

A Literature Review on the Relationship between Tax Sharing and Environmental Pollution

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Abstract: China's economic development has entered a new normal, it becomes primary task to solve environmental problems under the current ecological construction. In the framework of intergovernmental fiscal relations characterized by upward shift of tax rights, this paper sorts out the relevant literature on taxation and local government behavior, focusing on its impact on environmental regulation and environmental pollution, and answering: Why does the seemingly harsh environmental management system not have a good effect on suppressing pollution?

Keywords: Tax Sharing, Fiscal Decentralization, Environmental Pollution

1. Introduction

Since the 18th National Congress, the central and local governments have issued a number of institutional arrangements to implement pollution remediation and environmental protection. To a certain extent, the degree of environmental pollution has been reduced, however, it has not fundamentally curbed the trend of deteriorating ecological environment. Environmental pollution incidents continue to affect the public health and economic development. This requires the participation of the government, enterprises and the public, improving the environmental supervision system, strengthening environmental protection efforts, and effectively promoting the investigation and handling of environmental problems. It is of great practical significance to strengthen the implementation of the government's environmental protection functions, deepen the reform of the environmental protection vertical management system, and solve the pollution problem.

In China, the environmental policy standards are formulated by the central government, and the specific implementation is implemented by local governments at various levels. Therefore, the effectiveness of environmental regulation depends on whether it is compatible with local government behavior incentives. Based on the research of this issue, the academic circles have paid more attention to the relationship between fiscal decentralization and public product. The overseas

scholars focus on the relationship between fiscal decentralization and environmental pollution from the perspective of traditional environmental federalism. The domestic scholars focus on the transmission mechanism of environmental pollution affected by fiscal decentralization, as well as local government behavior decisions under fiscal incentives.

2. Environmental Federalism

Looking back at environmental protection in countries around the world, we find that the government plays a very important role without exception. From an economic point of view, as a typical public goods, the environment is non-exclusive and non-competitive. Therefore, environmental protection and governance are considered to be one of the basic functions of the government. However, facing different levels of government, it is the key that how environmental protection responsibilities should be divided between central government and local government (Sigman,2007[1]; H.Spencer Banzhaf and B. Andrew Chupp,2010[2]), that also is the subject of environmental federalist theoretical research rooted in fiscal decentralization theory.

In the nearly 60 years before the 21st century, Tibout(1956)[3] provided a theoretical basis for decentralization reforms around the world, exploiting the efficiency of intergovernmental competition, and providing public services that better suit the preferences of residents in the jurisdiction. This is the main purpose of decentralization in a period. Silva(2006) believes that traditional environmental economic theory ignores the importance of local governments in the formulation and implementation of environmental policies, and proposes that fiscal decentralization is an important means to deal with the heterogeneity of environmental preferences. Oates and Schwab (1997)[4] fully embodies the idea of environmental federalism theory, they all believe that the responsibility for the protection should be the responsibility of the local government, and the decentralized decision-making behavior is compared with the unified standards of the central government. It is able to internalize costs and benefits and improve the overall welfare of society. Later, Oates (2002)[5] realized in his research that certain environmental pollution has

cross-regional pollution spillover effects, so central government intervention is needed to control such pollution. But Scott (2000), Breton, and Scott (1978) argue that negative externalities can be resolved by strengthening coordination and cooperation between regional governments without using the authority of the central government.

However, the theoretical advantages of decentralization have not been supported by consistent experience, and issues such as externalities and economies of scale have become increasingly prominent. The traditional environmental federalism theory holds that the environment has significant externalities, and environmental supervision under the fiscal decentralization system will produce a “race to the bottom” phenomenon, which will enable local governments to relax environmental regulations (Kunce & Shogren, 2008)[6]. At this time, Levinson (2003)[8] and Dalmazzone (2006) pointed out that the implementation of centralized environmental policy can not only avoid local governments to relax the environmental control to the “bottom line”, but also playing the economies of scale of centralized management, but this will ignore the existence of local heterogeneity. On the other hand, although environmental decentralization can better meet the environmental needs of residents in the jurisdiction, the problem of environmental pollution spillovers cannot be solved well. The existence of these two extreme situations is conducive to further clarifying the advantages and disadvantages of centralization and decentralization, and highlights the importance of establishing a reasonable degree of decentralization.

