# The Structural Influences on the Urban and Rural Residents' Spiritual Consumption in China after China's Entry into WTO

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**Keywords:** consumption structure; disposable income; WTO; spiritual consumption

**Abstract.** In this paper, consumption structure between urban and rural residents were studied respectively, and a comparison between urban and rural residents was further made regarding to the influences of the consumption structure on spiritual consumption structure. The results show that, urban residents spend more disposable income on education, entertainment and cultural than rural residents. The model of residents' spiritual consumption has obvious structural changes since China's accession to WTO, and accession to WTO has greater impact on urban residents' spiritual consumption. However, rural people's demand for consumption of education and entertainment increases faster than urban residents, and the gap between rural and urban consumption is gradually being narrowed.

## Significance of Study

Since the beginning of 21st century, China's economy has embarked on a new stage, along with the accelerating transformation of production structure and consumption structure. According to the census data of the past 20 years [1], Chinese people have been paying more and more attention to the expenditure on entertainment, culture, education and other services, which means that with the continuous development of economy and the improvement of quality of people's life, the proportion of material consumption and spiritual consumption, namely, the structure of consumption has undergone significant changes.

Spiritual consumption, which emerges because of economic growth, is the consumption of some intangible goods, such as entertainment, culture, education and other services [2,3]. This kind of consumption not only reflects the income level, spending power and living standard of our people, but also has close relations with people's quality of life and happiness index, which deserve more attention in the new stage of development. Besides, spiritual consumption also plays an important role for the development of entire economic society [4]. For example, the impact of the consumption of education on the improvement of the quality of citizens can not be ignored, which can help the whole society make progress in enhancing both technical quality and cultural quality. Therefore, it is urgent and necessary for us to make researches on spiritual consumption in order to improve people's happiness index, meet the increasing consumer demand with a more reasonable allocation of resources and promote the rational development of economic structure.

Since accession to WTO in 2000, the openness of China has been expanding significantly, which strengthens our economic cooperation and communication with foreign countries, promotes economic prosperity and transformation and brings more advanced technology and capital, resulting in a series of positive influences[5,6,7]. However, does it really improve the quality of life of our people? What kind of impact does it have on spiritual consumption? On one hand, accession to WTO promotes economic development, increases people's income and has some impact on people's

spiritual consumption; On the other hand, there will be some ideological emancipation and impact after China goes abroad, resulting in a certain adjustment of people's consumption structure. Considering the urgency of research on spiritual consumption and the trend of research on China's going abroad, we hope to study whether China's accession to WTO has a structural influence on the model of our people's spiritual consumption. Since the consumption structure between urban and rural residents are different, as well as the influences on them caused by accession to WTO, therefore we will study the urban and rural residents respectively and make a comparison with influences on spiritual consumption structure between urban and rural residents. After that, we will conclude whether China's openness can bring changes to people's happiness and improve their quality of life, offering a reference for our country to promote the spiritual consumption, develop consumer-driven economy and narrow the gap between urban and rural areas.

### **Major influential factors**

According to economic theory, we chose the following factors as influential factors:

(1) Price Index for entertainment, culture and education(ECEPI):X11 (urban) and X21 (rural)

As a measurement of the relative price of a basket of goods and services concerning culture, entertainment and education, ECEPI has a direct impact on consumption of entertainment, culture and education. When the price index increases, it will exert suppression to consumption to some extent. However, because of the recent social trend (third-party factors),the expenditure on culture, entertainment and education is increasing. Therefore, we can infer that the increase in the price index will curb consumption. But we can not determine which impact is more significant between one caused by price index and one caused by social trend. The only thing we can get is that the increase in the price index results in a slight reduction in consumption and we can not conclude that there is an inverse correlation between the price index and expenditure on spiritual consumption. In the following, we use X11 and X21 to represent the urban and rural ECEPI respectively, which refers to the same content.

(2) Per capita disposable income: X12 (urban) and X22 (rural)

Per capita disposable income is an important factor affecting all types of consumption. With the disposable income rising, people will turn to spiritual consumption and pay more attention to enhancing the happiness of life after basic material needs has been satisfied, which naturally leads to the increase of demand for consumption of entertainment, cultural and education. If there are both demand and ability to spend, it will ultimately result in the occurrence of consumer behavior by economical principle. In the text, we use X12 and X22 to represent the per capita disposable income of urban households and rural households respectively.

