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Is There Competition Among Environmental Protection Expenditures of Local Government?

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ABSTRACT
In the new era, the central government has elevated "building a beautiful China" as a national strategy. Use environmental quality to evaluate the political performance of local officials. When "free-riding" is not enough to improve environmental quality, local governments have to increase fiscal environmental protection expenditures for environmental governance. Out of free-riding psychology and the need to improve environmental quality, local governments have demonstrated Different forms of competition for fiscal environmental protection expenditures. From the perspective of strategic interaction, this paper uses the Moran Index to detect and determine the fiscal environmental protection expenditures of 30 provinces and regions from 2007 to 2019. The results show that there is competition for fiscal environmental protection expenditures between neighboring local governments across the country.

Keywords: *Environmental protection expenditure competition, Existence*

1. INTRODUCTION

Since the reform and opening up, the Chinese-style fiscal decentralization system and the political promotion championship mechanism have triggered competition among local governments, which has spawned competition in fiscal expenditures. The pursuit of short-term economic growth by local governments has led to a fiscal expenditure structure biased toward productive expenditure. Environmental governance has given way to economic growth for some time. In the new era, "Building a Beautiful China" has been upgraded to a national strategy. Local governments are paying more and more attention to ecological construction. Environmental protection is no longer as easily overlooked as other public goods. With the implementation of the environmental accountability system and the establishment of the environmental performance evaluation system, the new promotion championship theory with environmental protection as the core promotes local government fiscal expenditures to tilt toward environmental protection, while strengthening regional environmental governance to promote the overall improvement of environmental quality. There is a trade-off between "free-riding" and "collaborative governance." Environmental spending presents different modes of strategic interaction.

2. PRELIMINARY

2.1. Environmental protection expenditure competition

Foreign scholars define the competition of environmental protection expenditure as: the fiscal expenditure decision of a certain area government directly affects the policy choices of other neighboring district governments. This kind of strategic interaction behavior of local governments in fiscal expenditure can be regarded as fiscal expenditure competition. One is the spillover effect, which means that the effect of the fiscal expenditure policy in a certain region will spill over and benefit neighboring regions, which leads to the "free rider" phenomenon of neighboring local governments, that is, strategy substitution competition; the other is Fiscal competition means that local governments in a certain region provide high-quality public goods and services aimed at attracting the inflow of factors through fiscal expenditure policies. At this time, local governments in neighboring regions will adopt similar fiscal expenditure policies to prevent the outflow of factors in the region. Complementary strategy competition.（Baicker，2005[1]；Keen，1997[2]；Ferraresi，2018[3]）.

2.2. The existence of competition in environmental protection expenditures

Based on the theory of government expenditure competition, scholars have conducted empirical studies on whether there is expenditure competition among local governments and their social effects. Most foreign researches are based on spatial econometric models, using spatial lag to characterize the mode of strategic interaction between local governments and using reaction functions to analyze competition behaviors among local governments. The strategic interaction model refers to a region's government behavior as a function of competing government behaviors, and the spatial lag term is used to describe the government behavior in other regions, and the spatial lag term coefficient is used to estimate whether the local governments are inter-governmental. There are strategic interaction behaviors and the direction of interaction behaviors. The slope of the response function is negative, which means that the policy variable between governments has differentiated competition, or strategy substitution competition; on the contrary, there is imitation competition, or strategy complementary competition. For example, Fredriksson and Millimetde (2002)[4] studied the intensity of environmental regulations between states in the United States, and found that one party increased the intensity of environmental regulations, while the other had no obvious response. There is no race to the end. Woods (2006)[5] research conclusion is the opposite, and believes that there is a phenomenon of environmental regulations competing to the end between states. Konisky (2016)[6] conducted regression analysis on different environmental regulations, and the results were not stable. Some environmental regulations showed a race to the end, while others were not.

In verifying the existence of expenditure competition, different scholars use different perspectives and time-space scales, but they all conclude that there is competition in the scale and structure of fiscal expenditures among local governments in my country. Some scholars have carried out research on provincial-level data. For example, Wu Wenzhong (2011)[7] used the convergence method to test the existence of fiscal expenditure competition. The fiscal expenditure competition is divided into material-based competition,civilian-based competition, and official-based competition. It is believed that the competition between government-based capital in national fiscal expenditure is the most intense, followed by material-based competition and people-based competition, and that this corresponds to management-oriented government and economic-based competition. Government and service-oriented government. This is consistent with previous theoretical research. Wang Meijin (2010)[8] uses the spatial measurement model to identify the "fraternal competition" and the "father-son dispute" of local government fiscal competition. It is found that local governments imitate the central government in terms of the relative scale of expenditures and capital construction expenditures; in terms of relative scale of expenditures, capital construction expenditures, and expenditures on science, education, culture and health, the local governments imitate each other. Li Tao, Zhou Ye'an and others (2009)[9] used China's provincial panel data from 1999 to 2005 to empirically test the strategic interaction between the total fiscal expenditures of various provinces and the fiscal expenditure items. It is found that the total actual per capita fiscal expenditure and administrative management fee expenditure in each province show significant strategic substitution characteristics, while the actual per capita expenditure on infrastructure, education, science, medical and health, and extra-budgetary expenditures in each province shows significant strategic complementarity. feature. And if this kind of strategic interaction is based on the data perspective of the year, the interaction is not significant; but if one year's lag is considered, this kind of strategic interaction becomes significant. Some scholars used city data. For example, Peng Chong (2018)[10] selected panel data from 283 cities in China from 2007 to 2013, and found that prefecture-level governments have significant strategic complementary competition in government health expenditures. Liang He (2015)[11] classified fiscal expenditures into three categories: economic expenditures, social expenditures, and maintenance expenditures. Using the panel data of 231 prefecture-level cities in 27 provinces across the country for empirical analysis from 1985 to 2012, they found that they belonged to the same Cities in the provinces have significant competition in the three types of expenditure items, but the interaction of fiscal expenditure strategies between cities in different provinces is relatively weak.

