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Research Article

An Empirical Study on the Influence of Art Industry Development on the Quality of China's Economic Growth

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Cultural industry is recognized as "sunrise industry of the century" or "gold industry," and art, the most original and contagious form of expression in larger culture, has clearly become a leader in the rapid expansion of the cultural industry, with an unequalled affinity for other components of culture, such as religion and education. The subject of this study is empirical research on the impact of the art industry's development on the quality of China's economic growth. This study firstly combines the characteristics of cultural industry with the research framework of the quality of economic growth and theoretically analyzes how the development of cultural industry may affect the quality of economic growth from many different dimensions. The influence of cultural industry development on the quality of economic growth is then tested using the fixed effect and random effect models. Through the basic result analysis, robustness test, endogenous treatment, mechanism analysis, and other parts, the empirical test of the development of the art industry on the quality of economic growth, the research results show that the development of the art industry contributes to the improvement of the quality of economic growth.

1. Introduction

At present, the economy is in the transition period to high-quality growth and it has become an urgent and realistic requirement to realize the transformation from "quantity catch-up to quality catch-up" [1]. In this context, the importance of studying issues related to the quality of economic growth has been greatly increased [2]. The art sector, in addition to being an essential part of the national economic system, has several distinct characteristics from other industries, such as low energy use, low pollution, high human capital requirements, and a focus on addressing people's spiritual needs [3, 4]. Scholars have found that accelerating the integration of the art industry and other industries can improve the speed of economic growth [5]. However, the existing literature on how the development of the art industry affects the quality of economic growth is still insufficient in the aspect of systematic analysis and empirical test [6]. Dong Ping [7] (2017) conducted many valuable studies on the relationship between the development of the art industry and economic growth and found that the development of the art industry contributes to promoting the number of regional economic growth, promoting the integration with other industries, and contributing to the formation of industrial agglomeration. However, there is a lack of systematic theoretical analysis on how the development of the art industry will affect the quality of economic growth, its mechanism, and in which aspects it will affect the quality of economic growth [8]. Therefore, this study chooses the influence of the development of the art industry on the quality of economic growth as the research topic.

The paper's organization paragraph is as follows: the theoretical basis work is presented in Section 1. Section 2 shows the empirical process of the proposed work. Section 3 discusses the experiments and empirical results. Finally, in Section 4, the research work is concluded.

Table 1: Descriptive statistics of research variables.

Variable name	Sample size	Standard deviation	Mean	Median	1% quantile	99% quantile
QEG	120	2.135	1.605	1.182	−3.045	11.312
QEG1	120	0.752	0.458	0.443	−1.253	2.345
QEG2	120	1.883	1.201	0.714	−2.328	8.814
QEG3	120	1.212	0.763	0.483	−1.152	5.752
QEG4	120	0.818	1.004	1.021	−0.084	3.514
QEG5	120	1.169	0.325	1.281	−0.351	4.230
QEG6	120	1.258	0.547	0.362	−1.405	7.623
Cultural	120	0.482	1.035	0.963	0.345	2.815
RD	83	3.576	8.254	8.105	0.651	13.954
Rate	104	3.441	0.655	0.441	0.262	0.876
MC	120	0.225	0.621	0.608	0.294	1.283
HC	120	68.750	161.752	154.332	45.684	344.507
Fixed	120	1.405	14.647	14.831	11.502	17.167
OE	120	0.195	0.190	0.086	0.023	0.834
PerGDP	120	24502	33154	26514	5032	116027

Table 2: Correlation coefficients of research variables.

Variable name	QEG	QEG1	QEG2	QEG3	QEG4	QEG5	QEG6
QEG	1						
QEG1	0.152	1					
QEG2	0.402	0.615	1				
QEG3	0.385	0.289	0.287	1			
QEG4	0.204	0.814	0.517	0.202	1		
QEG5	0.564	0.503	0.745	0.176	0.684	1	
QEG6	0.517	0.416	0.343	0.140	0.415	0.465	1
Cultural	0.382	0.037	0.284	0.018	0.079	0.417	0.249
RD	0.364	0.512	0.402	0.384	0.487	0.389	0.334
Rate	0.356	0.047	0.165	0.227	0.164	0.236	0.058
MC	−0.456	−0.064	−0.324	−0.134	−0.214	−0.452	−0.067
HC	0.305	0.176	0.181	0.025	0.296	0.304	0.228
Fixed	−0.051	0.123	−0.087	0.104	0.094	−0.108	0.036
OE	0.402	0.168	0.224	0.238	0.254	0.284	0.076
PerGDP	0.436	0.217	0.283	0.130	0.417	0.442	0.268