(3) Time variable T

In order to rectify the influence of multiple variables changing at the same trend with the time variation, we separate the time variable from other variables to prove that the correlation between variables is not due to the common trend, ensuring that our model can reflect the reality more accurately. And if there is indeed a time trend without being represented by a variable, the error of missing variable will occur. Therefore, the time variable can be added to ensure that our model has no missing variables. We use T to denote time variable. According to economical principle, there is positive correlation between time variable and expenditure on spiritual consumption.

(4) Virtual variable Di

In order to study the influence of China's accession to WTO on urban and rural residents' spiritual consumption, we introduce a virtual variable Di and chose 2001 as a boundary. The Di before 2001 (excluding 2001) equals 0, denoting that it was not affected by the accession to WTO.

The Di after 2001(including 2001) was 1, which means that it was affected by the accession to WTO. It is expected that the virtual variable will have a positive impact on the expenditure of spiritual consumption, that is , accession to WTO can increase residents' spiritual consumption.

### Establishment of Model

We have established two double logarithmic models for urban and rural residents respectively:

Urban residents:  $\ln y_1 = a_{11} \ln x_{11} + a_{21} \ln x_{12} + a_{31} \ln T + a_{41} \cdot Di + u_1$

Rural residents:  $\ln y_2 = a_{12} \ln x_{11} + a_{22} \ln x_{12} + a_{32} \ln T + a_{42} \cdot Di + u_2$

Note:  $u_1, u_2$  represent the stochastic disturbance of two models.

### Data gathering and processing

Raw data:

Statistical year	[Pi0306: Consumer Price Index for entertainment , education and culture]	[Ec0507: The average expenditure per urban resident per year on consumption of entertainment ,cultural and education] [Unit:Yuan]	[Ec0607: The average expenditure per rural resident per year on consumption of entertainment ,cultural and education] [Unit:Yuan]	[Ec0301:Per Capita Net Income of Rural Households][ Unit:Yuan]	[Ec0301:Per Capita Net Income of Urban Households][ Unit:Yuan]	[Ec0305: Engel 's Coefficient of Rural Households]	[Ec0306: Engel 's Coefficient of Urban Households]	[Pi0101: Consumer Price Index]
1994	112.5	250.75	75.11	1221	3496.2	58.9	50.04	78.10866835
1995	106.4	312.71	102.39	1577.7	4283	58.6	50.09	91.46525064
1996	110.4	374.95	132.46	1926.1	4838.9	56.3	48.76	99.05686645
1997	100.9	448.38	148.18	2090.1	5160.3	55.1	46.6	101.8304587
1998	96.6	499.39	159.41	2162	5425.1	53.4	44.66	101.015815
1999	98.6	567.05	168.33	2210.3	5854.02	52.6	42.07	99.60159363
2000	97.4	627.82	186.72	2253.4	6280	49.1	39.44	100
2001	106.62	690	192.64	2366.4	6859.6	47.7	38.2	100.73
2002	100.61	902.28	210.31	2475.6	7702.8	46.2	37.68	99.974525
2003	101.33	934.38	235.68	2622.2	8472.2	45.6	37.1	101.1442269
2004	101.29	1032.8	247.63	2936.4	9421.6	47.2	37.7	105.0686229
2005	102.22	1097.46	295.48	3254.9	10493	45.5	36.7	106.970365
2006	99.52	1203.03	305.13	3587	11759.5	43	35.8	108.5428294
2007	99.02	1329.16	305.66	4140.4	13785.8	43.1	36.29	113.7203224
2008	99.33	1358.26	314.53	4760.62	15780.76	43.67	37.89	120.3843332
2009	99.34	1472.76	340.56	5153.17	17174.65	40.97	36.52	119.5536813
2010	100.62	1627.64	366.72	5919.01	19109.44	41.09	35.7	123.5228636
2011	100.37	1851.74	396.36	6977.29	21809.78	40.36	36.3	130.1807459
2012	100.51	2033.5	445.49	7916.58	24564.72	39.33	36.23	133.6305357
2013	101.8	2293.99	485.88	8895.91	26955.1	37.66	35.02	137.1049296

All data in this article are from CSMAR

After a series of data processing, we got the required variable data. (All income, expenditure and

price index were converted into the price level based on 2000).

