

Enabling Carbon Market Regulation under the Coupling of Institutional Rationality and Economic Rationality

Haochong Wang

Harbin Institute of Technology, Harbin 150000, China

*954923369@qq.com

Abstract

Carbon emissions trading is an important market-based instrument to address climate change and achieve carbon neutrality, which is different from general commodity trading and requires effective government regulation and empowerment. This paper analyzes the differences between the primary and secondary markets of carbon emissions trading from the perspective of coupling institutional and economic rationality, and points out that in the current carbon emissions regulation, the regulatory intervention is still insufficient in terms of scientificity, compulsion and flexibility, and systematic empowerment is needed. We should start from three perspectives: promoting the implementation of the Regulation on Carbon Emission Trading, clarifying the regulatory boundary between the horizontal authorities and the vertical central and local agencies in the carbon market, and paying attention to the synergy of economic incentive-based carbon emission regulation tools, and gradually constructing a regulation model compatible with carbon tax and carbon emission trading.

Keywords

Carbon Emission Rights; Carbon Allowances; Administrative Permits; Quasi-in-kind Rights; Regulation.

1. Introduction

On September 22, 2021, the Central Committee of the Communist Party of China (CPC) and the State Council issued the Opinions on Complete and Accurate Implementation of the New Development Concept and Good Carbon Neutral Work (hereinafter referred to as "Opinions"), which clarified the timeline and roadmap of 3060; on October 24, 2021, the State Council issued the Action Plan for Carbon Peaking by 2030, which formed the top-level design and implementation plan of the policy dimension. The 3060 climate target is unfolding in the power release of party politics. The Opinions proposed to "improve carbon emission market laws and regulations", which pointed out the direction for China's carbon emission trading market in the new era and provided the possibility for the Interim Regulations on Carbon Emission Trading Management (for Trial Implementation) to break through the corresponding shackles of the existing legal framework such as weak targeting and poor effectiveness [1]. However, the path to break through the shackles from a purposive normative perspective must clarify the key function of the carbon market, which is to guide investment through an "effective carbon price" [2]. Institutional change will lead to changes in the institutional environment, and fundamental changes in relative prices are the most important source of institutional change [3]. In view of this, there is a need to clarify the scope of the legal environment and the effective interface between the price mechanism and the carbon market rules needed to perform the price function.

2. Specificity of Carbon Emissions Trading: Differences between Primary and Secondary Markets

2.1. Separation of the Basic Concepts of Carbon Emission Rights and Carbon Allowances.

China's legislation is more prudent in expressing the characteristics of the legal attributes of carbon emission rights. Article 42 of the Interim Regulations on the Management of Carbon Emission Trading (for Trial Implementation) states, "Carbon emission rights: refers to the carbon emission credits allocated to key emission units for a specified period of time." However, this definition only describes carbon emission rights from the factual point of view. Compared to the allowances (allowances) stipulated in Article 3(a) of the European Conference and Council Directive 2003/87/EC and the Application for GHG emissions permits (Application for and contents of the GHG emissions permit) stipulated in Articles 5 and 6 contents of the GHG emissions permit) in China is vague and broad. When the cost of litigation is greater than the damage caused, the credit of the whole carbon emission trading system will be damaged instead of the two parties of a single case, which shows that the legal properties of carbon emission rights in China need to be confirmed.

Most of the international regions that have engaged in carbon emissions trading adopt the dichotomous classification of carbon emission rights and carbon allowances. Given that carbon emissions trading is not a trading market in the traditional sense, [4] by nature, the carbon trading market is a regulated market shaped based on the polluter pays principle, which aims to redistribute costs through the quantification of emission reduction obligations, a political and market process in which both administrative and economic attributes must be discussed.

2.2. Ethical Analysis of Carbon Emission Allowances.

Carbon emission allowances do not simply rely on laws, but also require a sense of ethics from individuals and institutions. Because the allocation and trading of carbon emission allowances involve major ethical values such as fairness and justice, social responsibility, and environmental protection, a lack of ethical sense may lead to the abuse, waste, evasion, and fraud of carbon emission allowances, thus undermining the order and efficiency of the carbon market, as well as the goals of carbon emission reduction and climate governance. Therefore, when individuals and institutions participate in carbon emission allowance trading, they should not only abide by legal norms, but also establish a sense of morality, respect nature, care for others and be responsible for the future, in order to realize the true meaning of the carbon emission allowance trading system.

