

The Influence of Carbon Finance on Roa-An Empirical Study Based on Carbon Trading Data of Domestic Enterprises

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Abstract: With the continuous adjustment of human living space by environmental problems, more and more people pay more attention to environmental problems, and many financial products begin to enter the market one after another, and carbon trading is one of them. This paper aims to analyze the trading data of Shanghai Environmental Energy Exchange through the actual carbon trading case, and finally draw a conclusion about how carbon trading affects ROA of enterprises, and put forward suggestions for improvement in the current carbon market trading environment.

Keywords: Environmental issues, Carbon trading, ROA.

1. Introduction

At the beginning of December, 1952, the air over London was affected by an anticyclone, which caused a large amount of coal-fired waste gas emissions used in industrial production and life to accumulate over the city. This made the whole of London shrouded in gloom, which not only disrupted people's pace of life, but also caused great harm to human health. Afterwards, it was counted that as many as 4,703 people died as a result of this accident, which is now widely known as the "1952 London Smoke Incident". This incident is not only a wake-up call for human beings, but also makes the whole society fall into thinking about environmental protection. In the book *Silent Spring* published in 1962, the importance of environmental protection was exposed. Since then, human beings began to explore and pursue the methods of environmental protection. Many economists began to imagine using the invisible hand of market mechanism to automatically allocate resources, and then using other methods to suppress the pollution problem from the source. Based on this exploration environment, a series of different financial products and new financial mechanisms have been launched in the market, and carbon finance is one of these many financial products. In 1968, the concept of carbon finance was first proposed.

Since 1990, the Clean Air Act Amendment passed by the US Congress has made people see the dawn. The amendment established the "total limit and trade" of sulfur dioxide gas emission quota, and the Clean Development Mechanism (CDM) and carbon trading market began to form. In 2005, the European Union launched the world's first carbon trading market, and on February 16th of the same year, the Kyoto Protocol came into effect. According to the regulations, in order to realize the obligation of greenhouse gas emission reduction, developed country parties must reduce the greenhouse gas emission level by 5.2% on average from 2005 to 2012, because the cost of greenhouse gas emission reduction in developed countries is several times or even dozens of times that in developing countries. In May 2023, a total of 7,636 CDM projects were registered in the world, among which China was the largest participant and

contributor to CDM, accounting for 50.7% of the global total. The types and geographical distribution of CDM projects are more diversified. In order to improve the sustainable development benefits and social equity of CDM projects, all parties actively explore and develop more CDM projects involving energy efficiency, transportation, architecture, cities and other fields. With the expansion of carbon trading in the domestic market, China attaches importance to the carbon trading market, and analyzes the domestic carbon emission market. Scholars use CEDI (carbon intensity) as a measure to evaluate carbon dioxide emissions, and all parties actively explore and develop more fields involving energy efficiency, transportation, architecture, cities and so on.

According to Zhao Changle's *Problems and Countermeasures in the Development of China's Carbon Trading Market*, Cai Yuhan's *Research on the Status Quo and Problems of China's Carbon Trading Market* and Lin Yunhua's *Development Status Quo of Carbon Finance Business at Home and Abroad*, at present, China must improve the laws and regulations on carbon trading as soon as possible and establish a good external operation mechanism[1-3]. For example, there are few carbon trading resources available in low-developed areas, and enterprises lack understanding of relevant regulations on carbon trading, which leads to excessive carbon emissions. While operating carbon trading, enterprises lack certain attention to carbon trading derivatives and related development strategies. Among the contents mentioned in the development status of carbon finance business at home and abroad, there are two points worth noting: (1) The international market is too divided, which leads to the inconsistency of management standards, such as the formulation and distribution methods of emission quotas, the regulated industry regulations, whether it is an emission reduction unit, how to identify emission reduction units and trading mechanisms, etc., which makes it difficult to directly cross-trade between different markets, and gradually forms a highly divided international carbon trading market. (2) Excessive transaction costs In the current international carbon trading project market, high transaction costs also have a negative impact on market development, including moral hazard caused by information

asymmetry.

