

AN EMPIRICAL ANALYSIS OF THE RELATIONSHIP BETWEEN SOCIAL CONSUMPTION DEMAND FACTORS AND THE CULTURAL INDUSTRY IN CHINA

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Abstract: The relationship between social consumption demand factors and the development of Chinese culture industry is analyzed based on the theory of industrial structure. The result indicates that average disposable income of urban residents and Engel coefficient of rural households are related to culture industry very significantly and that the contribution of culture industry to GDP needs to be improved. Three countermeasures are proposed to promote the development of culture industry from two angles, including improving average disposable income of urban residents to increase their consumption ability, reducing Engel coefficient of rural households to improve the quality of life and promoting the construction of public cultural service system.

1 INTRODUCTION

International competition enters into culture industry and culture domain under the background of economic globalization. Therefore, the strength of culture industry becomes an indicator of national culture competitiveness. The statistical data of Chinese culture and relevant industries accomplished by China National Bureau of Statistics shows that Chinese culture industry increases powerfully and the increasing speed came to be higher than that of gross domestic production for the first time in 2006. It was also faster than the tertiary industry in the corresponding period. China is a developing country whose culture industry started later and the level of industrialization, scale and intensification is lower than developed countries. Chinese culture industry is in the process of growth and the value added increased from 394.1 billions RMB in 2004 to 760 billions RMB in 2008. But the proportion accounting for GDP only increased with a small rate from 2.15 percent to 2.53 percent

As the income of urban and rural Chinese residents is being enhanced remarkably and the quality of life improves further, new concepts of culture consumption gradually grows up and the consumption demand space becomes larger and

larger. On the other hand, the State Council made Culture Industry Promotion Planning in July 2009 which proposed explicitly the guiding ideology, fundamental principles and planning goals. The planning goals included that culture industry scale must constantly enlarge and the industry function and role of motivating economic and social development be played better. A depth study on the influence of social consumption demand factors on the development of Chinese culture industry can help provide important basis for making national culture industry policies.

We conducted empirical analysis on culture industry and the relevant influential factors with Eviews, a statistical software. The results show that average disposable income of urban residents and the Engel coefficient of rural households influence Chinese culture industry most notably and that the contribution of Chinese culture industry to GDP needs to be enhanced. According to the empirical analysis results, we put forward some countermeasures and proposals to facilitate the development of culture industry.

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2 CULTURE INDUSTRY AND SOCIAL CONSUMPTION DEMAND FACTORS

Consumption demand plays a role of guiding and pulling tremendously to the development of society and economy. Economy development and income growth always push the demand of culture go up at some stages in the process of industrialization and urbanization. China is in the intermediate period of industrialization and urbanization where the speed of economy development and income growth is fast and the demand of culture is being awakened. But the system of resource allocation by market has not been built. Therefore, the demand of spirit and culture products lacks of effective interaction and links with the suppliers. On the one hand the huge potential demand cannot be realized. On the other hand a large quantity of products supply is invalid and more enormous culture resources cannot be industrialized.

Consumption demand has become the source of industry formation and development since demand determines production in the modern economy. According to the Engel's law and Maslow's hierarchy of needs theory, when the economy develops to certain level income improvement and the change of income structure will make demand structure go upstream and the proportion of spirit and culture consumption continuously rise at a faster speed than that of material consumption demand. As the culture consumption ability increases, the scale of culture consumption will be constantly expanded so as to pull the growth of culture industry. The culture consumption demand of a country is the basis of the development of its culture industry and the motive power of enhancing competitive advantage of culture industry. So grasping the culture consumption demand is capturing the master key of developing culture industry. The key point of expanding domestic demand is exploiting new hotspots with the rapid development of national economy and the expansion of civil culture consumption demand space while culture consumption is a new pattern of pulling economy development through consumption. International experience also testifies that culture consumption expenditures are positively relevant with GDP.

