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Research on Regulating Regional Differences and Optimization of the Environmental Protection Tax Law in China in the Post-epidemic Era

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Abstract

The implementation of the environmental protection tax law is a major event in China's economic and social development. However, two years after its implementation, due to sudden epidemic control, the normal implementation process was impacted, resulting in alienation and aggravating the existing problems. Based on the sample survey of Chinese tax officials, this study empirically tests the "Porter Hypothesis" effect of environmental protection tax collection, compares regional differences, finds that the "Porter Hypothesis" effect of environmental protection tax has degenerated, and then puts forward the countermeasures, so as to provide practical theoretical reference for the further implementation of the environmental protection tax law under the new situation.

Keywords

Environmental protection tax law, post-epidemic era, environmental regulation, "Porter's hypothesis", regional differences.

1. Introduction

On January 1st, 2018, China's environmental protection tax law was formally implemented, which was collected by the tax department instead of the pollution discharge fee previously collected by the environmental protection department. The implementation of the western environmental protection tax law has a history of more than 100 years, has accumulated rich experience, and has played an important role in the dual drive of economic development and environmental protection. China's environmental protection tax law has been implemented for only five years, and it is only in its infancy in 2018 and 2019. By the beginning of 2020, it was suddenly under strict epidemic control, and the normal implementation process was impacted, seriously restricting the realization of the mission of the environmental protection tax law. Therefore, after the implementation of the loose epidemic prevention policy, it is necessary to conduct an in-depth analysis of the alienation mechanism of the environmental protection tax law during the three-year period of strict epidemic control, so as to lay an epistemological foundation for the recovery, adaptation and self transcendence in the new period.

Existing studies have discussed some problems existing in the implementation of China's environmental protection tax law before the period of strict epidemic control: Yulin Huang (2018) pointed out that the deficiencies of China's environmental protection tax law in tax system design are: first, it limits taxpayers to enterprises and institutions, which is not conducive to the environmental improvement role of environmental protection tax; Second, the scope of taxation is too narrow, especially excluding carbon dioxide and other pollution sources that seriously damage the environmental quality from the scope of taxation; Third, the tax rate is too low to play an incentive role in energy conservation and emission reduction and technological innovation[1]. Peiying Guo(2020) pointed out that the main problems existing in the practical operation of China's environmental protection tax are: first, tax officials lack

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professional knowledge in environmental protection; Second, the enterprise lacks the ability to declare and cannot correctly calculate the amount of tax payable; Third, the tax department and the environmental protection department lack coordination in information sharing; Fourth, there is information asymmetry between the two sides[2]. Wenwen Mao(2021) pointed out that the legal system of environmental protection tax in China has some shortcomings in terms of the collection and management subject, such as inconsistent rights and responsibilities of environmental protection departments, lack of legal responsibilities of environmental protection departments, and unclear division of labor between environmental protection departments and tax authorities[3]. It can be seen that in the two years before the implementation of strict epidemic control, there were many problems in the implementation process because the implementation of the environmental protection tax law was still in the adaptation period. Subsequently, due to the strict control of the epidemic situation, these problems are bound to be alienated, and some new problems have arisen, adding new obstacles to the promotion of the environmental protection tax law.

In short, the existing studies have focused on the deficiencies of the environmental protection tax law in the implementation process in 2018 and 2019, but have not yet analyzed the dissimilation effect of the environmental protection tax law during the period of strict epidemic control, and have not paid attention to the regional differences in the implementation of the environmental protection tax law in different regions, so they have not fully revealed the Dissimilation Mechanism of the environmental protection tax law. In addition, the conclusions of existing studies have not been empirically tested, and do not have high reliability and effectiveness. Therefore, it is necessary to use empirical research methods to explore the alienation direction and regional differences of the environmental protection tax law during the epidemic control period, so as to provide practical theoretical guidance for the further implementation of the environmental protection tax law in the post epidemic era.