Of course, the clear social purpose of the market naturally requires the perfection of self-regulation to be trusted and accepted in the society through this, while the lack of trust and the need for stability of the mechanism give rise to mandatory rules and restrictions. That is to say, in the absence of moral compulsion, the law needs to play its compulsory role, and the two complement each other.

2.3. The Specificity of Carbon Emissions Trading: A Market under Administrative Control.

As a new type of environmental resource management system, carbon emission rights have both market and administrative characteristics. The market nature refers to the fact that carbon emission rights can be freely bought and sold in the national carbon emission trading market, forming a price signal to stimulate greenhouse gas emitting units or individuals to save energy and reduce emissions, so as to achieve the goal of total greenhouse gas emission control. The administrative nature refers to the fact that the allocation, registration, trading and settlement of carbon emission rights are regulated and supervised by national laws, regulations and

technical specifications, reflecting the leading role and responsibility of the state for greenhouse gas emission control.

From the current practice situation, the administrative nature of carbon emission rights is more prominent and the market nature is not sufficient. It is manifested in the following aspects:

The allocation method of carbon emission rights is mainly free allocation, and lacks a paid allocation mechanism. It means that the government interferes too much in the total control and allocation rules of carbon emission rights, and does not give full play to the decisive role of the market in the allocation of carbon emission rights. The free allocation method may lead to the undervaluation of carbon emission rights, reduce the incentive and efficiency of enterprises to save energy and reduce emissions, and reduce the activity and liquidity of the carbon market. The paid allocation mechanism can make carbon emission rights truly reflect their scarcity and value through auction and taxation, increase the cost pressure and motivation of GHG emitting units or individuals to save energy and reduce emissions, and promote an active and effective carbon market.

The price formation of carbon emission rights is based on administrative guidance and lacks market competition mechanism. It means that the government interferes too much in the price formation of carbon emission rights and does not give full play to the decisive role of the market in the price formation of carbon emission rights. The administrative guidance in price formation may lead to the underestimation or overestimation of the price of carbon emission rights, which affects the liquidity and stability of the carbon market and the cost effectiveness of carbon emission reduction. The market competition mechanism can make the price formation of carbon emission rights more flexible and diverse by increasing the number of trading subjects, trading varieties and trading methods, and better reflect the scarcity and value of carbon emission rights.

The regulation of carbon emission rights is mainly administrative and lacks a market regulation mechanism. It means that the government's management of the carbon market is too centralized and rigid, which may lead to high regulatory costs, poor regulatory effectiveness and unclear regulatory responsibilities. The administrative regulation approach is likely to cause contradictions and conflicts between regulation and market, which affects the innovation and development of carbon market. The market supervision mechanism can be used to improve the transparency and credibility of the carbon market and promote the healthy development of the carbon market by introducing multiple subjects such as third-party institutions, the public and the media to form a supervisory synergy.

The trading rules of carbon emission rights are based on uniform standards and lack of differentiated mechanisms. It means that the government's trading rules for carbon emission rights are too rigid and do not fully consider the differences and characteristics of different regions, industries and types of GHG emitting units or individuals. The predominantly uniform standard of trading rules may lead to the limitation of innovation and vitality of the carbon market, affecting the adaptability and inclusiveness of the carbon market, as well as the fairness and efficiency of carbon emission reduction. The differentiation mechanism can make the trading rules of carbon emission rights more flexible and reasonable by introducing regional coordination, industry stratification and type classification, and better reflect the differences and characteristics of different GHG emitting units or individuals.

2.4. Clear Property Rights Attributes of Allowances in the Secondary Market.

Carbon trading mechanism as Finland, Poland and Denmark started to implement carbon trading mechanism in 1992. The United States established a carbon trading mechanism in 2005. China adopts the approach of piloting before promoting, based on the experience of international carbon quota and carbon trading mechanism development:

From 2011 to 2017, China launched eight carbon trading pilot regions in Beijing, Tianjin, Shanghai, Chongqing, Guangdong, Shenzhen, Hubei, and Fujian provinces, with local carbon quota trading being the main focus during this phase. In terms of the historical evolution of carbon regulation policies, carbon quotas and carbon trading mechanisms are important measures to achieve the "30-60" target. [5] In October 2021, the "Opinions of the Central Committee of the Communist Party of China and the State Council on Comprehensively Implementing the New Development Concept and Doing a Good Job of Carbon Neutralization" clearly stated the need to actively develop green finance, establish a sound green financial standard system and other measures. The Central Bank of China listed "implementing the major decisions and plans of carbon compliance and carbon neutrality, improving the policy framework and incentive mechanism of green finance" as the focus of its work, and established the policy idea of "three major functions" for green finance development. Three functions of green financial development policy ideas: First, through monetary policy, credit policy, regulatory policy, etc., to guide and leverage financial resources to carpet projects, green transformation projects, CCER and other green projects tilt. Second, through tools such as climate risk stress test, environmental climate risk stress test green and brown asset risk weighting adjustment, etc., to enhance the financial management of climate change risks. Third, promote the construction of a national carbon emissions trading market and the development of carbon futures and other derivative products [6].

In summary, whether carbon derivatives are established as a risk prevention and control asset weighting tool or as a fundamental price signal to guide investment, the pre-requisite must be clearer property rights. Here, it is necessary to clearly define the property rights of carbon emission allowances. Bazell defines property rights as "economic rights" and "legal rights", where economic rights are the ultimate goal and legal rights are the means and ways to achieve the ultimate goal. It can be seen that the legal property of carbon emission allowances determines the service and its economic value. As an asset, carbon emission allowance is nominally considered as a tradable right certificate, according to the functional value theory: carbon emission allowance has the functional property of guiding investment and underlying assets on top of the original environmental constraint function, so the latter two right properties must have stable cash flow as the performance goal, while the net income generated by the asset depends on the definition of the rights. Therefore, as long as the property rights are clearly defined at the transaction stage, the income generated by the asset is economically possible.

The system of property rights calls for the improvement of the system of factors, and the clarity of property rights of carbon quotas cannot be separated from the marginal determination of performance targets. According to the concept of ESG investment proposed by the United Nations Environment Programme in 2004 and the institutional structure divided by the United Nations Principles for Responsible Investment (PRI) in 2006, the following institutional structure is divided, namely, environmental, economic and social systems. The environmental system is the source of the legitimacy and rationality of carbon emission allowances, and the three performance indicators based on the total environmental control target are the type of greenhouse gas emissions, the type of free allowances and the market access threshold for emission control enterprises. The economic system, as the source of the economic feasibility and sustainability of carbon emission allowances, consists of nine performance indicators based on the maturity of the public interest-oriented market: the number of emission enterprises included in the market, the number of institutional investors, the types of trading models, the types of traded products, the number of allowances traded, the average carbon price, the proportion of CCER trading, the concentration of trading, the rate of change of hands and the compliance rate. The social system as the basis of social risk prevention and control of carbon quotas configures three performance indicators based on information disclosure, laws

and regulations, regulatory agencies and regulatory standards based on the risk social base constraints.

2.5. Analysis of the Rationality of Quasi-materialization of Carbon Quotas.

While the state's legislative will to shape a set of social goals has procedural legitimacy, the functions and privileges derived from the structure of rights and obligations embedded in this will should not be taken for granted. Once economic efficiency is recognized as efficiency that enhances welfare, and what economists regard as the satisfaction of welfare preferences, the weight of efficiency is not so high in the growth equation. And allowances play a crucial role as a quantitative tool for balancing between the weights.

The quasi-in-kind properties of carbon emission rights in the current institutional design are mainly reflected in the following aspects:

First, certainty, meaning that the elements of carbon emission rights, such as attribution, quantity and validity, have clear legal basis and technical specifications, and are not subject to arbitrary intervention or change. The Kyoto Protocol has clearly set out the greenhouse gas emission reduction targets for the countries listed in Annex I. According to the base year emissions and the percentage of commitment target, the amount of greenhouse gas emissions allowed for these countries can be obtained and the amount of resources of atmospheric capacity at their disposal, so the carbon emission rights enjoyed by these countries are determined under the Convention system. 7 Article 8 of China's "Measures for the Administration of Carbon Emission Trading (for Trial Implementation)" stipulates that the State shall, in accordance with the goals and requirements for the control of total greenhouse gas emissions, formulate a national implementation plan for the setting and allocation of carbon emission trading quotas, and allocate carbon emission quotas in accordance with the implementation plan. The Implementation Plan, on the other hand, specifies the details of the allocation method, accounting formula, and data sources for each industry, ensuring the certainty of carbon emission rights.

