

Analysis of Supply-side Factors of Cultural Consumption in Beijing Based on Econometric Models

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Abstract. At present, China's economic development has entered a new normal, and the development of cultural consumption has become an important initiative to promote economic growth. However, demand management based on demand-side perspective leads to problems such as supply-demand mismatch in the cultural consumption market. In order to further develop cultural consumption, the paper uses panel data of 16 municipal districts in Beijing from 2016-2019 as a sample and establishes a linear logit model using nonlinear regression method to analyze cultural consumption of Beijing residents from the supply side. The results show that except for the food consumption expenditure ratio, the explanatory variables residents' income, cultural industry output value, and the number of relevant policies all have positive effects on cultural consumption expenditure in Beijing.

Keywords: Cultural Consumption; Supply Side; Demand Side; Panel Data

1 Introduction

At present, China's economic development has entered a new normal, stimulating consumption and expanding domestic demand have become important measures to promote economic growth. Cultural consumption, as a special kind of consumption, is still in a stage of continuous development in the context of building a moderately prosperous society in China.

Cultural consumption refers to residents' consumption of different cultural products and services in various forms to meet their spiritual and cultural needs. With the increase of income, the living standard of residents has been improving, and the most basic subsistence consumption needs are satisfied, and then they start to pursue a higher level of spiritual and cultural life. In this process, residents' demand for cultural consumption is increasing and has great potential for development. Therefore, the development of cultural consumption has become an important driving force for expanding domestic demand.

However, the overall cultural consumption level of Chinese residents is currently low [1]. In the past, China managed its economic development mainly from the demand side, focusing on driving economic growth through investment, consumption, and exports. However, this management approach is no longer able to maintain stable economic growth and cannot adapt to the current economic development in China, which has a negative impact on the development of cultural consumption in China [2].

Therefore, in order to further develop cultural consumption, meet residents' demand and achieve new economic growth. This paper establishes a linear logit model and uses a nonlinear regression method to study the cultural consumption of Beijing residents from a supply-side perspective.

2 Status of cultural consumption in Beijing

Through the big data survey, we found that the overall cultural consumption of Beijing residents is in a growing trend, but we can still find the following problems.

(1) At present, China's cultural industry still suffers from the problem of insufficient independent innovation capacity. The homogenization of cultural products in the market is a serious problem, and the protection of intellectual property rights is not adequate to protect the interests of innovators ^[3].

(2) In 2019, the gross value of culture, sports and entertainment in Haidian District amounted to more than 26 billion yuan, while the gross value of Shunyi District was about 300 million yuan, which shows the uneven development of cultural industries in Beijing.

(3) The ratio of per capita education, culture and entertainment consumption expenditure to per capita consumption expenditure of Beijing residents changed from 10.75% in 2015 to 10.02% in 2019. The consumption level of residents decreases instead with the increase of per capita disposable income, reflecting that the cultural consumption demand of Beijing residents is yet to be stimulated.

(4) The output value of Beijing's cultural industry increased by 47.5% between 2014 and 2019, but cultural consumption increased by only 31.9%, reflecting the mismatch between cultural consumption supply and demand. This has led to a serious waste of resources in the cultural industry and a constraint on effective supply ^[4].

3 Model-based analysis of the influence mechanism of cultural consumption

According to the results of the research related to cultural consumption, it can be seen that the supply factor of industry, the demand factor of consumers, the price factor of cultural products and the government policy factor have an impact on the cultural consumption of Beijing residents. The results of this paper are shown in Figure 1, which focuses on industry supply and government policies.

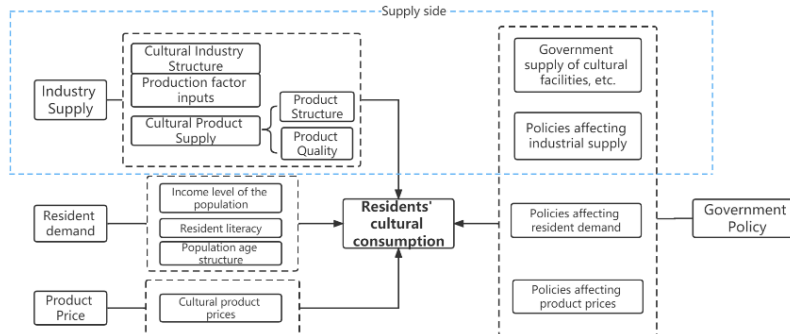


Fig. 1. Influencing factors of cultural consumption of Beijing residents (Photo credit: Original)

(1) The production structure of cultural industry will affect the production structure of products. With economic development and policy support, the cultural consumption demand of Beijing residents will change, and the demand of residents can be better met through the adjustment of industrial structure. It is through the reasonable allocation of factor inputs that the total factor production rate can be improved to help upgrade and develop the industry. Cultural product supply should pay attention to product production structure and product quality. Cultural consumption products and services have a unique spiritual value, and the cultural consumption needs of different residents differ. Whether cultural products can form a unique product structure in terms of product quality and quantity will largely affect the level of cultural consumption [5].