2. Research model design of regional differences in regulation of environmental protection tax law

The environmental protection tax law is a typical environmental regulation, which not only has the characteristics of mandatory environmental regulation, but also has the characteristics of market incentive environmental regulation. The regulation mechanism of the environmental protection tax law includes the following links: First, since the environmental protection tax law does not stipulate a unified tax or tax rate, the local government's tax or tax rate standards in the region need to be defined in a reasonable range, which can not only effectively restrict the emission of pollutants from enterprises, but also promote the development of enterprises[4]. Second, due to the great differences in the production processes and characteristics of different industries, different tax rates need to be set for different industries in the same region in order to maintain the fairness of the environmental protection tax law[5]. Third, the monitoring of pollution emissions is highly technical, professional and complex. It is necessary for the environmental protection department to measure the amount of emissions, and then the tax department to implement the collection and management, so as to improve the efficiency of Taxation. Fourth, Information sharing is an important supporting point of environmental protection tax in the process of tax collection and management, and is the premise of close cooperation between tax authorities and environmental protection departments. Fifth, the environmental protection tax law has set up a number of preferential tax policies. Due to the differences in the implementation methods, paths and efforts in different regions, the implementation effects of the preferential policies are also different[6]. Sixth, the collection of environmental protection tax objectively requires tax officials to have certain environmental protection professional knowledge in order to complete their work more

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effectively. Seventh, the environmental protection tax has implemented the enterprise declaration system, which has brought certain technical pressure to the enterprise declaration[7]. Eighth, the original intention of the establishment of the environmental protection tax is to "earmark funds for specific purposes, and earmark funds for specific treatment", and use the tax revenue for environmental protection and ecological civilization construction, so as to effectively reduce the cost of pollution control. Ninth, the supervision of the public on the implementation process of environmental protection tax is an important factor to improve the quality of the implementation of environmental protection tax. Finally, environmental protection is the common goal of all mankind. China can learn from the successful experience of developed countries in the process of collecting environmental protection tax and constantly make up for its own shortcomings.

As a typical environmental regulation, the ultimate goal of the implementation of the Environmental Protection Tax Law is to pursue the "Porter Hypothesis" effect. From the perspective of regional development, the "Strong Porter Hypothesis" effect includes the following characteristics: Firstly, there is a significant increase in green technology innovation among enterprises in the region; Secondly, the market competitive advantage of enterprises in the region is significantly improved; Thirdly, good results have been achieved in regional ecological environment protection; Fourthly, the ecological environmental awareness of the public in the region has reached a new height [8].

According to the above analysis, the design of the research model on regional differences of regulation in the environmental protection tax law is shown in formula 1.

$$SPHE=\beta_0+\beta_1TR+\beta_2DT+\beta_3AC+\beta_4IS+\beta_5PI+\beta_6CT+\beta_7TS+\beta_8SF+\beta_9PS+\beta_{10}DE+\mu \quad (1)$$

Among them, β_1-β_{10} represents the variable coefficients separately.

The explained variable SPHE represents the strong Porter hypothesis effect, consisting of four explained sub variables: green technology innovation, market competitive advantage, ecological environment quality, and public environmental awareness.

The independent variable TR represents the tax rate standard. DT represents differential tax rate design. AC represents accurate calculation of emissions. IS represents collection and payment information sharing. PI represents reduction of preferential incentives. CT represents cultivation of composite talents. TS represents taxation skills of enterprises. SF represents special funds and special treatment.PS represents social public supervision. DE represents drawing on the experience of western countries.

3. Model test of regional differences of regulation of environmental protection tax law

This study is based on the sample of tax officials who implement environmental protection tax collection in China. The survey began on March 20, 2023 and ended on April 30, 2023. With the joint efforts of all the members of the research group, 1000 valid samples were obtained in the western, central and eastern regions using the 7-point scale system and the network survey method. Then, the model was tested with the help of stata15.0 software, and the test results are shown in Table 1. Before the model test, the multicollinearity test was carried out, and it was found that there was no multicollinearity problem in the research model. Among them, the value of the explained variable "strong Potter hypothesis effect" is taken from the average of the values of the four explained sub variables.