2. Theoretical Basis

2.1. Art Industry. The art industry is a special industry with both artistic characteristics and economic characteristics. The word "art industry" or similar titles began to appear in different organizations [9]. Gao Xuewu [10] (2014) focused on the intellectual property rights of artistic products, generally using the term "copyright industry" to replace the art industry, covering film and television, books, records, performing arts, and other aspects.

2.2. Quality of Economic Growth. The quality of economic growth is related to the overall development level of a country, fiscal and monetary policies, the difference in people's living standards, and other major issues related to the national economy and people's livelihood. It affects the investment and financing decisions of enterprises and also affects the production efficiency and resource allocation [11]. While studying the quantity of economic growth, Xue Xiaoxia [12] (2014) also gradually pays attention to the quality of economic growth from many aspects.

2.3. Mechanism of the Development of Art Industry Affecting the Quality of Economic Growth. The development of the art industry affects the efficiency of economic growth, which is mainly reflected in the economic output obtained by unit production factor input [13]. As the economic added value of the art industry is higher, it is easier to have a positive impact on the efficiency of economic growth. The development of the art industry may play a role in some of these aspects [14]. The development of the art industry affects welfare change and achievement distribution, and the development of the art industry should have certain positive value for the welfare change and achievement distribution dimension in the quality of economic growth.

3. Empirical Process

3.1. Econometric Model and Variable Selection. In order to empirically test the impact of the art industry development on the quality of economic growth, we must first determine the structure of research data. Existing literature mainly uses two types of data structures when studying the quality of economic growth. The first type is annual time series data at the national level [15]. In addition, variables have differences

Table 3: Influence of the overall development of the art industry on the quality of economic growth.

Variable name	QEG (1)	QEG (2)	QEG (3)	QEG (4)
Cultural	0.995 (0.532)	0.994 (0.507)	0.752 (0.258)	0.814 (0.364)
MC	−0.995 (1.025)		−1.078 (0.719)	
HC	0.002 (0.004)		0.001 (0.004)	
PerGDP	0.000 (0.000)		0.000 (0.000)	
OE	3.652 (2.706)		1.415 (1.083)	
Constant term	−0.321 (0.907)	0.561 (0.534)	0.481 (0.670)	0.706 (0.438)
Model	Fixed effects		Random effects	
R^2	0.107	0.039	0.114	0.039
Sample size	120	120	120	120

Table 4: Mixed regression model and extreme values.

Variable name	QEG (1)	QEG (2)	QEG (3)	QEG (4)
	Robustness test: mixed regression model		Robustness tests: handle extreme values	
Cultural	0.756 (0.249)	0.917 (0.228)	0.834 (0.504)	0.607 (0.351)
R^2	0.121	0.039	0.027	0.108
Control variables	YES	YES	YES	YES
Model	Mixed scale model		Fixed effects	
Sample size	120	120	120	120

Table 5: Robust standard error and replacement core explanatory variables.

Variable name	QEG (1)	QEG (2)	QEG (3)	QEG (4)
	Robustness test: robust standard error		Robustness test: replace core explanatory variables	
Cultural	0.993 (0.431)	0.993 (0.528)		
Structure			0.078 (0.038)	0.081 (0.021)
R^2	0.285	0.285	0.214	0.273
Control variables	YES	YES	YES	YES
Model	Fixed effect	Fixed effect	Fixed effect	Random effect
Sample size	120	120	120	120

Table 6: Two-stage least square method of instrumental variables.

Variable name	First stage regression Cultural	Second stage regression QEG
Cultural		3.337 (1.058)
Reform rate	0.407 (0.073)	
MC	−0.891 (0.112)	0.784 (1.148)
PerGDP	−0.000 (0.000)	0.000 (0.000)
OE	−1.308 (0.152)	3.667 (1.378)
HC	0.003 (0.001)	−0.005 (0.003)
Cons	1.327 (0.087)	−2.624 (1.576)

not only at the time level but also at different individual levels. This makes it relatively easy to identify the influencing factors.

$$QEG_{it} = \alpha_0 + \alpha_1 \text{Cultural}_{it} + \beta \text{Controls} + \varepsilon_{it}, \quad (1)$$

where QEG_{it} is the quality index of economic growth, indicating the quality index of economic growth of T province in the first year. The larger the number, the better the quality of economic growth. The Cultural_{it} metric refers to the state of the art industry development in t province in year I. Controls is the control variable of this study.

