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Study on Environmental Tax Burden and Development Countermeasures of Livestock Breeding Industry

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***Abstract*—Since January 1, 2008, environmental tax has been formally implemented in China. Livestock and poultry farming is a small profit industry. Some enterprises are even at a loss. The levy of environmental taxes increases the cost of farming enterprises. The aquaculture industry is facing difficulties in transformation and adjustment. Aiming at the tax burden of environmental tax, this paper analyses the partial equilibrium theory of Taxation, and puts forwards some suggestions on how to develop the aquaculture enterprises from the two aspects of government and enterprises.**

Keywords—livestock breeding industry; environmental tax;tax burden

I. INTRODUCTION

Since January 1, 2018, the environmental protection tax law has been implemented in China, and the livestock and poultry breeding industry is also levied on environmental tax. Compared with other countries, the operation of livestock and poultry enterprises in China is not good, and most of the farms are in a state of loss. The implementation of environmental tax will inevitably increase the production cost of livestock and poultry products, and the operation of aquaculture enterprises will be more difficult. The levy of environmental tax is a double-edged sword. Some enterprises with backward equipment and serious pollution will be eliminated. Those farms that are heavily invested in earlier environmental equipment can enjoy preferential tax policies and get better development. What is the tax burden on environmental tax? How the government helps enterprises to cross the transition period? This paper analyzes these problems.

II. REVIEW OF LITERATURE

A. Double Dividend Theory

Pigou, the founder of the welfare economics, first proposed the use of the "Pigou tax" to solve the secondary externalities in the production process. It would improve the environment and improve the overall welfare of the society. The dual dividend view first appeared in the study of water resources, such as Tullock (1967) and Kneese, Bower (1968) and so on. With the deepening of the research on "double dividend" of environmental tax, many scholars have made a more comprehensive and in-depth exposition of the concept of "double dividend" of environmental tax, and questioned whether it can generate "double dividends". At present, in many studies, there are mainly three explanations: consciousness, the theory of "double dividend", the two is the theory of strong double dividend, and three is the theory of "double dividend for employment". Almost all economists are in favor of the existence of "green bonuses".

B. Income Distribution Theory of Environmental Tax

Van Heerden (2006) studies on the environmental tax effect in South Africa show that the environmental tax is not only conducive to improving the environmental quality, but also improving the output level and narrowing the gap between the rich and the poor, so that the distributive double dividend is established. Frei, Haldi, Sarlos (2005) analysis the effect of the Swiss environmental tax, and found that the implementation of environmental tax will improve the employment rate and promote the fair distribution of income. The conclusion of Metcalf (1999) is relative to the doctrine of the mean. He thinks that if the environmental tax reform is applied to the structural tax cuts of payroll tax and personal income tax, it can almost ignore the influence of income tax and welfare allocation.

C. Application of CGE Model

Andre et al. (2005) used CGE model to estimate the impact of Spain's levying environmental tax on environmental quality and economic growth; Shim Takeda (2006) made use of Japanese historical data. A multisectoral dynamic CGE model is constructed to study the impact of carbon dioxide on economic growth. Li Hongxin and Fu Boying (2004) use the computable general equilibrium model (CGE) to simulate the impact of environmental tax reform on production, consumption and government revenue, and illustrate the feasibility of the "double dividend" hypothesis of environmental tax in China. Tong Jinzhi and Shen Yixing (2011) established a CGE model, and analyzed the social production, product supply and social welfare status of the model under two scenarios of environmental tax preferential policies. The tax exemption of environmental tax has little

effect on social welfare in the long run, but it will have a greater negative impact on the environmental protection effect of environmental tax.

III. THE CONTENT OF ENVIRONMENTAL TAX

A. Scope of Expropriation

The scope of the tax on environmental protection of livestock and poultry farming industry is that the scale of the livestock farm is larger than 50 cattle, 500 pigs, 5000 chicken and duck livestock and poultry farms.

The scope of tax exemption includes: small scale farms and scattered farms that are not up to the scale of Taxation, breeding activities of non-production and operation units and individuals, and large-scale farms for comprehensive utilization of fecal contaminants.

B. Tax and Tax Rate

Environmental taxes on livestock and poultry industry are mainly atmospheric pollutants, water pollutants and solid pollutants, and a few farms are charged with noise pollution taxes. Tax items and pollution equivalent values are shown in "Table I" and "Table II".

