

The Future of Chinese Carbon Market: A Comparison Between Carbon Tax System and Carbon Emission Trading Market

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Abstract: Greenhouse gas emission has been identified as the most important factor of recent global climate change. Countries around the world are beginning to ameliorate the phenomenon under the initiative of the United Nations. The two feasible carbon mitigation measures, carbon tax system and carbon emission trading market, proposed in the United Nations Framework Convention on Climate Change (UNFCCC) are now accepted universally. In order to solve the problem of global warming caused by the rise in carbon emissions, "energy saving and emission reduction" has become a direction of our development of green economy. This paper studies carbon tax system and carbon emission trading system, analyzes the advantages and disadvantages, complementarity and compatibility of the two systems from the perspective of emission reduction cost, extensiveness of applicable objects, institutional fairness and implementation effect, and gives some suggestions based on this nature.

Keywords: Green Finance; Carbon Emission Trading Market; Carbon Tax System

1. Introduction of Concept

In terms of carbon tax system, its model is the energy tax proposed by Pigou, a British economist, in his Welfare Economics. The emissions of greenhouse gas caused "negative externality", making the social cost more than the private cost, this is where the government stepped in. Authorities levied carbon taxes on enterprises or other organizations for the carbon dioxide and other greenhouse gases produced by the consumption of fossil energy in the process of industrial development, internalizing external costs.

Unlike carbon tax system, a policy tool based on market failure theory to control price, carbon emission trading market is a policy instrument based on property rights theory that directly controls total emissions. Its theoretical basis can be traced back to Ronald Coase's The Problem of Social Cost published in 1960. And on the basis of Coase's research, Dales, an American economist, introduced the concept of property rights into the field of pollution control and first proposed the system design concept of emission trading. That's also what carbon emission trading market inspired by. The government adopts scientific method to determine the total amount of greenhouse gas emissions and establish a secondary market for carbon emission trading according to international emission reduction agreement or domestic emission reduction demand. After that, the government will distribute greenhouse gases quota to individuals from fixed total quantity of emissions through the auction or for free according to their marginal carbon emission cost and total emission demand.

2. Comparisons between Two Strategies

Although such two strategies are both effective to promote the reduction of carbon emissions, there are still differences in implement cost, reduction efficiency, social acceptance and international cooperation between them. And we will give a brief comparison between carbon tax system and carbon emission trading market below.

2.1 Implement Cost

In the short term, as a tax system, carbon tax system can be directly added to the existing tax system of various countries, whose implementation cost is low. Carbon emission trading market, however, requires to make choice of the initial allocation mode at first. Moreover, the supporting mechanism including reporting mechanism, monitoring mechanism and punishment

mechanism, that it needing also demands high to market economy system. Therefore, for the initial cost, the implementation cost of the carbon tax system is lower than that of carbon emission trading market.

In the long term, government is required to determine an appropriate tax rate at which the marginal cost of abatement is equal to the marginal social cost for carbon tax system. Difficultly and insufficiently as the information to get in China, such a large country, the government has to spend a great deal of time and manpower to do it. Even so, carbon tax rates may deviate from optimal values, which further reduces the effectiveness of the carbon tax policy. But what government should do for carbon emission trading market is establishing a sound market trading system, and according to Property theory and the Coase theorem, “the invisible hand” will optimize the allocation of resources.

2.2 Reduction Efficiency

According to the Coase Theorem, as long as property rights are clear, marketization is the best way to achieve the optimal allocation of resources, and that’s what carbon emission trading market is for. In the free market economy, the price of carbon emission permits reflects the average marginal cost of emission reduction of the whole society. Enterprises independently decide to buy or sell carbon emission rights according to their own marginal cost of emission reduction and the market price of carbon emission rights. The differences in technical conditions of different enterprises make enterprises have the motivation to learn from each other to reduce the marginal cost of emission reduction. In other words, it provides a cost-effective and optimized market mechanism for the realization of the total carbon emission control target to stimulate technological innovation and force energy consumption structure and industrial structure low-carbon.

On contrast, the carbon tax does not encourage the diffusion and exchange of advanced carbon emission reduction technologies among different enterprises and regions, which will not promote the improvement of the overall efficiency of carbon emission reduction in the society, and thus is not conducive to the development of low-carbon economy. Therefore, carbon emission trading market is more advantageous in reduction efficiency.

2.3 Social Acceptance

On one hand, carbon tax system takes a push strategy, which means government has taken back companies' original rights to emit greenhouse gases freely, increasing the operating cost of the enterprise. Moreover, carbon tax is also a kind of tax with regressive properties, when the government implements carbon tax system or increases the carbon tax rate, the enterprises as the production sector will transfer the increased costs to the consumers, thus, the low-income people in the society will bear relatively more costs. If the government includes the revenue from carbon tax into general fiscal revenue without transfer payment, this inequality will be further aggravated. On the other hand, carbon tax system can provide stable cost expectation for enterprises, thus reducing unnecessary transaction costs and reducing the total production cost of society.

Contrary to the fixed and stable effect of carbon tax on enterprises, the price of carbon permits is the same as the price of other commodities. While it is mainly determined by market supply and demand forces, it is also affected by a variety of uncertain factors, such as economic development, initial emission rights allocation scheme, government policies, breakthroughs in low-carbon technologies, meteorological disasters brought by climate change, energy prices and so on. Businesses may become averse to such uncertainty. Fortunately, enterprises will automatically internalize this cost and consider it an obligation to nature and society. What’s more, since the amount of carbon emitted under the carbon emission trading market is fixed, companies will compete for those rights aggressively, lowering the price of their productions, which in turn benefits consumers.

2.4 International Cooperation

Country can’t develop in isolation, it’s the same with carbon market. Different from independence of carbon tax system, carbon emission trading market can achieve global interoperability. Through the international carbon trading market, developed countries with higher marginal emission costs can purchase emission reduction quotas from developing countries to make up for the shortage of domestic emission reduction quotas. While developing countries can obtain funds and advanced technologies through exchanges with developed countries, which will undoubtedly help developing countries avoid repeated research in low-carbon technologies and realize low-carbon economic development mode as soon as possible and finally achieve the equalization of global marginal emission reduction costs.

3. Conclusion

Carbon tax system has advantages in initial implement cost, while carbon emission trading market is more advantageous in long term implement cost, reduction efficiency and international cooperation. In social acceptance, they have their relative pros and cons.

All in all, the two strategies aren't antagonistic. Just like human and nature, they are complementary and compatible. Lucid waters and lush mountains are invaluable assets. In the face of an increasingly deteriorating environment, what we human can only do is taking full advantage of these strategies and leveraging the vitality of the earth with green finance.

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