Secondly, disposability means that the holder of carbon emission rights can freely dispose of them, including the use, transfer, mortgage, pledge and other ways. Countries with well-defined carbon rights have full freedom to use their carbon rights: they can use their atmospheric capacity resources, i.e., emit greenhouse gases, transfer them through a carbon trading system, or purchase carbon rights from other countries for their own use or to meet their emission reduction targets [7]. Article 18 of China's Measures for the Administration of Carbon Emissions Trading (for Trial Implementation) stipulates that key emission units may buy and sell carbon emission rights in the national unified carbon emission trading market through agreed transfer, one-way bidding or other means. Article 24 stipulates that key emission units can apply for financing by using the carbon emission rights they hold as collateral or pledge. These provisions give the holders of carbon emission rights a certain degree of disposability.

Finally, tradability refers to the fact that carbon emission rights can be bought and sold on the national unified carbon emission rights trading market, forming a market price that reflects their scarcity and value. Tradability is not only an important feature of carbon emission rights as quasi-property rights, but also an important means for the right holders to exercise their rights and an effective way to realize the optimal allocation of atmospheric environmental capacity resources and promote greenhouse gas emission reduction [7]. Article 17 of China's "Measures for the Administration of Carbon Emission Trading (for Trial Implementation)" stipulates that the Ministry of Ecology and Environment, together with relevant departments, shall establish a national unified carbon emission trading market and formulate relevant trading rules. Article 21 stipulates that key emission units shall determine the purchase and sale prices in accordance with market supply and demand. These provisions establish the tradability of carbon emission rights.

3. The Regulatory Empowerment of Carbon Emissions Trading

At present, in the face of the conflict between the goal of carbon compliance and carbon neutrality and the current state of the carbon market, the consensual nature of the market and regulation needs to be assessed. The logical starting point of market regulation is close to convergence, i.e. economic reasons social reasons.

The economic rationale: efficiency. In carbon emissions trading, clear property rights can improve the efficiency of the market. Specifically, carbon emissions trading is an economic instrument to reduce greenhouse gas emissions by imposing limits on corporate carbon emissions. Without clear property rights, it is difficult to determine which firms should be held responsible and which should be rewarded. As a result, the market is unable to price and allocate resources correctly in such cases, leading to inefficiencies. Since clear property rights can help solve this problem, clear property rights can facilitate more efficient carbon emissions management in a carbon trading market. For example, allocating emission allowances to firms and allowing them to decide how to use and allocate these allowances can provide incentives for firms to adopt more environmentally friendly production practices. At the same time, if a firm does not need all of its emission allowances, it can sell the rest for a profit. Such a market mechanism can promote the optimal allocation of resources, thus increasing the efficiency of the market. It can help the carbon trading market to price and allocate resources correctly, and thus improve the efficiency of the market [8]. This helps reduce carbon emissions, mitigate the effects of climate change, and create better economic benefits for businesses and consumers.

Social rationale: distributive justice. The value of justice is generally considered to be higher than efficiency, and some scholars argue that a carbon price can reduce the "spillover effect" of carbon emissions and better synergize with a carbon tax to form a sustainable policy structure. Thus, the carbon emission constraint is actually a resource constraint that makes carbon a negative contributor. By deriving the factor equivalence in the production function and using the price determined by the market supply and demand equilibrium to construct the objective function of economic operation, the optimal resource allocation effect will be obtained. Provide an important mimetic environment for the shaping of ideas and ideologies. Every society must establish some rules to deal with the following five issues: 1. the determination of various standards; 2. the organization of production; 3. the distribution of products; 4. the maintenance and development of the economy; and 5. the adjustment of consumption to production in the short run. And the price of carbon emission rights can do three types of things in solving the above five problems:

First, the carbon price is the most important signal in the carbon market, which can convey information to GHG emitters or individuals about the scarcity of carbon emission rights and society's demand for emission reduction. For example, when carbon credits are in short supply, its price rises, thus telling GHG emitters or individuals that they should reduce carbon emissions and telling those who can afford to sell carbon credits that they should sell more; conversely, when carbon credits are in short supply, its price falls, thus telling GHG emitters or individuals that they can increase carbon emissions in moderation. In this way, the carbon price can coordinate the behavior between GHG emitting units or individuals and those who can afford to sell carbon emission rights, so that the carbon market can reach a balance between supply and demand.