(2) Policy factors are qualitative in nature and these policies can influence cultural consumption by affecting the supply of cultural industries [6]. Also government policies can increase the supply of public cultural facilities and other facilities. These policies can raise the awareness of cultural consumption among residents while guiding them to do so.

In summary, cultural consumption is all generated when the supply meets the needs of the population.

4 Empirical Analysis of the Impact of Cultural Consumption Supply on Beijing Residents' Cultural Consumption

4.1 Variable Selection and Data Sources

The selection of variables and their definitions are shown in Figure 2.

Variable type	Variable name	Variable symbol	Relative meaning
Explained variable	Per capita cultural consumption expenditure	Con	Per capita consumption expenditure on education, culture and entertainment
Explanatory variable	Disposable income per capita	Inc	Disposable income per inhabitant
	Cultural industry output per capita	Exp	Culture, sports and entertainment industry output value/resident population
	Cultural Consumption Policy	Gov	Number of cultural consumption-related policies issued in Beijing and each district
Control variable[Ⓔ]	Food consumption expenditure ratio	Eng	Per capita food consumption expenditure/per capita consumption expenditure of residents

Fig. 2. Variable selection (Photo credit: Original)

According to the analysis of the influence mechanism of cultural consumption, the explanatory variables per capita disposable income of residents, per capita cultural industry output value, and the introduction of government policies related to culture and cultural consumption will have a positive influence on cultural consumption. The control variable, food consumption expenditure ratio, is an indicator that does not positively affect residents' cultural consumption. Therefore, it is reasonable to assume here that the coefficients of the model explanatory variables are all positive, while the coefficients of the control variables are negative.

This paper collects panel data for 16 districts in Beijing from 2016 to 2019 from the Beijing Statistical Yearbook and the Beijing Dongcheng District Statistical Yearbook for each district in Beijing. To eliminate the effect of inflation, the data are deflated by 2016 as the base period. The number of cultural consumption policies for each district in Beijing is collated from the policy documents issued by each district government in Beijing.

4.2 Model Building and Model Testing

In this paper, data other than the food consumption expenditure ratio in the explanatory variables are logarithmized, i.e., a linear logit model is chosen to analyze the panel data, and the regression model is constructed as follows.

$$Con_{it} = \alpha_{it} + \beta_1 \ln Inc_{it} + \beta_2 \ln Exp_{it} + \beta_3 \ln Gov_{it} + \beta_4 Eng_{it} + \varepsilon_{it}$$

where i represents 16 districts in Beijing ($i = 1, 2, \dots, 16$), t represents the regression time interval ($t = 1, 2, 3, 4, \dots, 16$).

The form of the model was first selected by the Hausman test. From the test results in Table 1, the model has a p-value of 1, which is greater than 0.1, indicating that the model accepts the original hypothesis at the 10% significance level, so this paper chooses to use the random effects model for regression.

Table 1. Hausman test results

Test Summary	Chi-Sq.Statistic	Chi-Sq. d.f.	Prob.
Crosssection random	0.0000	4	1.0000

According to the model regression results in Table 4.3, the goodness of fit of the entire model is 89.98% and the F-value is 132.5033, indicating that the linear logit model passes the test and the entire model is significant.

Table 2. Model regression results

F-Statistic	Prob.	R-squared	Adjusted R-squared
132.5033	0.0000	0.8998	0.8930

The regression results of the model are shown in Table 4.4. From the regression results of this fixed effects model, disposable income per capita (lnInc) is the explanatory variable that has the most significant positive effect on cultural consumption, significant at the 1% level of significance with a positive coefficient of 3247.936. There is also a positive effect of market supply (lnExp) on the level of cultural consumption, and the output of cultural industries per capita is significant at the 5% level of significance with a positive coefficient of 102.0482. It shows that a 1% increase in per capita cultural industry output increases per capita cultural consumption expenditure by an average of \$1.02, with other variables held constant. Government cultural consumption policy (lnGov) also has a strong positive effect on cultural consumption, significant at the 10% level of significance with a positive coefficient of 417.3221. The control variable China's per capita food consumption expenditure/per capita daily consumption expenditure (Eng) has a strong negative effect on cultural consumption, significant at 5% level of significance with a negative coefficient of -0.202. Finally the constant term α is significant at 1% level of significance with a negative coefficient of -32935.01. The coefficients of the variables in the model are as expected and the variables pass the significance test.

Table 3. Regression results of fixed effects model

Variable	Con	Coefficient	t-statistic	Prob.
	lnInc	3247.936***	25.4392	0.0000
Explanatory variable	lnExp	102.0482**	2.3361	0.0229
	lnGov	417.3221*	1.7331	0.0883
	Eng	-1556.675**	-2.6436	0.0105
Constant term	α	-32935.01***	-18.3569	0.0000

Note: ***, **, * indicate significant at 0.01, 0.05, and 0.1 levels of significance, respectively.