Statistical year	y1	x11	x12	y2	x21	x22	T	Di
1994	321.0271091	90.94632073	4476.071701	96.16090196	90.94632073	1563.206781	1	0
1995	341.8894037	96.76688525	4682.652669	111.9441529	96.76688525	1724.917375	2	0
1996	378.5199486	106.8306413	4884.971808	133.7211692	106.8306413	1944.438653	3	0
1997	440.320122	107.7921171	5067.540759	145.5163827	107.7921171	2052.529299	4	0
1998	494.3681342	104.1271851	5370.545194	157.806973	104.1271851	2140.258928	5	0
1999	569.3182	102.6694045	5877.43608	169.00332	102.6694045	2219.1412	6	0
2000	627.82	100	6280	186.72	100	2253.4	7	0
2001	684.9995036	106.62	6809.887819	191.2439194	106.62	2349.250472	8	1
2002	902.5099144	107.270382	7704.762788	210.3635901	107.270382	2476.23082	9	1
2003	923.8095225	108.6970781	8376.355484	233.0137934	108.6970781	2592.53551	10	1
2004	982.9766214	110.0992704	8967.091921	235.6840635	110.0992704	2794.744918	11	1
2005	1025.9477	112.5434742	9809.258852	276.2260369	112.5434742	3042.805359	12	1
2006	1108.345901	112.0032655	10833.97224	281.1148389	112.0032655	3304.686289	13	1
2007	1168.79725	110.9056335	12122.54742	268.7822138	110.9056335	3640.861998	14	1
2008	1128.269737	110.1625658	13108.64925	261.2715389	110.1625658	3954.517894	15	1
2009	1231.881765	109.4354928	14365.63877	284.8594842	109.4354928	4310.339876	16	1
2010	1317.683183	110.1139929	15470.36674	296.884309	110.1139929	4791.833535	17	1
2011	1422.437694	110.5214147	16753.46062	304.4689883	110.5214147	5359.694286	18	1
2012	1521.73303	111.0850739	18382.56494	333.3744026	111.0850739	5924.229788	19	1
2013	1673.163763	113.0846052	19660.19754	354.3855071	113.0846052	6488.39544	20	1

### Empirical research

The regression results of urban residents' spiritual consumption are as follows:

Dependent Variable: LOGY1  
 Method: Least Squares  
 Date: 12/31/16 Time: 14:39  
 Sample: 1994 2013  
 Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGX11	-0.803818	0.538222	-1.493469	0.1560
LOGX12	0.438361	0.070420	6.224956	0.0000
LOG(T)	0.325623	0.056954	5.717289	0.0000
DI	0.200096	0.053883	3.713519	0.0021
C	5.652066	2.665824	2.120194	0.0511
R-squared	0.989476	Mean dependent var	6.700987	
Adjusted R-squared	0.986670	S.D. dependent var	0.519620	
S.E. of regression	0.059994	Akaike info criterion	-2.576821	
Sum squared resid	0.053990	Schwarz criterion	-2.327888	
Log likelihood	30.76821	Hannan-Quinn criter.	-2.528226	
F-statistic	352.5763	Durbin-Watson stat	1.752944	
Prob(F-statistic)	0.000000			

The regression equation is:  $\ln y_1 = -0.804 \ln X_{11} + 0.438 \ln X_{12} + 0.326 \ln T + 0.200 \ln D_i + 5.652$   
 (-1.493) (6.225) (5.717) (3.714) (2.120)

After preliminary analysis, it can be concluded that the X11, which represents the price index of consumption of entertainment, cultural and education, can not pass through T test. The probable

reason is that this explanatory variable itself does not have a strong ability to interpret the explained variable Y1, which means that the change of price index can not significantly affect expenditure of spiritual consumption in current economic trend. However, since the meaning of this variable has theoretical support, we planned to verify whether X11 can be discarded with the method of restricted regression.