TABLE I. TAX AND TAX AMOUNT

Tax item	Tax unit	Tax amount
Atmospheric pollutant	Per pollution equivalent	1.2-12 yuan
Water pollutant	Per pollution equivalent	1.4-14 yuan
Solid pollutants	Ton	25yuan
Noise pollution	Super standard decibels	350-11200 yuan a month

TABLE II. POLLUTION EQUIVALENT VALUE

type	Pollution equivalent value	Remarks
cattle	0.1 head	Only for 50 cattle, 500 pigs, 5000 chicken and duck livestock farms
pig	1 head	
Poultry and poultry	30 head	

C. Calculation of Environmental Tax on Livestock and Poultry Farming Industry

Take the pig farm as an example to illustrate the calculation of environmental tax. In a pig farm of 500 pigs, one pig was charged monthly air and water pollution tax: 1x (1.2+1.4) =2.6 yuan. According to statistics, one pig manure generated every day about 2.5 kg, one pig per year need to be imposed on the solid waste environmental tax for 2.5x360/1000x25=22.5 yuan, one pigs for each year was imposed on environmental tax is 2.6 x12+22.5=53.7, 500 pigs, each year need to be levied on the ring bonded to 53.7x500=26850 yuan.

IV. ANALYSIS OF TAX BURDEN ON LIVESTOCK AND POULTRY FARMING INDUSTRY

The products produced by livestock and poultry farming are the meat and egg products that the common people need every day. Because of the expropriation of environmental tax, the enterprises will raise the price of the products and make the consumers pay a certain tax. Another important factor affecting livestock and poultry breeding is epidemic disease. In the epidemic situation, the elasticity of demand will undergo drastic changes, which will affect the degree of tax burden shifting. The following analysis is taken as an example of the pig farm.

A. Transfer of Tax Burden under Normal Circumstances

Pork is China's residents mainly meat, small demand elasticity, so under normal circumstances, a part of the environmental tax will be passed on to the consumer to pay, as shown in Figure 1: the demand curve is d, the supply curve is s before the tax levied by the government, the supply curve is the S1 after the environmental protection tax, supply curve is the supplier to improve the product supply cost , the total environmental tax levied by the government is the area of P1FDP2, the excess burden is the area of the DEF, the area of P1FGP0 on the grounds is the environmental tax burden on consumers, The area of P0GDP2is the tax taken by the supplier, thus it can be seen that under normal circumstances, a part of theenvironmental tax imposed by the government will be transferred to the consumer.

B. The Transfer of Tax Burden in the Occurrence of Epidemic Diseases

When the disease occurs, the residents will quickly reduce the number of consumption of pork, the elasticity of demand increases, tax burden as shown in Figure 2: the supply curve before the levy is s, at this time, the equilibrium price is P0, the supply price is P0, after the environmental protection tax levy, the supply curve shift to S1, equilibrium price improve to P1, supplier get the price is P2, the total revenue is the area of P1FDP2, the tax burden on consumers is the area of P1FGP0, the tax burden producers is the area of P0GDP2, at this time, most environmental taxes are held by the aquaculture enterprise.

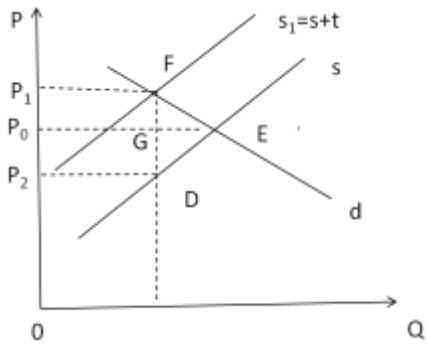

Fig. 1. Transfer of tax burden under normal circumstances.

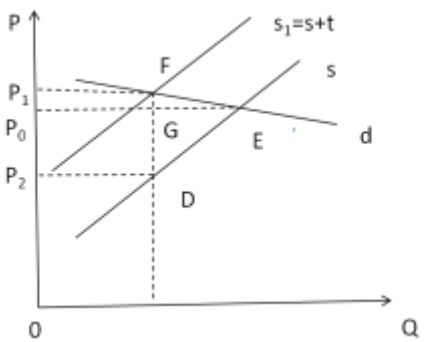

Fig. 2. The transfer of tax burden during the period epidemic diseases.

V. The Inevitable Trend of the Development of Livestock and Poultry Breeding Industry

In the long run, small-scale farms will be phased out. Some large scale farms already equipped with environmental protection equipment will enjoy preferential tax incentives for environmental taxes, and will continue to develop in the process of continuous reform. From the perspective of single farms, the economic benefits of enterprises will be lost, but from the perspective of the whole society, resources will be allocated optimally, and the overall welfare level of the society will be improved.

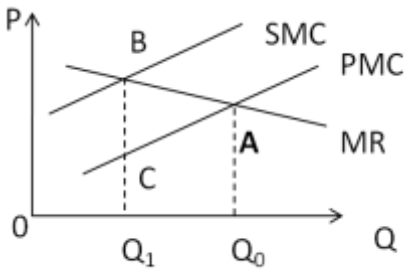

Fig. 3. The correction of the external nature of environmental tax.