5 Conclusions and Policy Recommendations

5.1 Conclusions

Based on the analysis of the fixed effects model, this paper draws the following conclusions, and the analytical ideas are shown in Figure 5-1. both ways of expanding residents' demand and satisfying residents' cultural consumption needs can influence the level of residents' cultural consumption. At present, cultural consumption in Beijing has problems such as supply-demand mismatch and demand stratification. Based on this, to improve the cultural consumption level of Beijing residents, we should first take demand as the guide, start from the supply side, and

increase the quality and effective supply through innovative design to achieve the supply and demand mismatch of cultural products [7]. The model results also indicate that the current level of supply of cultural industry in China has a low degree of influence on the cultural consumption of residents, and in this case, the level of cultural consumption of residents will not change if the demand of residents is simply expanded. Therefore, by improving the production level of the cultural industry and strengthening the government policy guidance.

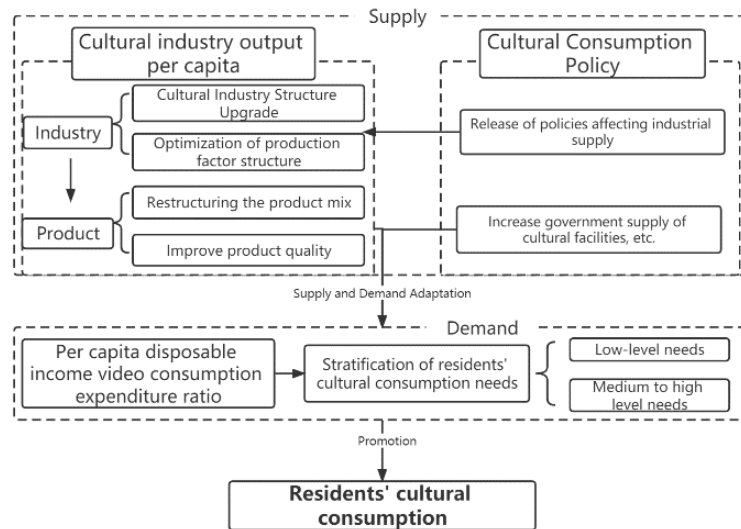


Fig. 3. Model Insights (Photo credit: Original)

5.2 Policy Recommendations

(1) Promote the upgrading of the structure of cultural industry and realize the agglomeration of cultural industry by creating cultural industry parks. Through the power of agglomeration, production factors are integrated, resources are shared, and the overall competitiveness of the industry is improved.

(2) Adjusting the product structure, increasing the production levels of cultural products, exploring the scope and boundaries of cultural products, innovating and designing cultural products and services, and enriching the form of spatial cultural products [7]. Improve product quality, improve and upgrade crude cultural products, and provide elegant cultural products by giving them deeper cultural connotations with socialist core values as the guide.

(3) Issue policies that affect the supply of the industry, such as further improving laws and regulations for the protection of intellectual property rights in the cultural industry, safeguarding the interests of innovators, and encouraging enterprises to engage in cultural innovation. Issue supportive policies to stimulate the market dynamics of small and micro cultural enterprises. On the other hand, government supply such as cultural facilities can be increased. Create diversified cultural activities and promote more high-quality projects as a supplement and expansion of the cultural consumption market.

References

- [1]. Zhou Shixiong. Research on the influence of cultural consumption policy on the high-quality development of cultural industry [D]. Jiangxi: Jiangxi Normal University, 2021.
- [2]. Wang Yuandi, Yang Xue, Hu Yuanyuan, Li Yanjia. The interpretation of "supply-side reform" and the practice of enterprises under the influence of policy[J]. Journal of China University of Mining and Technology (Social Science Edition),2016,18(03):48-59.
- [3]. Dai Xiaofang, Li Zhen,Li Xing. An empirical analysis of the impact of population aging on cultural consumption in China--a test from inter-provincial panel data in China[J]. Journal of Nanjing University of Finance and Economics,2016(05):33-41.
- [4]. Fan Zhou, Zhou Jie. Correct understanding of supply-side structural reform in culture[J]. Dongyue Series,2016,37(10):5-14.
- [5]. Song Hao. Research on Urban Cultural Consumption and its Impact on Economic Growth in Beijing [D]. Beijing: Capital University of Economics and Business, 2013.
- [6]. Liu Junchen. An Econometric Study of Regional Differences in Cultural Consumption in China[D]. Jilin: Jilin University,2021.
- [7]. Chai Dongdong, Wang Linsheng. The value, characteristics and path of cultural consumption space in the construction of Beijing international communication center[J]. Journal of Urbanism, 2021,42(04):67-74.