We made this constraint:  $\alpha_{11}=0$ . The regression results under constraint are as follows:

Dependent Variable: LOGY1  
Method: Least Squares  
Date: 12/31/16 Time: 14:47  
Sample: 1994 2013  
Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGX12	0.468284	0.070057	6.684306	0.0000
LOG(T)	0.268686	0.043909	6.119149	0.0000
DI	0.185495	0.054989	3.373338	0.0039
C	1.754451	0.564307	3.109034	0.0068
R-squared	0.987911	Mean dependent var	6.700987	
Adjusted R-squared	0.985644	S.D. dependent var	0.519620	
S.E. of regression	0.062258	Akaike info criterion	-2.538193	
Sum squared resid	0.062018	Schwarz criterion	-2.339046	
Log likelihood	29.38193	Hannan-Quinn criter.	-2.499317	
F-statistic	435.8408	Durbin-Watson stat	1.747451	
Prob(F-statistic)	0.000000			

It can be seen that all statistical indicators of the model under constraint show good. At this

time, we can see:  $F = \frac{(RSSR - RSSU) / (KU - KR)}{RSSU / (n - kU - 1)} = \frac{(0.989476 - 0.987911) / 1}{0.989476 / 15} = 0.237$ , while  $F(1, 15)$

equals 8.68 at the 95% confidence level. The calculation results were significantly less than that value, indicating that the null hypothesis can not be rejected and X11 can be removed from the model.

Based on the analysis above, the regression equation obtained after removing X11 is:

$$\ln y_1 = 0.468 \ln X_{12} + 0.269 \ln T + 0.185 Di + 5.652$$

(6.684)      (6.119)      (3.373)      (3.109)

#### (1) Economic significance test

- ① The per capita disposable income X12 has positive effects on spiritual consumption expenditure, and the elasticity of disposable income to spiritual consumption expenditure is  $0.468 < 1$ , which is in line with economic significance.
- ② Time variable T has positive effects on spiritual consumption expenditure, which means that the increase of time plays a role in promoting spiritual consumption, also in line with economic significance.
- ③ The influence of virtual variable Di on spiritual consumption expenditure is also positive, which denotes that the accession to WTO increases people's spiritual consumption and improves the quality of life. This conforms to economic significance.

#### (2) Statistical significance test

##### ① Goodness-of-fit test

The Goodness-of-fit index of the model is 0.988 and the adjusted Goodness-of-fit index is 0.986, which means that the fitting effect is very good.

##### ② T-test

According to the accompanying probability of T value above, they are all less than 0.05. We can

indicate that the null hypothesis is rejected at significance level 0.05 and equation coefficients are significant, passing through T-test..

③F-test

The accompanying probability of F is less than 0.01, indicating that the null hypothesis, which assumes that equation coefficients are zero, is rejected at significance level 0.01. The equation is significant as a whole, passing through F-test.

(3)Model’s specification error test

To verify whether the model has specification error, we set the number of fitted value 1 and got the results of RESET test as follows:

Ramsey RESET Test  
Equation: UNTITLED  
Specification: LOGY1 LOGX12 LOG(T) DI C  
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.212144	15	0.2442
F-statistic	1.469294	(1, 15)	0.2442
Likelihood ratio	1.868949	1	0.1716

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.005533	1	0.005533
Restricted SSR	0.062018	16	0.003876
Unrestricted SSR	0.056485	15	0.003766

LR test summary:

	Value	df
Restricted LogL	29.38193	16
Unrestricted LogL	30.31640	15

Unrestricted Test Equation:  
Dependent Variable: LOGY1  
Method: Least Squares

Since F-statistic is 1.46 and F (1,15) is 4.54 at confidence level 95%. Therefore we can not reject the null hypothesis that the model with new variable has no significant difference from the original one. The model has no specification error.

(4)Econometric test

①Test for multi-collinearity

Since there is no correlation among these three independent variables in economic significance and there is no contradiction in economic significance test and statistical significance test, we can affirm there is no obvious multi-collinearity.