According to the industrial structure theory of Chenery, an American economist, some kind of linear correlation exists among certain GDP development level, certain Engel coefficient and certain culture consumption expenditures. When the average GDP is between 2000 dollars to 4000

dollars, the resident culture consumption demand will emerge evidently and the culture consumption will reach 4 to 5 percent of GDP. Chinese average GDP was larger than 2500 dollars while the culture consumption accounted only 2.5 percent for GDP. This indicator is 5.47 percent in the same rank countries. That is to say, the culture consumption level of Chinese residents is only half of the level of other countries in the same class.

At the present stage in China, the condition of insufficient proportion and lower amount of culture consumption stands out. Therefore, Chinese culture consumption has a great improvement space compared with western developed countries. Inferior culture consumption demand is the direct factor that restricts the development of the culture industry in China.

3 THE EMPIRICAL ANALYSIS

3.1 Indicator Selection

The contribution of culture industry to a country's economy can be measured by the proportion of the added value of culture industry accounting for GDP on the basis of existing research. So we selected the added value of culture industry as the dependent variable i.e. explained variable of the linear regression equation. According to Chenery's theory of industrial structure, we selected GDP, average income level and Engel coefficient as independent variables i.e. explanatory variables.

It is necessary to point out that average income level and Engel coefficient reflect social consumption ability from amount and structure respectively although they are strongly correlative. These two indicators are complementary since average income level emphasizes on the resident consumption ability as the foundation and guarantee of consumption ability while Engel coefficient emphasizes on the living behavior.

In order to study the influence of urban and rural culture consumption demand further, the average income level is split into average disposable income of urban residents and average net income of rural residents and Engel coefficient is split into Engel coefficient of urban households and Engel coefficient of rural households to make pointed references for resolving the problems of the development of urban and rural culture industry.

In conclusion, we selected the added value of culture industry, GDP, average disposable income of urban residents, average net income of rural

residents, Engel coefficient of urban households and Engel coefficient of rural households as the indicators of linear regression model. The data of the six indicators are from the year of 1998 to 2009. The symbols and meanings of the dependent variable and independent variables in the model are demonstrated in Table 1.

In the empirical analysis, we should not only find out the factors which influence the economic contribution of Chinese culture industry but also determine the significance of each factor and whether auto correlativity exists among these factors. These goals bring forward high requirements for the comprehensive function of software. The strong function of Eviews can just satisfy these requirements with great practical value.

Table 1: Relevant Variables.

Type of Variables	Symbols	Variables
Dependent variables	Y	Added value of culture industry
Independent variables	X ₁	GDP
	X ₂	Average disposable income of urban residents
	X ₃	Average net income of rural residents
	X ₄	Engel coefficient of urban households
	X ₅	Engel coefficient of rural households

3.2 Related Data

The data used in the regression model is time series data derived from China Statistical Yearbook (1999-2010) and the website of China National Bureau of Statistics. The sample data are shown in Table 2.

Table 2: Related data.

Year	Y (Hundred Million RMB)	X ₁ ((Hundred Million RMB))	X ₂ (RMB)	X ₃ (RMB)	X ₄ (%)	X ₅ (%)
1998	1823.9	84402	5425	2162	44.5	53.4
1999	2098	89677	5854	2210	41.9	52.6
2000	2391.2	99215	6280	2253	39.2	49.1
2001	2768.7	109655	6860	2366	38.2	47.7
2002	3090.5	120333	7703	2476	37.7	46.2
2003	3415.1	135823	8472	2622	37.1	45.6
2004	3940.8	159878	9422	2936	37.7	47.2
2005	4454.8	183217	10439	3255	36.7	45.5
2006	5123	211924	11759	3587	35.8	43.0
2007	6559.9	249530	13786	4140	36.3	43.1
2008	7600	300670	15781	4761	37.9	43.7
2009	8400	340507	17175	5153	36.5	43.0

Data source: China Statistical Yearbook, 1999-2010.

3.3 Regression Analysis

It is supposed that linear correlativity exists between the added value of culture industry and GDP, average disposable income of urban residents, average net income of rural residents, Engel coefficient of urban households and Engel coefficient of rural households. A linear equation is built as following

$$Y=C_1X_1+C_2X_2+C_3X_3+C_4X_4+C_5X_5 \tag{1}$$

The result of a linear regression analysis of the data in Table 2 is shown in Table 3.