Theoretically speaking, the heterogeneity of jurisdiction and the spillover of pollution affect the division of environmental rights. In fact, China is no exception. Facing the inefficiency of the planned economy, China implemented the decentralization reform in the economic and financial fields after 1978. The growth effect of decentralization reform is remarkable. Under the impetus of decentralization reform, despite the large economic fluctuations in the entire 1980s, China still maintained an average growth rate of 9.6%. However, issues such as local protectionism, redundant construction, scale uneconomic, and negative environmental externalities brought about by decentralization reforms during this period have become increasingly prominent. Based on this practical experience, some scholars believe that fiscal centralization is more in line with the process of China’s fiscal reform practice and negative externalities. For example, Yuan Fei (2008)[9] believes that China’s existing intergovernmental fiscal system is a system with a higher degree of decentralization of responsibility, but a lower proportion of local budgetary revenues, and basically no formal taxation power. The tax reform since 1994 has brought about a growing vertical fiscal imbalance between different levels of government. Tao et al.(2009)[10]believes that the tax-sharing reform, which is based on the centralization of fiscal revenue, significantly concentrates fiscal

revenue while maintaining the same division of responsibility for inter-governmental expenditures, and also limits the use of taxation tools by local governments to support opportunities for local businesses. Xi Penghui (2017) [11] explained from the perspective of tax sharing that the upward shift of tax rights has caused local governments to relax environmental regulation and develop manufacturing to create tax revenue, but also use various policies to attract polluting manufacturing to generate income.

The fundamental problem that environmental federalism theory wants to solve is not whether environmental protection decentralization or centralization is more conducive to the governance environment, thus determining an optimal degree of environmental protection decentralization. Therefore, this theory portrayed indirectly cannot accurately and truly reflect the division of environmental responsibility between the central government and local governments, which is particularly prominent under China’s “sector” environmental management system.

3. fiscal decentralization and environmental pollution in China

In order to control effectively China’s pollution problem, we must first clarify the root causes of the continuous growth of pollution. It is undeniable that as a developing country, the economic model of blindly pursuing GDP growth is one of the main reasons. In China, a socialist market economy, the role of the government is a force that cannot be ignored. Some of the literature revealed that local officials make their behavioral decisions so as to promote the championship. There are also scholars analyzing the environmental control dilemma of local governments in the face of political incentives and fiscal incentives from the perspective of rational government.

The existing literature shows that the increase in the degree of decentralization will exacerbate environmental pollution, and local governments will choose to relax environmental regulations in order to pursue GDP growth. In theory, they pointed out that the “stripe competition” generated by political centralization and the “block competition” caused by fiscal decentralization make local governments develop the economy without taking on the consequences of environmental pollution, which has exacerbated environmental problems. Cai et al. (2008) [12]believed that the improvement of environmental quality requires the design of the central government’s mechanism. First, it is necessary to internalize the inherent requirements of transforming economic growth mode into the changes of local government development behavior and realize the transformation of local government functions. Second, it is necessary to improve central and local transfer payments, alleviate fiscal pressures in underdeveloped regions, and use incentive compatibility mechanisms to achieve emission reductions. In short, fiscal incentives are an important source of high pollution and high growth in China’s economy.

In terms of experience, many scholars' research has confirmed. Yang et al. (2007) used the dynamic panel data model to test the impact of Chinese decentralization on environmental quality for the first time. It was found that the increase in fiscal decentralization had a significant negative impact on environmental quality, which may be caused by the reduction of local government environmental regulation. But at the same time, he also suggested that the heterogeneity of the jurisdiction will also have an impact on the local government's environmental control policies. Li Meng (2009) estimated the feedback mechanism of environmental pollution and per capita fiscal revenue from the perspective of the modified environment Kuznets hypothesis, and found that the pollution and per capita local financial capacity are inverted U-shaped Curve relationship. Fu Yong (2010) used fiscal decentralization indicators to replace environmental federalism, and then used fiscal decentralization to characterize local government's behavioral decisions and outcomes. Liu et al. (2015) used the panel smooth transition model to find out that the fiscal decentralization has a nonlinear effect on environmental pollution under the influence of different conversion variables.

Zhang (2011) analyzed the impact of fiscal decentralization on the environment from the perspective of carbon emission, using the provincial panel data from 1998 to 2008, and believed that the increase in the degree of decentralization is not conducive to the reduction of carbon emissions. Further, for the analysis of the mechanism, he believes that decentralization reduces the local government's environmental control efforts, and fiscal decentralization also affects carbon emissions through energy consumption structure, geographic location, and environmental policy jurisdiction heterogeneity. Xue and Pan (2012) used provincial panel data to analyze the scale of fiscal decentralization and pollutant emissions, and also examined the impact of income decentralization and expenditure decentralization on pollutant emissions. The results show that when the fiscal decentralization index is measured by expenditure decentralization, it has a negative correlation with the scale of pollutant discharge. When using income decentralization, the relationship is uncertainly.

The above studies, without exception, suggest that the increase in the degree of decentralization reduces the government's regulatory efforts and intensifies pollution. Therefore, it can be said that this angle is mainly analyzed through the perspective of environmental regulation. Some foreign studies have also pointed out that the decline in environmental quality may also be caused by the decline in environmental protection efforts of local governments caused by fiscal decentralization.

4. Official promotion and environmental pollution

In addition to the negative impact of fiscal decentralization or centralization, it is also considered to be related to the political incentives of local government officials. Zhou Li'an (2007) first proposed the

"promotion of the championship" theory, providing a new research perspective for studying the incentive and governance models of local government officials in China, revealing the miracle of China's economic growth and its accompanying various environmental problems. Local government officials compete for growth through large-scale investment (Shu Yuan and Xu Xianxiang, 2002), and relaxing environmental regulations, distorting fiscal spending structures, tax incentives, and improving infrastructure (Tung and Cho, 2001).