②Test for serial correlation

We used LM test, made residual equal 1 and got the following:

**Breusch-Godfrey Serial Correlation LM Test:**

F-statistic	0.053210	Prob. F(1,15)	0.8207
Obs*R-squared	0.070696	Prob. Chi-Square(1)	0.7903

Test Equation:  
 Dependent Variable: RESID  
 Method: Least Squares  
 Date: 12/31/16 Time: 11:51  
 Sample: 1994 2013  
 Included observations: 20  
 Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGX12	0.003187	0.073536	0.043338	0.9660
LOG(T)	0.000371	0.045297	0.008195	0.9936
DI	-0.003876	0.059129	-0.065547	0.9486
C	-0.027086	0.593515	-0.045637	0.9642
RESID(-1)	0.063662	0.275983	0.230672	0.8207

R-squared	0.003535	Mean dependent var	-4.52E-16
Adjusted R-squared	-0.262189	S.D. dependent var	0.057132
S.E. of regression	0.064186	Akaike info criterion	-2.441734

Since the T-test does not pass in LM test for first-order sequence correlation and LM = 0.076. This value is less than 3.84, which is the critical value of Chi-square distribution with one degree of freedom at significance level 0.05. Thus we can judge the model has no serial correlation.

③ Test for random explanatory variables

Since the variation of T is only related to the change of time, there is no possibility that the explanatory variable has effects on it, which means that T is a deterministic variable. Besides, the virtual variable Di, which represents China's accession to WTO, is also a deterministic variable. Therefore, only X12 has a possibility to be endogenous variable. Considering that the spiritual consumption expenditure may in turn affect the residents' disposable income, we decided to carry out endogeneity test to X12.

We chose T, Di and X12(-1) which means a lag for one period as explanatory variables and establish a linear regression model:  $\ln X12 = C(1) \cdot \ln T + C(2) \cdot \ln Di + C(3) \cdot \ln X12(-1)$ . Then, we put the residual canca got from this model into the original model and the results are as follows:

Dependent Variable: LOGY1  
 Method: Least Squares  
 Date: 12/31/16 Time: 11:49  
 Sample (adjusted): 1995 2013  
 Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGX12	0.326876	0.071260	4.587115	0.0004
LOG(T)	0.419737	0.059606	7.041848	0.0000
DI	0.133444	0.047060	2.835643	0.0132
C	2.739907	0.544544	5.031559	0.0002
CANCA	1.191747	0.803689	1.482846	0.1603

R-squared	0.991851	Mean dependent var	6.749906
Adjusted R-squared	0.989523	S.D. dependent var	0.484237
S.E. of regression	0.049565	Akaike info criterion	-2.950141
Sum squared resid	0.034393	Schwarz criterion	-2.701604
Log likelihood	33.02634	Hannan-Quinn criter.	-2.908079
F-statistic	426.0194	Durbin-Watson stat	1.574255
Prob(F-statistic)	0.000000		

Since the T value of residual can not pass through T test at confidence level 95%, we consider that canca is zero significantly and X12 is not endogenous variable.

The regression results of rural residents' spiritual consumption are as follows:

Dependent Variable: LOGY2  
 Method: Least Squares  
 Date: 12/31/16 Time: 15:42  
 Sample: 1994 2013  
 Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGX21	0.164216	0.460245	0.356801	0.7262
LOGX22	0.227404	0.062792	3.621520	0.0025
LOGT	0.289355	0.048934	5.913114	0.0000
DI	0.091910	0.044912	2.046470	0.0587
C	2.104569	2.212171	0.951359	0.3565
R-squared	0.984079	Mean dependent var		5.362998
Adjusted R-squared	0.979834	S.D. dependent var		0.371459
S.E. of regression	0.052750	Akaike info criterion		-2.834184
Sum squared resid	0.041739	Schwarz criterion		-2.585251
Log likelihood	33.34184	Hannan-Quinn criter.		-2.785590
F-statistic	231.7925	Durbin-Watson stat		1.535283
Prob(F-statistic)	0.000000			