Table 3: Results of linear regression analysis.

Variable	Coefficient	Std.Error	t-Statistic	Prob.
X ₁	-0.0315	0.0186	-1.6957	0.1409
X ₂	0.6387	0.2238	2.8542	0.029
X ₃	0.0741	0.2282	0.3248	0.7563
X ₄	-42.8431	19.0012	-2.2348	0.065
X ₅	-54.7905	13.8829	-3.9466	0.0076
C	5472.92	599.3474	9.1315	0.0001
R-squared	0.998	F-statistic	631.5	

The number of variables is 5 and the sample size is 12. Adjusted R Square is 0.998 and F-statistic is 631.5. So the degree of fitting reaches up to 0.998. The regression of forecasting dependent variables within the sample is very successful.

In the result of Prob. the p value of X₁ is 0.1409, which indicates that the influence of X₁ to Y is not significant. The t statistic values of X₂ and X₃ are both positive, indicating that these variables are positively correlated with Y. It means that the added value of culture industry will increase as the average income of urban and rural resident increases. Meanwhile, the t statistic values of X₄ and X₅ are both negative, indicating that these variables are negatively correlated with Y. It means that the added value of culture industry will increase as the Engel coefficients decrease.

Then the most significant indicators were analyzed by linear regression. In the results of Prob., the larger the p value, the less significance it shows. The significance is the largest when the p value is zero while the significance degree is zero when the p value is 0.15. From Table 3 it is known that the p value of X₃ is 0.7563, which indicates it is insignificant. The p values of X₁ and X₄ are 0.1409 and 0.065 respectively, which indicates their significance degrees are small. Therefore, these three groups of data can be eliminated. Then we made regression analysis of X₂ and X₅. The output results are shown in Table 4.

Table 4: Results of linear regression of X_2 and X_5 .

Variable	Coefficient	Std.Error	t-Statistic	Prob.
X_2	0.270	0.020	13.395	0.000
X_5	-82.354	9.780	-8.421	0.000
C	4782.960	613.670	7.794	0.000
R-squared	0.994	F-statistic	754.04	
Durbin-Watson stat	1.781	Prob (F-statistic)	0.000	

The number of variables is 2 and the sample size is 12. Adjusted R Square is 0.994 and F-statistic is 754.04. The fitting degree of the regression equation is high, reaching up to 0.994. The regression of forecasting dependent variables within the sample is very successful.

From the output results of Prob., the significance degrees of X_2 and X_5 reach to the largest level. These two factors are the determining factors of this regression equation.

In the end, we tested the correlativity of the most significant indicators. After building the linear regression model, we can obtain the figure of residual distribution. It shows that there is heteroscedasticity if the distribution dots are not closely around a horizontal line and their distribution area becomes broader or narrower or irregular complex variation appears. Auto correlativity does not exist from direct viewing.

Firstly, we got the figure of residual distribution as seen in Figure 1 to verify if heteroscedasticity exists between X_2 and X_5 . From the figure we can draw the conclusion that heteroscedasticity exists between X_2 and X_5 and auto correlativity does not exist from direct viewing.

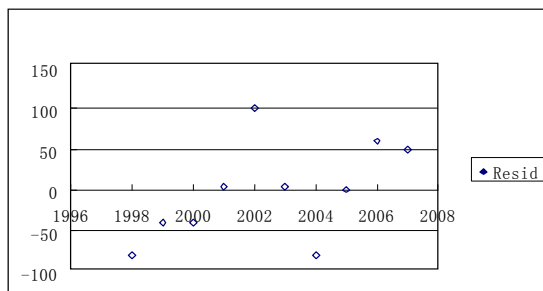


Figure 1: Residual distribution.

