

Research on Accounting Treatment of China's Carbon Emission Right under Low Carbon Economy

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Abstract: Carbon accounting plays an important role in the balance between economic development and environmental protection. It is an effective tool to push enterprises to reduce emission. Under the guidance of the carbon peaking and carbon neutrality, along with the establishment and development of China's carbon emission trading market, the Ministry of Finance also issued the Interim Provisions on Accounting Treatment of Carbon Emission Trading to guide the standardized accounting treatment of relevant businesses of key emission enterprises in China. In this paper, the existing research on carbon accounting was discussed, and the views of the industry on the recognition and measurement of carbon emission quotas before and after the promulgation of the Provisional Provisions were reviewed. Moreover, the shortcomings of the Provisional Provisions were analyzed, hoping to contribute to the improvement of China's carbon accounting system and the development of the carbon emission trading market.

Keywords: Carbon accounting, Low-carbon economy, Carbon emission right, Carbon information disclosure.

1. Introduction

In modern times, with the development of my country's economy, heavy industry and other related industries are also booming. Behind the development of industrial economy is the large emission of greenhouse gases. As the world's largest developing country, my country has played a leading role in many aspects, especially in protecting the environment. At the United Nations Conference in 2020, my country clearly proposed to strive to achieve carbon peak in 2030 and carbon neutrality in 2060, and included it in the development goals in the subsequent National People's Congress. This move is enough to show that my country attaches great importance to environmental protection. In 2011, my country had already started the pilot work of carbon emission trading in seven provinces and cities including Beijing and Shanghai, and started to establish a national carbon market in 2017. After ten years of in-depth research and development, the national unified carbon emission trading market officially started operation on July 16, 2021.

In the current low-carbon economy era, traditional financial accounting is bound to be impacted by many aspects. The public has changed from observing corporate profits to observing corporate responsibilities and fulfillment of responsibilities. At this time, traditional financial accounting can no longer meet the needs of society, and carbon accounting has come into being. The origin of carbon accounting is the international community's concern about climate change (Wang Aiguo, 2012)^[1]. Low-carbon economy and environmental protection are closely linked to the development of our country. Carbon accounting is an important part of low-carbon economy. As early as 2016, my country issued the "Interim Provisions on Accounting Treatment for Carbon Emission Trading Pilot (Draft for Comments)". After three years of trial and solicitation of opinions, my country issued the "Interim Provisions on Accounting Treatment for Carbon Emission Trading" at the end of 2019 and officially implemented it on January 1, 2020. This paper analyzes the development and main viewpoints of carbon accounting in my country, and discusses and analyzes the problems existing in the "Interim Provisions", hoping to create a better atmosphere for my country's carbon accounting

practice.

2. Research Status and Main Viewpoints

2.1 Related Literature Review

Sang Junchao (2010)^[2] believes that carbon accounting is a new subject that confirms and measures a company's low-carbon emission reduction through currency and other physical objects in accordance with the relevant environmental protection laws, with the aim of helping companies reduce emissions and maximize profits. Li Ning (2011)^[3] believes that carbon accounting should include carbon emission accounting and carbon emission rights trading accounting. They have different accounting subjects. The former accounts for the polluting gases emitted by companies in their daily operations, while the latter accounts for the carbon emission quotas bought and sold in the carbon emission rights trading market. Liu Shuang (2013)^[4] believes that carbon accounting is based on carbon footprint, uses currency as a unit of measurement, and uses special scientific and technological means to reflect and supervise the carbon emissions in companies. He also pointed out that the goal of carbon accounting is to meet the information needs of stakeholders for energy conservation, emission reduction and profit maximization in a low-carbon environment. Liu Xiaohai (2018)^[12] believes that carbon accounting is a tool for companies to confirm and measure the gases emitted by companies in accordance with relevant accounting systems under the guidance of the concept of sustainable development, with carbon emission rights as the accounting object. Yuan Guangda et al. (2023)^[20] regard carbon accounting as a branch of environmental accounting. Specifically, it is a series of technologies and measures taken to achieve the country's low-carbon goals. The ultimate goal is to protect the ecology and provide valuable information for corporate economic decisions. Jiang Junsong et al. (2022)^[18] used CiteSpace knowledge graph to analyze relevant literature related to carbon accounting in my country on CNKI as of 2021 and concluded that the development of carbon accounting in my country is closely related to the development of my country's economy and national policies.