The regression equation is:  $\ln y_2 = 0.164 \ln X_{21} + 0.227 \ln X_{22} + 0.289 \ln T + 0.092 \text{Di} + 2.105$   
 (0.357) (3.622) (5.913) (2.046) (0.951)

It can be seen that the price index variable is still not significant in rural model. Therefore we made the same constraint:  $a_{21} = 0$ . The regression results under constraint are as follows:

Method: Least Squares  
 Date: 12/31/16 Time: 11:29  
 Sample: 1994 2013  
 Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGX22	0.223632	0.060184	3.715781	0.0019
LOG(T)	0.300036	0.037639	7.971445	0.0000
DI	0.093576	0.043433	2.154488	0.0468
C	2.878299	0.425213	6.769072	0.0000
R-squared	0.983944	Mean dependent var		5.362998
Adjusted R-squared	0.980934	S.D. dependent var		0.371459
S.E. of regression	0.051291	Akaike info criterion		-2.925733
Sum squared resid	0.042093	Schwarz criterion		-2.726587
Log likelihood	33.25733	Hannan-Quinn criter.		-2.886858
F-statistic	326.8413	Durbin-Watson stat		1.493788
Prob(F-statistic)	0.000000			

It can be seen that all statistical indicators of the model under constraint show good. We can see:

$$F = \frac{(RSSR - RSSU) / (KU - KR)}{RSSU / (n - kU - 1)} = \frac{(0.984079 - 0.983944) / 1}{0.984079 / 15} = 0.002, \text{ while } F(1, 15) \text{ equals } 4.54 \text{ at}$$

the 95% confidence level. The calculation results was significantly less than that value, indicating that null hypothesis can not be rejected and X21 can be removed from the model.

Based on analysis above, the model regression equation obtained after removing X21 is:

$$\ln y_2 = 0.224 \cdot \ln X_{22} + 0.300 \cdot \ln T + 0.094 \cdot Di + 2.878$$

(3.716)      (7.971)      (2.154)      (6.769)

(1) Economic significance test

① The per capita disposable income X22 has positive effects on spiritual consumption expenditure, and the elasticity of disposable income to spiritual consumption expenditure is  $0.224 < 1$ , which is in line with economic significance.

② Time variable T has positive effects on spiritual consumption expenditure, which means that the increase of time plays a role in promoting spiritual consumption, also in line with economic significance.

③ The influence of virtual variable Di on spiritual consumption expenditure is also positive, which denotes that the accession to WTO increases people's spiritual consumption and improves the quality of life. This conforms to economic significance.

(2) Statistical significance test

① Goodness-of-fit test

The Goodness-of-fit index of the model is 0.984 and the adjusted Goodness-of-fit index is 0.981, which means that the fitting effect is very good.

② T-test

According to the accompanying probability of T value above, they are all less than 0.05. We can indicate that the null hypothesis is rejected at significance level 0.05 and equation coefficients are significant, passing through T-test.

③ F-test

The accompanying probability of F is less than 0.01, indicating that the null hypothesis, which assumes that equation coefficients are zero, is rejected at significance level 0.01. The equation is significant as a whole, passing through F-test.

(3) Model's specification error test

To verify whether the model has specification error, we set the number of fitted value 1 and got the results of RESET test as follows:

Ramsey RESET Test  
Equation: UNTITLED  
Specification: LOGY2 LOGX22 DI LOG(T) C  
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.978455	15	0.0665
F-statistic	3.914283	(1, 15)	0.0665
Likelihood ratio	4.637343	1	0.0313

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.008711	1	0.008711
Restricted SSR	0.042093	16	0.002631
Unrestricted SSR	0.033382	15	0.002225

LR test summary:

	Value	df
Restricted LogL	33.25733	16
Unrestricted LogL	35.57600	15

Unrestricted Test Equation:  
Dependent Variable: LOGY2  
Method: Least Squares

Since F-statistic is 3.914 and F (1,15) is 4.54 at confidence level 95%. Therefore we can not reject the null hypothesis that the model with new variable has no significant difference from the

original one. The model has no specification error.

(4) Econometric test

① Test for multi-collinearity

Since there is no correlation among these three independent variables in economic significance and there is no contradiction in economic significance test and statistical significance test, we can affirm there is no obvious multi-collinearity.