3.2. Data Source. Based on data availability, the research sample used in this study is panel data of 30 provincial administrative units in China from 2016 to 2021. The data of economic growth quality come from "China Economic Growth Quality Development Report" [16] over the years. The index of art agglomeration was collected from the CSMAR database. The "Arts Research" section of the economic research series gives index of location entropy of the art industry agglomeration.

3.3. Descriptive Statistics. Descriptive statistics of research variables are shown in Table 1.

There are great differences between various indicators of the quality of economic growth, the core variable, and different quantiles of Cultural and the location entropy of the art industry agglomeration.

Correlation coefficients of research variables are shown in Table 2.

The subdivision indicators QEG1-QEG6 of the quality of economic growth are positively correlated with the overall index QEG, and they are all significant at the 1% level.

4. Empirical Results

4.1. Result of Influence. The influence of the overall development of the art industry on the quality of economic growth is shown in Table 3.

The basic result of the empirical analysis is the empirical regression result of the influence of the overall development of the art industry on the total index of economic growth

Table 7: Test results of economic growth efficiency and structure.

Variable name	QEG1 (1)	QEG1 (2)	QEG2 (3)	QEG2 (4)
	Economic growth efficiency		Economic growth structure	
Cultural	0.095 (0.181)	0.062 (0.135)	0.362 (0.507)	0.581 (0.249)
Constant term	0.382 (0.307)	0.272 (0.238)	0.509 (0.846)	0.419 (0.527)
MC	0.205 (0.345)	0.072 (0.251)	0.824 (0.951)	−0.409 (0.574)
PerGDP	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
OE	−0.518 (0.864)	−0.327 (0.413)	5.563 (2.508)	0.672 (0.746)
HC	−0.002 (0.002)	0.001 (0.002)	−0.021 (0.004)	0.002 (0.002)
R^2	0.008	0.024	0.021	0.073
Model	Fixed effect	Random effect	Fixed effect	Random effect
Sample size	120	120	120	120

Table 8: Test results of economic growth stability, welfare change, and achievement distribution.

Variable name	QEG3 (1)	QEG3 (2)	QEG4 (3)	QEG4 (4)
	Stability of economic growth		Welfare change and outcome distribution	
Cultural	−0.021 (0.314)	0.178 (0.139)	0.528 (0.183)	0.445 (0.127)
Constant term	1.465 (0.541)	0.882 (0.417)	1.628 (0.948)	1.086 (0.401)
MC	−0.285 (0.604)	−0.462 (0.341)	−0.847 (0.359)	−0.521 (0.263)
PerGDP	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)
OE	1.825 (1.623)	0.881 (0.414)	1.628 (0.914)	1.075 (0.412)
HC	−0.003 (0.003)	−0.001 (0.001)	0.003 (0.002)	0.002 (0.001)
R^2	0.352	0.048	0.108	0.124
Model	Fixed effect	Random effect	Fixed effect	Random effect
Sample size	120	120	120	120

quality. The coefficient of Cultural in column 1 is 0.995, which is statistically significant at the 10% level. In column 2, corresponding control variables are removed, and the coefficient of Cultural remains basically unchanged at 0.994. The random effect model is used again in columns 3 and 4 for verification.

4.2. Robustness Test. This study conducted robustness tests from the empirical model, sample processing, variable replacement, and other aspects, respectively, as follows.

4.2.1. Using Mixed Regression Model. Mixed regression model is another common regression analysis tool besides fixed effect model and random effect model [17]. The coefficient of Cultural is still positive and reaches a significance of 1%.

4.2.2. Sample Extreme Values Are Processed. In order to reduce the interference of extreme values on the empirical results, the continuous variables were curtailed at 1% level in this study.

The mixed regression model and extreme values are shown in Table 4.

4.2.3. Using Robust Standard Error. In this study, the robust standard error of clustering is used, and white robust standard error is used in column 2, and the test is reconducted.