Then we used Durbin-Watson statistic to test if there is auto correlativity between X_2 and X_5 . From Table 4, the DW statistic is 1.781. For the situation where k is 2 and n is 12, the lower threshold dL is 0.812 and the upper threshold is 1.579. Since DW is in the range of $dU \rightarrow 2$, we can judge that there is no sequence correlativity between X_2 and X_5 .

3.4 Analysis Results

The analysis results of this multiple regression model are as follows.

(1) After analyzing all the indicators by linear regression, we knew from the output results of t-statistic that the added value of culture industry will increase if the average income of urban and rural households increases. Meanwhile, the added value of culture industry will increase if the Engel coefficients of urban and rural households decrease.

In the output result of [Prob.], the p-value of X_1 is 0.1409, indicating that the influence of X_1 to Y is not significant. The reason is that there is little direct relation between the growth of GDP and that of culture industry. The contribution of culture industry to GDP is not very evident.

(2) After analyzing all the indicators by linear regression, we knew from the output results of [Prob.] that the influence of X_3 to Y is not significant and the significance of X_1 and X_4 is little. So we eliminated these three factors and made regression analysis of X_2 and X_5 . From the output results, the significance of X_2 and X_5 reaches to the largest level. Therefore, among the five variables average disposable income of urban residents and Engel coefficient of rural households are the determinant factors. The reason is that urban residents spend the added income more on culture consumption after the subsistence problem has been resolved. But the life quality of rural residents is not as high as that of urban residents. So the rural people spend the added income more on material consumption.

(3) After confirming that X_2 and X_5 are the determinant factors of this linear model, we made D-W test for X_2 and X_5 . We found that there is no auto correlativity. It means that although average disposable income of urban residents and Engel coefficient of rural households are important factors influencing the added value of culture industry there is no certain relation between them.

4 CONCLUSIONS

Through the empirical analysis of the consumption demand factors that influence the development of culture industry, we drew the conclusion that average disposable income of urban residents and Engel coefficient of rural households are determinant factors influencing the economic distribution of Chinese culture industry. The average

income level of residents and household Engel coefficient are two factors that reflect domestic culture consumption demand comprehensively. So we testified that the culture consumption demand of a country is the basis of the development of its culture industry and the motive power of enhancing competitive advantage of culture industry. So grasping the culture consumption demand is capturing the master key of developing culture industry. In order to facilitate the development of Chinese culture industry, it is necessary to expand the culture consumption demand from two aspects, one of which is to enhance the average disposable income of urban residents with still more forces so that the consumption ability can be increased, the other of which is to lower the Engel coefficient of rural household and improve their life quality.

The following countermeasures were put forward according to this empirical analysis.

- Enhancing the resident income level. The consumption ability of residents is decided by their income level. So enhancing the income of residents especially the rural residents and the urban low-income residents is the prerequisite to strengthen the resident consumption ability and provide a solid economic foundation for the development of culture industry. For this purpose, it is necessary to increase the proportion of resident income in the national income distribution, enhance the subsistence allowances of urban low-income residents, increase transfer payment to the distressed areas and reduce the residents income gap. It is need to enlarge the scale of the medium-income group and enhance the income of rural residents through various measures.
- Releasing the rural consumption demand. From the model, the added value of culture industry will increase as the Engel coefficient decreases. Therefore, it is necessary to improve the lift quality of the rural residents. Although the activities of sending culture to the countryside have been carried out in many regions, there are many problems such as little quantity and low quality because of lack of corresponding motivation system. It is a problem that needs to be solved as soon as possible to improve the rural culture consumption situation and release the rural consumption demand. For this purpose, it is necessary to building more rural culture facilities to satisfy the hardware requirements of culture consumption and invest on training culture talents and supporting culture projects to provide solid and sustainable guarantee for booming rural culture.
- Promoting public culture service systems. For the people in backward areas and lacking

consumption ability, establishing and completing public culture service systems is necessary to satisfy the requirements of culture consumption demand. Opening public culture products and service market can turn the potential culture demand into actual culture demand so as to develop culture productivity. The key point is to reform the management system of public culture. The government should exit from the position of monopoly provider and produce various structure condition, policy condition and social condition.

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