Facing the obstacles in carbon trading business, it is necessary to improve the relevant regulations of carbon trading, unify the trading platform and pricing, control the market segmentation to make the carbon trading market comprehensive, change the tax policies related to carbon trading and moderately reduce the cost of carbon trading.

2. Research Significance

2.1. Theoretical significance

With the continuous development and gradual expansion of the scope of carbon trading, the market value brought by carbon trading is more and more immeasurable, and there are more and more academic studies on carbon trading in China. Scholars often start with the analysis of the impact of carbon trading on enterprises, but most of the studies only focus on the positive impact of carbon trading on enterprises, and rarely analyze the possible negative impact of some enterprises participating in carbon trading.

In order to make this study more theoretical support, this study will be based on the analysis of the double-sided impact of carbon trading on the return on assets of enterprises. Carbon trading (that is, trading of greenhouse gas emission rights) is the certified emission reductions sale and purchase agreement (ERPAs), the basic principle of which is equivalent to that one of the two parties to the contract buys greenhouse gas emission reductions from the other party, and uses the purchased emission reductions to mitigate the greenhouse effect so as to achieve the goal of emission reduction. According to the relevant definitions, carbon trading is a very

effective method to reduce greenhouse gas emissions, and how to affect the return on assets of enterprises while reducing emissions is the focus of this paper.

Therefore, based on the principle of carbon trading, this paper focuses on the impact of carbon trading on the return on assets of domestic private enterprises.

2.2. Practical significance

The continuous change of climate has stimulated the trading vitality of carbon market, and its prospect will be increasingly broad. It can not only trade in the market like other commodities, but also create a new opportunity for investment and financing activities of enterprises and encourage more investors and institutions to participate, so as to accelerate the development of carbon trading market. The government should introduce more perfect policies, laws and regulations, and play an important role in accelerating the development of carbon trading market. The development of carbon trading market also needs the efforts of market institutions and enterprises, as well as more stringent supervision, standardized system and other comprehensive factors. Create a win-win situation in the environment and economy, and finally achieve common economic benefits in many fields.

3. Example Analysis

The following case data is a linear graph of cumulative carbon trading volume and cumulative transaction amount of Shanghai Energy Exchange from July 24th to July 28th, 2023 (data source: Shanghai Environmental Energy Exchange).

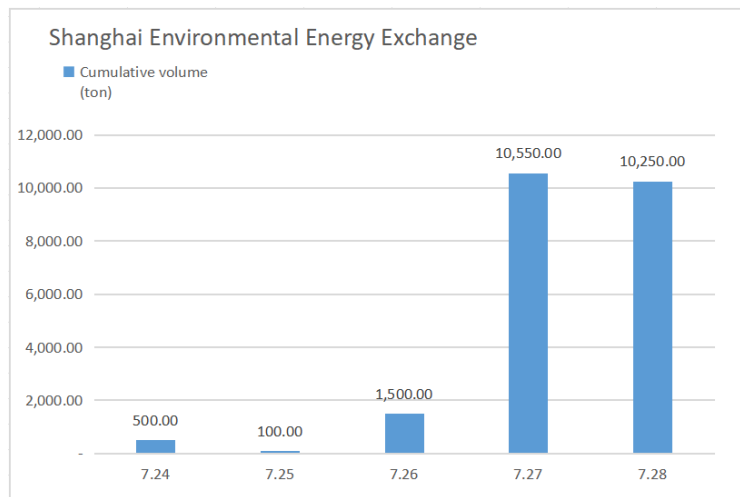


Figure 1. Cumulative volume of carbon trading (ton)