4.2.4. Replacing Core Explanatory Variables. The share of tertiary industry added value in GDP is used as another proxy variable for the development of the art sector in this study and its impact on the quality of economic growth is revisited.

The robust standard error and replacement core explanatory variables are shown in Table 5.

4.3. Endogeneity Analysis. A reasonable instrumental variable should have a strong correlation with the core explanatory variable art industry agglomeration and a weak direct correlation with the explained variable economic growth quality [18]. The proportion of pilot cities in the total number of cities in this province is the specific instrumental variable reform rate created in this study. The two-stage least square method of instrumental variables is shown in Table 6.

In the first stage of regression, the coefficient of Reform rate is significantly positive at 1% level. In the second stage of regression, the Cultural coefficient generated by fitting was 3.337 and significant at 1% level.

4.4. Mechanism Analysis. The test results of economic growth efficiency and structure are shown in Table 7.

In the random effect model, Cultural's coefficient is significantly positive at the 5% level. It can be seen that the development of the art industry has made a positive contribution to the optimization of China's economic growth structure.

The test results of economic growth stability, welfare change, and achievement distribution are shown in Table 8.

Table 9: Test results of resource utilization, ecological environment cost, and national economic quality.

Variable name	QEG5 (1)	QEG5 (2)	QEG6 (3)	QEG6 (4)
	Resource utilization and ecological environment cost		National economic quality	
Cultural	0.628 (0.264)	0.754 (0.152)	0.382 (0.328)	0.354 (0.233)
Constant term	1.338 (0.452)	0.957 (0.267)	0.382 (0.501)	0.582 (0.426)
MC	−0.712 (0.520)	−1.235 (0.317)	−0.208 (0.534)	−0.126 (0.452)
PerGDP	−0.000 (0.000)	−0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
OE	1.116 (1.385)	0.772 (0.419)	−0.254 (1.445)	0.003 (0.901)
HC	−0.002 (0.003)	0.001 (0.001)	−0.002 (0.003)	−0.002 (0.003)
R^2	0.158	0.231	0.009	0.024
Model	Fixed effect	Random effect	Fixed effect	Random effect
Sample size	120	120	120	120

For the stability of economic growth, Cultural's coefficient is not significant in either the fixed effect model or the random effect model. For welfare change and achievement distribution, the coefficient of Cultural is significantly positive at 1%.

The test results of resource utilization, ecological environment cost, and national economic quality are shown in Table 9.

For the cost of resource utilization and ecological environment, regardless of the fixed effect model or the random effect model, Cultural's coefficient is positive and significant at 5%. In terms of national economic quality, Cultural's coefficient is positive in both fixed effect and random effect models, while the coefficients are not significant at the 10% level.

5. Conclusion

This study empirically examines the impact of the development of China's art industry on the quality of economic growth through basic result analysis, robustness test, endogenous treatment, and mechanism analysis.

(1) The development of the art industry contributes to the improvement of the overall index of economic growth quality. The higher the location entropy of the art industry agglomeration in each province as a proxy variable for overall development of the art industry, the higher the overall index of its economic growth quality.

(2) In terms of economic growth quality segmentation indicators, the development of the art industry has the most significant promoting effect on welfare change and achievement distribution, resource utilization, and ecological and environmental costs.

(3) In terms of how to develop the art industry to improve the quality of economic growth, empirical findings show that government expenditure on art undertakings, art enterprise research and development expenditure, and the art industry investment in fixed assets all contribute to improving the quality of economic growth to some extent.

(4) In terms of segmentation indicators, the R&D expenditure of art enterprises has a positive and highly significant impact on all six dimensions. To promote the development of the art sector and improve the quality of economic growth, enterprise research, and development is a key priority.

Although this study finds that the development of the art industry plays a positive role in promoting the quality of economic growth and puts forward some policy suggestions on this basis, the research may still have the following limitations or deficiencies. The nature problem is a significant issue in the empirical research of the entire economic circle, making it difficult to establish a 100% sure conclusion about the causal relationship of empirical results. Based on the possible limitations and shortcomings, if the study can obtain better exogenous impact events of the development of the art industry or more detailed large sample data in the future, we believe that the research on the art industry will be more in-depth and detailed.

Data Availability

The datasets used during the present study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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