2.2 Confirmation and Measurement of Carbon Emission Quotas

Research on the recognition and measurement of carbon emission quotas has always been controversial. Xu Fenglin et al. (2021) ^[5] believe that carbon emission rights meet the definition and characteristics of assets. Since enterprises can realize carbon emission rights in the short term, they can be further recognized as current assets. Since carbon emission rights have no physical form and can be freely traded in the market, they should be recognized as financial assets. Mao Zhengzhen (2015) ^[6] believes that from a cost perspective, carbon emission rights are not suitable for incorporation into existing asset categories such as intangible assets, financial assets, and inventories. Wang Haixia (2018) ^[7] also pointed out that there is no doubt that carbon emission rights meet the attributes of assets, but the existing asset categories cannot realize the classification of carbon emission rights. Carbon emission rights should be classified as a new asset account, and she mentioned that it is inappropriate to measure carbon emission quotas obtained free of charge at historical cost, but using only fair value measurement will increase financial risks, so historical cost and fair value should be combined for measurement. Cao Haijuan et al. (2022) ^[16] believe that the choice of measurement attributes depends on the maturity of the market. With the improvement of the carbon emission trading market, fair value measurement will be more in line with the needs of enterprises and the market.

2.3 Accounting Requirements in the Interim Provisions

The "Interim Provisions" mainly include several aspects related to carbon emission rights trading affairs: 1. It is only applicable to the use and trading of carbon emission rights of enterprises that have applied to become key emission enterprises; 2. Key emission enterprises must set up a special account to account for the carbon emission quotas purchased for a fee, that is, debit "carbon emission rights assets", and no accounting treatment is required for quotas obtained free of charge; 3. When key emission enterprises use purchased carbon emission quotas, they shall be recorded in non-operating accounts, and no accounting treatment shall be made when using quotas obtained free of charge; 4. When key emission enterprises sell and cancel carbon emission quotas, they shall make different treatments according to the different acquisition methods; 5. At the end of the accounting period, the debit balance of "carbon emission rights assets" shall be listed in the "other current assets" item in the balance sheet, and the relevant amount of non-operating income and expenditure accounts shall be listed in the income statement. Financial information and non-financial information related to the quotas shall also be disclosed in the notes to the financial statements.

3. Deficiencies in the Current Accounting Treatment of Carbon Emission Trading in My Country

3.1 Not All Emission Companies are Regulated

The Interim Provisions states that its scope of application only applies to key emission enterprises, but at present, key emission enterprises are a minority after all. Although the

low-carbon economy is still in its infancy, it will be more and more widely used in future life and development, and the scope of application will be larger. In the future, more enterprises will face accounting issues related to carbon emissions. And for non-key emission enterprises, the Interim Provisions are not binding on them, which will leave non-key enterprises with the opportunity to manipulate profits. Therefore, considering the future economic development, the scope of application of carbon emission rights trading should be expanded.

3.2 No Confirmation of Carbon Emission Quotas Obtained Free of Charge

First, carbon emission quotas are formed in past transactions or events, and are expected to bring inflows of economic benefits to enterprises, which meet the definition of assets, and there is a consensus among accounting scholars and institutions at home and abroad to confirm them as assets. In the "Interim Provisions", only carbon emission quotas purchased by enterprises themselves are recognized as carbon emission rights assets, while carbon emission quotas allocated by the government free of charge are not accounted for, including in subsequent use. However, the difference between carbon emission quotas obtained for a fee and carbon emission quotas obtained free of charge is only the source, and both meet the definition of assets. However, carbon emission quotas allocated by the government free of charge are not recorded as an asset, which violates the basic accounting principles, will make accounting information lose comparability, and will also reduce the authenticity of the company's balance sheet. In addition, if the carbon emission quotas allocated by the government free of charge are not accounted for, but are included in "non-operating income" when the company sells this part of the quota, it will inevitably inflate the company's profits, violate the prudence of accounting information, and cause distortion of income statement information.