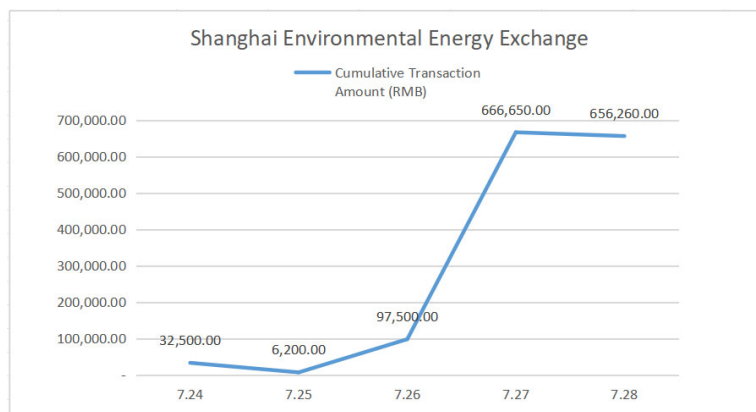


Figure 2. Cumulative Transaction Amount of Carbon Trading (RMB)

As shown in the figure, as of July 28th, the cumulative turnover of Shanghai Environment and Energy Exchange was 1,459,100 yuan, with a cumulative turnover of 22,900 tons.

The average transaction price this week is 63.72 yuan/ton. (July 24-July 30) This week, the trading activity of Shanghai carbon market decreased, the volume of transactions decreased significantly compared with last week, and the average transaction price increased by 5.11% compared with last week.

There is a one-to-one correspondence between the cumulative transaction volume and the cumulative transaction amount of carbon trading in Shanghai Environment and Energy Exchange, and the trend is in direct proportion. In this research cycle, the cumulative transaction volume and amount first began to decline, and then fell to the trading trough of this cycle on July 25, and then the transaction volume and transaction amount continued to rise. On July 27, the cumulative transaction volume and transaction amount climbed to the peak of this cycle, about 10,500 tons and 666,650 yuan respectively, and then the value tended to be flat.

4. Discussion

From the data analysis of Shanghai Environment and Energy Exchange, it is not difficult to find that carbon trading can bring huge profits to enterprises. From the calculation formula of ROA (ROA: Return on Assets) = net profit/total assets), we can also know that when the net profit gained by enterprises in carbon trading is large enough and the assets invested are infinitely small, the return on assets of enterprises is considerable. And a high amount of carbon trading can undoubtedly bring huge profits to enterprises. According to the relevant carbon trading regulations, the investment can also be controlled within an ideal range. Therefore, according to this theory, enterprises can undoubtedly obtain a higher return on assets in carbon trading. But why do only some enterprises participate in carbon trading activities and earn profits, instead of all enterprises actively responding to them?

The domestic carbon trading market is a huge cake for the whole China market. Although China has great carbon emission potential, there are also many problems, such as uneven distribution of resources, and the fragmentation of carbon trading market is a typical example. This paper discusses the development of carbon trading market in China and the current situation of international carbon trading, and puts forward some suggestions. For example, establish a unified market, speed up personnel training, speed up the construction of intermediary institutions, actively participate in price setting and rule making. These measures will help

China to develop the carbon trading market more smoothly. According to the current situation, the national society is highly concerned about the development of the carbon trading market, and the participation and active role of the China government is conducive to changing from a passive situation to an active one.

China's carbon trading market has been developing rapidly since its birth, but the government and enterprises need to work together to create a fairer trading order and trading environment if the market wants to develop better and enable more enterprises to improve their return on assets in carbon trading activities. Enterprises should seize the existing opportunities, make full use of the obtained resources and strive to create more considerable value in carbon trading; The government should guide financial institutions to actively participate in carbon trading, provide supporting services for carbon trading, speed up the construction of regional carbon trading system, improve the bargaining power of domestic intermediaries, establish and improve laws and regulations and risk assessment system for carbon trading, and finally make full use of CDM projects and international cooperation to adopt clean energy technologies to further improve energy efficiency, reduce emissions and improve the environment.

5. Conclusion

To some extent, the development of domestic carbon trading market is closely related to government policies and marketization. The government needs to introduce a perfect carbon trading market supervision mechanism as soon as possible, and the carbon trading market and enterprises should carry out comprehensive development of carbon trading. At the same time, strengthening the unification of market and platform, improving the liquidity and supervision mechanism of carbon trading market, and enhancing enterprises' awareness of carbon trading regulations are also the keys to the future development of China carbon trading market.

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