As shown in "Fig. 3", the horizontal axis represents the production of products, the vertical axis represents is the price of the product, MR is the market demand curve, PMC is the marginal cost curve , both the intersection reflect the balance between private marginal costs and benefits, and determine the market equilibrium output is Q0. The livestock breeding industry will bring pollution to the environment, so the social marginal cost curve SMC is located above the private marginal cost curve PMC. From a social point of view, the effective production is the Q1 determined by the intersection point of social marginal cost curve SMC and private marginal benefit curve MR, which is less than Q0.It can be seen that when the negative externality occurs, the result of the market operation will lead to the overallocation of resources, and the corresponding efficiency loss is the area of the triangle ABC. If the government imposes an environmental tax on the livestock and poultry breeding industry, the marginal cost of private will be raised to the marginal cost of society, and the output will be adjusted to Q1, which will play an important role in optimizing the allocation of resources and improving the overall welfare level of the whole society.

VI. Conclusion

Livestock and poultry industry is a micro profit industry. In the transition period after the Levy of environmental tax, enterprises will face difficulties in transformation. The purpose of environmental tax is to guide the transformation of enterprises instead of restricting the development of enterprises. From the government aspect, we should take various measures to help enterprises develop. From the perspective of enterprises, we should analyses the situation and policies well, and actively carry out reform in order to make the enterprise get better development.

A. Government Aspects

The government helps enterprises to develop from the long-term development model, policy support and scientific and technological innovation.

1) To take measures to promote the development of "the combination of different breeds": For the long-term development of livestock and poultry enterprises, the model of ecological development must be taken. The European countries such as Denmark, Holland and other European countries have achieved successful experience. For example, Danish law stipulates that farms must be equipped with a certain scale of cultivated land. The scale of farms is determined by the area of land allocated. The scale of farms must be consistent with the land area that can be consumed. In order to develop the livestock and poultry industry in the long run, the development model of "combination of different breeds" must be taken. However, the development mode of "combination of different breeds" in China is also facing the problems of capital and land. The government should solve these aspects to promote the development of "combination of breeding and breeding" mode.

2) To promote scientific and technological innovation and increase the added value of products: The cost of livestock products in China is higher than that of international similar products, and its competitiveness is low. Increasing the added value of the product is the key to improving the competitiveness. However, the increase of value-added products needs a long process. The key is to raise the level of technology, management level and production concept continuously. It is difficult for a single farming enterprise to fight and the government should play a guiding role.

To be specific: one is to research on breeding varieties by scientific research institutions and research institutes, to improved varieties breeding of fine varieties, improve the coverage rate; two is to guide enterprises to do the deep processing of aquaculture products, improve product varieties; three is to increase the breeding enterprise staff training and guidance, improve the comprehensive cultivation level, improve the quality of the products; four is to cultivate large leading enterprises, leading the aquaculture industry chain to the leading enterprises, build the brand.

3) To do a good job of third party service: Small scale aquaculture enterprises are small in scale, and it is impossible to invest in the construction of environmental protection equipment. The way out is to deal with pollution sources through third party services. There are already relevant experiences abroad, and in the early days of the country, the pollution sources were dealt with on a large scale and centralized treatment. The biogas treatment center is set up. The farm around the center will transport the waste to the biogas station, and the biogas liquid is transported to the surrounding land for absorption. Drawing lessons from foreign experience, aiming at some small and scattered farms, by establishing resource utilization center, collecting waste generated from livestock and poultry breeding and doing third party services, it not only solves the problem of environmental protection of farmers, but also produces certain economic benefits.

B. Aquaculture Enterprises

The levying of environmental tax brings challenges to the culture enterprises. In order to get the development of the culture enterprises, it is necessary to respond positively and do all the work of the transformation.

1) The way out for small and medium farms: Environmental tax has the greatest impact on small and medium farms. In order to achieve long-term development, there are two ways: one is to combine a number of small farms and establish a large scale breeding base. We should do well in the construction of environmental protection facilities. All of them will develop in a large-scale, modern and ecological way; the two is that small farms combine to form cooperatives. By joining cooperatives, we can get the advantages of management technology, breeding species, feed and sales. The co-operatives will also receive certain subsidies from the state every year, and they can enjoy financial subsidies if they join the cooperative.

2) The development direction of the scale breeding farm: To increase investment in environmental protection equipment. The investment of environmental protection equipment will bring economic pressure to the farmers in the short term, but it will bring long-term benefits. The input of a set of environmental protection equipment is about 500 thousand yuan, not a small number for the farm. But in the long run, the farm is not a loss. On the one hand, enterprises will enjoy government incentives; on the other hand, environmental equipment can also bring economic benefits, such as biogas power can save farms from electricity.

VII. CONCLUSION

To make full use of the existing preferential policies, the government has given a large number of preferential policies in order to encourage the development of culture enterprises in tax, land use, insurance, prevention and treatment of epidemic diseases. Aquaculture enterprises should carefully study the relevant preferential policies, according to the requirements of preferential policies, actively reform the system, and fully enjoy preferential policy. In order to fully enjoy the government's policy preferences, the aquaculture enterprises need to achieve two aspects: first, we must study the conditions to enjoy the preferential policies of the government; on the other hand, the aquaculture enterprises should do well in environmental protection, and actively build corresponding environmental protection facilities.

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