② Test for serial correlation

We used LM test, made residual equal 1 and got the following:

**Breusch-Godfrey Serial Correlation LM Test:**

F-statistic	0.789225	Prob. F(1,15)	0.3884
Obs*R-squared	0.999700	Prob. Chi-Square(1)	0.3174

Test Equation:  
 Dependent Variable: RESID  
 Method: Least Squares  
 Date: 12/31/16 Time: 11:43  
 Sample: 1994 2013  
 Included observations: 20  
 Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGX22	0.005909	0.060949	0.096953	0.9240
LOG(T)	0.001205	0.037914	0.031774	0.9751
DI	-0.006857	0.044398	-0.154434	0.8793
C	-0.044933	0.431020	-0.104247	0.9184
RESID(-1)	0.232353	0.261546	0.888383	0.3884

R-squared	0.049985	Mean dependent var	4.44E-16
Adjusted R-squared	-0.203352	S.D. dependent var	0.047068
S.E. of regression	0.051633	Akaike info criterion	-2.877011

Since the T-test does not pass in LM test for first-order sequence correlation and LM = 1.000. This value is less than 3.84, which is the critical value of Chi-square distribution with one degree of freedom at significance level 0.05. Thus we can judge the model has no serial correlation.

③ Test for random explanatory variables

Since the variation of T is only related to the change of time, there is no possibility that the explanatory variable has effects on it, which means that T is a deterministic variable. Besides, the virtual variable Di, which represents China's accession to WTO, is also a deterministic variable. Therefore, only X12 has a possibility to be endogenous variable. Considering that the spiritual consumption expenditure may in turn affect the residents' disposable income, we decided to carry out endogeneity test to X22.

We chose T, Di and X12(-1) which means a lag for one period as explanatory variables and establish a linear regression model:  $\ln X22 = C(1) \cdot \ln T + C(2) \cdot \ln Di + C(3) \cdot \ln X22(-1)$ . Then, we put the residual canca got from this model into the original model and the results are as follows:

Dependent Variable: LOGY2  
 Method: Least Squares  
 Date: 12/31/16 Time: 11:41  
 Sample (adjusted): 1995 2013  
 Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGX22	0.160396	0.069780	2.298614	0.0374
LOG(T)	0.370786	0.057464	6.452481	0.0000
DI	0.054994	0.048910	1.124396	0.2798
C	3.252733	0.469323	6.930689	0.0000
CANCA	0.549172	0.615842	0.891743	0.3876

  

R-squared	0.982294	Mean dependent var	5.404944
Adjusted R-squared	0.977235	S.D. dependent var	0.329398
S.E. of regression	0.049700	Akaike info criterion	-2.944676
Sum squared resid	0.034582	Schwarz criterion	-2.696139
Log likelihood	32.97442	Hannan-Quinn criter.	-2.902614
F-statistic	194.1681	Durbin-Watson stat	1.399747
Prob(F-statistic)	0.000000		

Since the T value of residual can not pass through T test at confidence level 95%, we consider that canca is zero significantly and X22 is not endogenous variable.

**Comparison and analysis**

We made a comparison and analysis between two equations:

$$\ln y_1 = 0.468 \cdot \ln X_{12} + 0.269 \cdot \ln T + 0.185 \cdot DI + 5.652 \text{ (urban)}$$

$$\ln y_2 = 0.224 \cdot \ln X_{22} + 0.300 \cdot \ln T + 0.094 \cdot DI + 2.878 \text{ (rural)}$$

We can draw the following conclusions:

- (1) From the perspective of the impact caused by per capita disposable income on spiritual consumption expenditure, the degree of impact on urban residents is almost twice as the one on rural residents, which means the expenditure elasticity of urban residents spending disposable income on education, entertainment and cultural is twice as much as the one of rural residents. In fact, this result is also consistent with actual situation. There are three possible reasons which can explain. First, the basic quality of urban residents' life is much higher than rural residents' one since the material security in city is better. Therefore, urban residents have more pursuit of spiritual intangible products and services. Second, there are more facilities, such as educational institutions and entertainment facilities, in city, which can provide more goods and services and promote urban residents' consumption. Third, urban residents have a relatively new ideological conception. They have a greater demand of spiritual consumption. For example, urban people now pay more attention to improvement of education level and they believe that knowledge can change one's destiny, which increase the demand for education consumption. However, with the incomplete facilities, the low level of living standard, the outmoded concept in rural areas, rural people's spiritual consumption is relatively low, remaining at a level of material satisfaction.
- (2) From the perspective of the accession to WTO, the degree of impact on urban residents caused by accession to WTO is also twice as one on rural residents. It shows that China's accession to WTO does have a significant impact not only on the development and reform of the whole economy but also on the improvement of people's quality of life and happiness index. The model of residents' spiritual consumption has obvious structural changes since China's accession to WTO. Urban

residents can receive more information from the outside world. In addition, most foreign trade activities happen in urban areas. Therefore, accession to WTO has greater impact on urban residents' spiritual consumption.

(3) It is worth noting that the coefficient of time variable T in rural model is larger than the one in urban model for the first time, indicating that with the changes of time, rural people's demand for consumption of education and entertainment increases faster than urban residents. Although the base of rural people's spiritual consumption is weak, it is undeniable that there is huge space for development in rural areas. This outcome also indicates that in recent years the rural people's quality of life has been improved rapidly and their conceptions have gradually changed. With the migration of workers into city and the process of urbanization, rural residents' demand for spiritual consumption has very rapid growth, resulting in the emergence of a market in which tertiary industry is developing. This also shows a good trend, indicating that the gap between rural and urban consumption is gradually being narrowed. We believe that with the government's continuous policy support, the rural people can enjoy more benefits from tertiary industry and get more improvement of spiritual pursuit.

### **Policy proposals**

From the analysis above, it can be seen that accession to WTO has positive impacts on the improvement of urban and rural residents' quality of life. Trading activities between China and foreign countries have played an important role in not only promoting the growth of our national GDP, but also benefiting the normal people in their daily life. It indicates that our contemporary people have made great progress in material and ideological aspects under the inspiration of "go abroad" policy because the spiritual consumption is promoted by changes in both mind and material levels. Besides, it can be inferred from the coefficient of T that with the increase in the degree of globalization and the passage of time, residents' especially in rural areas spiritual consumption will increase rapidly and can not be underestimated. However, at current stage, there is still an urban-rural gap in spiritual consumption. To be specific, the rural areas are generally not as good as urban areas which have better infrastructure and higher income levels. Besides, the will of spiritual consumption is also lower in rural areas. It is time for our government to take some measures to solve this problem. We offer some proposals below:

(1) We must always adhere to "go abroad" strategy. Although it can be seen from the study that accession to WTO has a greater impact on urban residents' spiritual consumption, we can not deny that the rural residents' spiritual consumption expenditure also has a considerable increase after China joining WTO. In recent years, with the passage of time and the deepening of degree of opening up, growth rate of rural spiritual consumption is more than one in urban districts. Therefore, we must insist on opening to the outside world, making full use of foreign capital and technology to improve living standards of our residents and using the principle of diminishing marginal utility to narrow the gap between urban and rural areas.

(2) We should formulate a policy to increase the financial support in rural areas. Fiscal support is an important method to improve the level of development in rural areas and rural residents' quality of life. Especially in recent years, the focus of government work report has turn to rural development, including the three rural issues concerning agriculture, countryside and farmers, rural infrastructure construction, supply side reform in agricultural development and so on, which reflect the government's attention to rural development.

(3) In the process of absorbing of foreign capital, we ought to highlight the regional orientation, and increase the ability of rural areas to attract foreign investment. Compare with general consumption, spiritual consumption's special point is that it pursues the satisfaction with spirit rather than just

material. Therefore, we need improve the level of rural development before improving the level of spiritual consumption. By introducing more foreign investment into rural areas, we can effectively develop the economy of rural areas to improve rural residents' quality of life and infrastructure. Only in this way will rural residents have stronger willingness and better conditions to increase their spiritual consumption and seek satisfactory spiritual life.

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