3. METHODOLOGY

Moran's I: This index was proposed by Australian statistician Patrick Alfred Pierce Moran in 1950 to measure the spatial correlation between variables. Calculated as follow equation:

$$I=\frac{n\sum_{i=1}^{n}\sum_{j=1}^{n}w_{ij}(x_i-\bar{x})}{\sum_{i=1}^{n}\sum_{j=1}^{n}w_{ij}(x_i-\bar{x})^2}=\frac{\sum_{i=1}^{n}\sum_{j\neq 1}^{n}w_{ij}(x_i-\bar{x})(x_j-\bar{x})}{S^2\sum_{i=1}^{n}\sum_{j=1}^{n}w_{ij}}$$

n is the number of regions in the sample, and Wij is the spatial weight matrix. Xi and Xj are divided into observed variables for regions i and j. In this chapter,

per capita expenditure on environmental protection in each province. X represents the average attribute of the observed variable, and S2 represents the variance of the observed variable.

The value of Moran Index measures the existence, direction and degree of spatial correlation. Its value range is [-1,1]. If Moran'I>0, it means that there is a positive correlation between the observed variables, and regions with similar attributes are clustered together, that is, as the spatial distribution positions are clustered, the correlation becomes more significant. If Moran'I<0, it means that there is a negative correlation between the observed variables, and areas with different attributes gather together. The closer the absolute value of the value is to 0, the more random the distribution of the observed variables, and the less obvious the spatial correlation. When it is 0, there is no spatial correlation.

4. RESULTS AND DISCUSSION

Table 1 .2007-2019 fiscal environmental protection expenditure level global Moran index test results

Year	I	E(I)	sd(I)	z	p-value*
Year1	0.337	-0.033	0.110	3.378	0.001***
Year2	0.363	-0.033	0.113	3.506	0.000***
Year3	0.222	-0.033	0.110	2.310	0.021**
Year4	0.284	-0.033	0.108	2.924	0.003***
Year5	0.261	-0.033	0.113	2.616	0.009***
Year6	0.230	-0.033	0.113	2.342	0.019**
Year7	0.149	-0.033	0.098	1.862	0.063*
Year8	0.183	-0.033	0.110	1.959	0.050*
Year9	0.138	-0.033	0.106	1.614	0.107
Year10	0.039	-0.033	0.101	0.713	0.476
Year11	0.086	-0.033	0.100	1.195	0.232
Year12	0.034	-0.033	0.106	0.634	0.526
Year13	0.271	-0.033	0.111	2.732	0.006***

It can be seen from Table 1 that the overall fiscal environmental protection expenditures of 30 provinces in my country from 2007 to 2019 have significant and robust spatial correlation, that is, the scale of fiscal environmental protection expenditures between neighboring governments is spatially dependent. Specifically, all indices (C values) are greater than 0 and less than 1, indicating that there is a significant spatial positive correlation between the level of fiscal environmental protection expenditures among provincial governments, and there is strategic imitation competition in geographical proximity. The coefficient is estimated to fluctuate between 0.034 and 0.363, and the overall aggregation trend has changed significantly but the amplitude is not large. It shows that the geographical distribution of my country's provincial fiscal environmental protection expenditure level is in the form of spatial clusters, and provinces with similar geographical locations have similar fiscal environmental protection expenditures. The p value in 2007, 2008, 2010, 2011, and 2019 was less than 0.01, and the p value in 2009 and 2012 was less than 0.05. The p value in 2015 was less than 0.5.

5. CONCLUSION

The Moran Index test proves that the scale of fiscal environmental protection expenditures in neighboring provinces across the country is spatially dependent, that is, competition for fiscal environmental protection expenditures is widespread among neighboring provincial governments. Provinces have different forms of competition. 70% of provinces have strategically complementary competition, that is, "top-to-top competition" or "bottom-to-bottom competition". The competition model of fiscal environmental protection expenditures adopted by each province from 2007 to 2017 is basically stable.

In recent years, the state has paid more and more attention to environmental pollution control. The central government no longer regards GDP as the only indicator of local government performance evaluation, but has turned to a multi-element indicator centered on improving people's livelihood. Incorporate environmental quality, ecological benefits, and people's health into the assessment indicators. Under the promotion of the central government, local governments have increased fiscal expenditures on environmental protection to improve the environment. At the same time, the environmental protection decisions of local

governments are not completely independent. There is widespread competition in the fiscal environmental protection expenditures of neighboring provinces across the country. Affected by the level of economic development, regional environmental quality, and central environmental regulations, various provinces exhibit different competition patterns. The “top-to-top competition” is mainly due to the strict environmental regulations of the central government, while the “bottom-to-bottom competition” can be attributed to the positive external effects of environmental governance and the “free-riding” psychology of local governments.

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