In empirical research, Jia (2012) used China's pollution data to analyze the impact of political incentives on the environment. By analyzing the differences between provincial leaders and key central leaders, he finds the closer relation between the governor and the central leaders, the more serious pollution. At the same time, the connection with the central leaders will also increase the marginal benefits of pollution to influence the promotion incentives. Zheng et al. (2013) found that the main motivation for controlling pollution is the pressure of supervision by the central government and the public. Guo and Zheng (2013) analyzed fiscal decentralization and environmental pollution from the perspective of officials' promotion incentives. The results show that the increase in decentralization has made local governments have the incentive to develop the local economy and the pollution emissions during economic growth. It will also increase the rent-seeking transaction between the government and the enterprise. In other words, the more corrupt local government officials, the more serious the pollution. Wu et al. (2013) analyzed the impact of infrastructure investment on the promotion of officials. It is generally believed that infrastructure investment can pull local GDP growth, thereby increasing the probability of official promotion. But data analysis shows that not all infrastructure investments are good for promotion. Among them, the investment in environmental infrastructure has little or no impact on the promotion of officials. Even if the higher-level government intervenes in the improvement of the environment, the lower-level government officials will basically comply in appearance, and the actual environmental governance investment will not increase too much. The explanation for this phenomenon is that the government expenditure bias caused by the promotion incentives of Chinese officials in cities is determined by their responsibility distribution and budget constraints.

Environmental regulation and environmental pollution

In previous studies, the impact of environmental regulations on pollution was included in the analytical framework of the environmental Kuznets curve. Under this framework, most empirical studies use environmental regulation as a control variable, and some focus on the impact of environmental regulation on pollution emissions, but the conclusions are slightly different. For example, Li and Shen (2008) believe that environmental regulation has an immediate effect on improving environmental quality and reducing pollution. Both Magat and Viscusi (1990), Shadbegian and Gray (2005) argue that environmental regulation, not only does not

reduce pollution due to implementation problems, but also contributes to pollution. Pindyck (2006) and Zhang Hongfeng (2013) believe that there are many uncertainties in environmental regulation, mainly including cost uncertainty and income uncertainty. Bao et al (2013) used the double difference method to test the actual effects of local environmental laws based on the perspective of environmental legislation by local people's congresses since 1990, and found that pure environmental protection legislation cannot inhibit environmental pollution. Significantly, however, environmental legislation will have significant environmental improvements in areas where environmental law enforcement is strict and where pollution is relatively serious and the government values environmental governance.

The effect of fiscal incentives on regional environmental pollution is not direct. Under certain conditions, the impact of fiscal incentives on environmental quality is closely related to local government's environmental regulatory behavior and environmental governance capabilities, that is, a good institutional environment and positive behavior can alleviate the adverse effects of fiscal incentives on environmental pollution.

Many empirical studies have pointed out that although sewage charges can be used as a substitution variable for government environmental regulation, the collection of sewage charges will increase internal costs and thus reduce pollution emissions (Liu Yu and Chen Yu, 2016), but sewage discharge standard is a floating range. In addition, the environmental protection department lacks effective means of detecting pollutant emissions, which makes the phenomenon of "consultation fees" between pollutant discharge enterprises and environmental protection departments. Lei et al. (2013) used sewage charges and industrial pollution control investment as substitute variables for environmental control. Through regression analysis, it is considered that China's industrial pollution control investment has low efficiency, and over-emphasizes the amount of investment without changing the investment structure. China's environmental control measures still show low efficiency and no effect, it also inhibits the improvement of production efficiency and environmental technology innovation.

Throughout the literature, we found that the relationship between environmental regulation and pollution effects did not reach agreement. On the one hand, the reason is that the selection of environmental control indicators has a certain subjective color. Most scholars use alternative indicators such as environmental protection agencies and personnel input, sewage charges, and actual pollution emission intensity. Although these indicators are highly correlated with environmental regulations, they are endogenous. The problem is inevitable, and the impact cannot be completely attributed to the results of environmental regulation itself. On the other hand, environmental regulation and pollution effects have strong heterogeneity, that is, pollution problems are different due to factors such as

economic development patterns, consumption structures, production and living habits of countries or regions, and environmental regulations are rooted in the institutional environment of countries or regions. Therefore, it is objectively inevitable that regulation has an effect on pollution.

5. Further research

Throughout the above literature, facing fiscal decentralization and environmental pollution, the theoretical framework of foreign scholars' studies is dominated by environmental federalism, and the model of empirical analysis is gradually maturing. The domestic literature mainly uses the foreign research model to apply China's empirical data so as to obtain the impact of decentralization on pollution, and the conclusions are different. The most crucial point is that there is no clear explanation of the transmission mechanism of the pollution effect of fiscal decentralization. Therefore, from the perspective of the tax sharing, which is in line with the practical experience of China's fiscal reform, the study focusing on the mechanism of pollution effects is more precise and realistic.

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