The quotas allocated by the government free of charge are somewhat similar to government subsidies, and to a great extent they meet the concept of government subsidies, so in the early stages of the development of carbon accounting, we may be able to compare them to government subsidies. With the continuous development and expansion of the carbon trading market, the carbon emission quotas held by enterprises in the future are likely to be used for more than just self-use and sales. The development of the carbon trading market will certainly drive the development of the financial attributes of carbon assets. Therefore, if the free quotas are still not recorded, it will not only violate accounting standards to a certain extent and greatly increase corporate profits, but will also seriously affect the research and development and promotion of carbon financial products and derivatives, which will lead to the slow development of my country's carbon trading market and have an adverse impact on the development of my country's low-carbon economy.

3.3 No Recognition of Carbon Emission Liabilities

In the Interim Provisions, it is not mentioned whether key emission enterprises should recognize this pollution behavior as a liability after carbon dioxide emissions. First of all, the

definition of liabilities is: 1. It is formed by past transactions or events, which just meets the concept that the enterprise purchased carbon emission quotas in the past and received quotas allocated by the government free of charge in the past; 2. It is expected to cause economic benefits to flow out of the enterprise. In the operation process of key emission enterprises, a large amount of carbon dioxide will inevitably be generated, and carbon emission quotas will be needed to perform the contract. The reduction of quotas may lead to a reduction in carbon emission rights assets, which will cause economic benefits to flow out of the enterprise; 3. A real obligation. In fact, when key emission enterprises emit polluting gases, a real performance obligation has been generated. Therefore, from the perspective of the definition of liabilities alone, carbon emission behavior has fully met the conditions for the recognition of liabilities. In addition, if only assets are recognized without liabilities, it may create an atmosphere of relaxed emission reduction in the society, and fail to increase the urgency of enterprises to transform to low-carbon and reduce emissions, which is disadvantageous both from an environmental and economic perspective.

3.4 Problems with the Measurement Method

Whether to use historical cost or fair value to measure carbon emission quotas has always been the focus of experts and scholars studying carbon accounting before the promulgation of the Interim Provisions. In fact, not only in carbon accounting, the entire practical community has different opinions on whether to use historical cost or fair value in accounting. Some scholars believe that my country's financial goals emphasize the reliability of accounting information, so the use of historical cost measurement in practice seems to be more in line with this point, but some scholars believe that from a long-term perspective, that is, my country's economic development can get better and better and occupy a favorable position in the international arena, it is more important to emphasize relevance, and the use of fair value measurement methods can better enhance the vitality of enterprises and markets and promote the vigorous development of my country's economy.

It is clearly stated in the Interim Provisions that the cost of obtaining carbon emission quotas should be confirmed, which means that the Interim Provisions default to using historical cost for measurement. When using historical cost measurement, data acquisition is more real, reliable and easy to obtain, and accounting processing is easier to operate. It seems feasible to use it in the early stage of the carbon emission rights trading market. However, with the development of the carbon emission rights trading market, more companies, institutions and individuals will participate, the trading market will become more active, and the price of quotas will change more frequently. When the price of carbon emission quotas changes frequently during the period of holding by the enterprise, the true value of the assets cannot be reflected by historical costs, which violates the comparability of accounting information to a certain extent. For corporate managers, the timeliness of accounting information is difficult to guarantee. In addition, it is difficult to accurately reflect the risk returns or losses of the enterprise in the current period by measuring the historical cost method, and the data of the balance sheet and income statement are not true, effective and

timely enough for information users. These problems will affect the decision-making and development of enterprises, and are not conducive to improving the enthusiasm of enterprises and the public to reduce emissions.