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Table 1: Test results of the research model (initial inspection)

Main independent variable	"Strong Porter Hypothesis Effect" (SPHE)		
	western region	central region	eastern region
TR	0.07	0.06	0.04
DT	0.03	0.10**	0.12**
AC	0.11**	0.14***	0.12**
IS	0.04	0.05	0.11**
PI	0.03	0.05	0.02
CT	0.11**	0.12**	0.14***
TS	0.04	0.03	0.11**
SF	0.13***	0.10**	0.16***
PS	0.15***	0.12***	0.14***
DE	0.04	0.02	0.05
statistic			
R2	0.66	0.70	0.62
△R2	0.02	0.02	0.03
Adjusted R2	0.68	0.72	0.65
adjusted F Value	77.19	108.29	83.16
P Value	***	**	***

Note:*P<0.05; **P<0.01; ***P<0.001; N=1000

4. Research conclusion

According to the test results, during the three-year period of strict epidemic control, the implementation quality of China's environmental protection tax law has not significantly improved, and there are still many problems, even showing more signs of alienation than before the strict epidemic control. At the same time, the problems in different regions also show obvious differences. The "Porter Hypothesis" effect is the most obvious in the eastern region, followed by the central region, and the weakest in the western region. This shows that the epidemic control has damaged the normal implementation process of the environmental protection tax law, and exacerbated the deficiencies existing before the epidemic control. On this basis, combined with the investigation of the implementation of the environmental protection tax law, we believe that in the post epidemic era, the in-depth implementation of the environmental protection tax law should be given priority in the following aspects:

Firstly, appropriately raise the tax standard for taxable pollutants in China's environmental protection tax. The model test results show that the setting of China's environmental protection tax in the western, central and eastern regions has not produced the "Porter Hypothesis" effect, indicating that the tax standard of environmental protection tax is not suitable for the needs of ecological economic development, which is not conducive to the initiative of enterprises in energy conservation and emission reduction. Therefore, for pollutants with great damage to the ecological environment, the tax rate standard can be appropriately increased.

Secondly, we should improve the preferential policies for the reduction and exemption of the environmental protection tax law. The model test results show that the reduction and exemption of environmental protection tax has no "Porter Hypothesis" effect in the western, central and eastern regions. On the one hand, we should pay attention to the fairness in the implementation of tax incentives; On the other hand, we will refine the level of tax incentives. In addition, the ratio of the amount of investment in special equipment for environmental protection to the corporate income tax will be appropriately increased to encourage enterprises to further implement green technology innovation.

Thirdly, the western region needs to promote the design of industry differentiated tax rates. The model test results show that the design of industry differentiated tax rates did not produce the "Porter hypothesis" effect in the western region. Therefore, the western region needs to strengthen the design and implementation of industry differentiated tax rates, increase the tax rates of heavily polluting enterprises, and effectively play a promoting role in enterprise pollution control and emission reduction. The western region can also draw on the experience of the central and eastern regions to make appropriate revisions to its own industry differentiated tax rate design.

Fourthly, the western and central regions need to strengthen the construction of tax collection information sharing platform. The model test results show that the construction of environmental protection tax collection and payment information sharing platform in the western and central regions has not produced the "Potter hypothesis" effect. It can be seen that the western and central regions need to improve the integration of environmental protection tax collection and payment information sharing, fully mobilize the enthusiasm of environmental protection departments, tax departments and tax paying enterprises to participate in the construction, focus on the shared database design, and make breakthroughs in key technologies as soon as possible.

Finally, strengthen the training of tax paying skills for enterprise taxpayers in the western and central regions. The model test results show that the tax payment skills of enterprise taxpayers in the western and central regions have not produced a significant "Porter Hypothesis" effect. In recent years, many training courses on environmental protection tax declaration have been held in the central and western regions, but the training content mainly focuses on collecting basic information, and filling out declaration forms, lacking in-depth interpretation. Therefore, the central and western regions should strengthen the professional skills training of taxpayers and quickly improve their tax paying ability.

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