Secondly, carbon price can not only transmit information but also provide incentives, i.e., influence the benefits and costs of GHG emitting units or individuals, and thus influence their behavioral choices. For example, when the carbon price rises, GHG emitting units or individuals will have a greater incentive to take measures such as energy saving and consumption reduction, structure optimization, and innovative technology to reduce carbon emissions and thus save expenses; at the same time, they will also have a greater incentive to carry out

measures such as clean energy, low carbon projects, and carbon sink activities to increase the supply of carbon emission rights and sell them to other units or individuals who need to buy carbon emission rights, thus increase revenue. Conversely, when the carbon price decreases, GHG-emitting units or individuals will have less incentive to take measures to reduce emissions because doing so will not bring significant savings; units or individuals who can afford to sell carbon credits will also have less incentive to carry out measures to increase them because doing so will not bring significant revenue effects. In this way, a carbon price provides incentives for GHG emitters and those who can sell carbon credits to conserve scarce resources and pursue efficiency.

Third, a carbon price also enables distribution, i.e., the distribution of carbon emission rights and revenues by enabling trading in the carbon market. For example, when the carbon price rises, units or individuals who can afford to sell carbon emission rights are able to earn more income, thus increasing their welfare; GHG-emitting units or individuals need to pay more expenses, thus decreasing their welfare. Conversely, when the price of carbon falls, those who can afford to sell their carbon credits will only earn less, thus lowering their welfare; those who emit greenhouse gases will only have to pay less to produce more products and earn more profit, thus raising their welfare. In this way, a carbon price can influence social equity and justice. At the same time, a carbon price can reflect the external costs of carbon emissions to the environment and society, making greenhouse gas emitters or individuals responsible and costly. Regulation of formal exchanges: Many exchanges are self-regulated, but the rules of the exchanges are also subject to regulatory oversight. Prices are future-dependent. How the exchange regulates prices can be summarized in the following three areas:

First, they regulate trading behavior and prevent market manipulation. Exchanges have established a series of trading rules and disciplines that clearly define the qualifications of traders, trading methods, trading hours, trading limits, margins, and penalties for non-compliance to ensure fair, equitable and transparent trading. The Exchange also monitors trading data to detect and stop any abnormal trading behavior that may affect normal price formation, such as insider trading, collusive manipulation, and malicious speculation.

Second, it improves market liquidity and increases market depth. By introducing diversified market players, such as market makers, arbitrageurs, and speculators, the Exchange has increased market participation and activity, increased the number of buyers and sellers in the market, and made prices more reflective of market supply and demand. The exchange also meets the needs of different investors by introducing a variety of varieties and contracts.

Third, improving information disclosure and market transparency. By establishing an information disclosure system, the Exchange requires all parties to disclose relevant information to the market in a timely, accurate and complete manner, such as contract rules, trading data, position changes, settlement prices, risk warnings, etc., so that market participants can fully understand market conditions and make rational judgments and decisions. The exchange also provides professional interpretation and guidance on market trends and influencing factors through the release of various analysis reports and research results, making prices more reflective of the fundamental situation.

4. Summary

Unlike general commodity trading that follows the concept of strong market and weak regulation, carbon emissions trading especially emphasizes regulatory empowerment to improve the effectiveness of regulation. Specifically, from a process perspective, the regulatory focus is mainly on ex ante allowance control, ex post price intervention and ex post behavior punishment. In order to regulate carbon emissions trading more effectively, systematic regulatory empowerment should be carried out in terms of institutional positioning, subject

coordination and tool optimization: promoting administrative regulations - the Regulations on Carbon Emissions Trading - to be implemented as soon as possible, determining the coverage of chapters in the future law on addressing climate change and environmental code, strengthening the regulatory coordination among financial regulators, ecological and environmental departments and development and reform departments, and enriching the regulatory coordination among the financial regulators, ecological and environmental departments and development and reform departments. The regulatory coordination among financial regulators, ecological and environmental departments and development and reform departments, and the enrichment of economic incentive-based carbon emission regulation tools such as carbon tax.

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