3.5 Relevant Matters Should be Confirmed as daily Business Activities

In the Interim Provisions, the profit and loss items of key enterprises related to carbon emission quotas are included in "non-operating expenses" and "non-operating income", which also means that the Interim Provisions list the carbon emission behaviors of key emission enterprises as non-routine activities, but this is obviously not in line with common sense. In the early stage of the development of the low-carbon economy, most of the enterprises that applied to become key emission enterprises were heavy industrial enterprises such as power generation, steel, and building materials. The carbon emissions of these enterprises constitute a large part of my country's total carbon emissions. However, with the development of my country's carbon emission rights trading market and low-carbon economy, there will be more and more entities trading in the carbon emission rights trading market. In the future carbon market, the main trading entities will probably be divided into two categories, one is the enterprises that emit polluting gases, and the other is investment institutions and individuals who want to pursue returns. Since it is still in the early stage of the development of the carbon emission rights trading market, the public's awareness of carbon emissions is not high and the complicated procedures for applying to become a key emission enterprise have made many enterprises still wait and see. However, with the improvement of national policies and the improvement of public low-carbon awareness, more and more enterprises will be included in the key emission enterprises, and if the scope of application of carbon accounting is to be expanded, more enterprises will trade in the market. In addition, green financial instruments derived from low carbon will also attract more institutions and individuals to invest in order to make profits.

When the number of trading entities in the market increases significantly, from the perspective of enterprises, carbon emissions are necessary to meet the needs of daily production and operation. Since production and operation belong to daily activities, it is contrary to common sense to regard carbon emissions that occur at the same time as production and operation as non-routine business activities. From the perspective of institutions and individuals, the purpose of these speculators participating in carbon emission rights trading is to obtain more benefits. At this time, carbon emission quotas can be compared to trading financial assets and included in investment income. Therefore, no matter from which aspect, it is inappropriate to list carbon emission behavior as non-routine activities, and including it in "non-operating income" and "non-operating expenses" cannot reflect the economic essence of the transaction behavior.

3.6 The Accounting Information Disclosure of Carbon Emission Trading is Not Perfect

Although the Interim Provisions contain requirements for information disclosure by key emission enterprises, those

requirements are too general and not standardized and rigorous enough. At present, the inadequate disclosure of carbon emission rights accounting information seems to be the norm among key emission enterprises, and some key enterprises do not even disclose relevant information at all. The author believes that a large part of the reason for this phenomenon is due to the imperfection of the Interim Provisions and the loopholes in the relevant legislation. In addition, the more important reason is that the low-carbon awareness of enterprises is far from enough, which leads to the lack of attention and inaction of enterprises on carbon information disclosure. If the current key emission enterprises are not active and rigorous enough in disclosing carbon information, it will inevitably hinder the development of carbon accounting in my country. With the development of the carbon emission rights trading market, the subjects and scale of the transactions will be more and wider, which will be a greater challenge for the accounting treatment and information disclosure of carbon emission rights. The key step to meet this challenge is to improve the current relevant accounting system as soon as possible.

4. Conclusion

In the current low-carbon economy, the traditional financial accounting system will be subject to many intangible and tangible constraints. Carbon accounting has gradually become an important tool for my country to achieve low-carbon emission reduction. In the context of my country's current economic environment and national policies, if we want to accelerate the development of carbon accounting, we must first improve the provisions on the accounting treatment of carbon emission rights trading, which can be updated on the basis of the existing interim provisions. First, we must broaden the scope of application of the "Interim Provisions", second, we must include the carbon emission quotas allocated by the government free of charge into the scope of asset recognition, third, we must clarify the definition of carbon liabilities and confirm carbon liabilities, fourth, we must change to subsequent measurement using fair value this morning, and fifth, we must improve the content of carbon emission rights accounting information disclosure. At the same time, relevant legislation on carbon accounting should also be improved as soon as possible. When policies, systems and laws are becoming more and more standardized, we can improve the public's awareness of low-carbon environmental protection, promote the development of my country's carbon emission rights trading market, increase the awareness and efficiency of corporate emission reduction, and improve my country's voice in international carbon accounting, laying a solid foundation for achieving dual carbon goals.

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