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The Impact of Low-Carbon Transition on Corporate Financial Flexibility

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Abstract: Corporate low-carbon transformation is an essential path for the country to achieve the "dual carbon" goals and high-quality economic development. Investigating the impact of corporate low-carbon transformation has become one of the hot topics in the field of economic and financial studies. Based on a review of existing literature, this paper first organizes different viewpoints and measurement methods related to the economic consequences of low-carbon transformation. It then systematically discusses the current research status and commonly used methods in the study of financial flexibility. Building on the literature review, this paper explores the impact of low-carbon transformation on financial flexibility from the perspectives of financing constraints and the quality of information disclosure, providing insights and directions for further research in this area.

1. Introduction

The global climate crisis is an urgent and pressing issue. While rapid economic development has significantly enriched material and cultural life, it has also brought with it enormous carbon dioxide emissions. This has led to global warming becoming a problem that requires collective action from all countries to address. As the world's second-largest economy and the largest emitter of carbon, China bears a significant responsibility in reducing carbon emissions. On September 22, 2020, President, during the 75th United Nations General Assembly, formally proposed the "dual carbon" goals, which aim to peak carbon emissions by 2030 and strive to achieve carbon neutrality by 2060. These goals have become a fundamental part of China's strategy to combat climate change and secure sustainable development.

The implementation of corporate low-carbon transformation has thus become an essential path for China to achieve its "dual carbon" goals and realize high-quality economic development. However, transitioning to a low-carbon economy inevitably requires technological upgrades and significant financial investment. This presents considerable challenges, particularly in managing cash flow risks, which affect corporate debt levels and financing capabilities[1]. Financial flexibility, which reflects a company's ability to manage financing costs and secure capital, plays a crucial role in navigating these challenges. However, the existing literature does not provide a unified conclusion on the relationship between low-carbon transformation and financial flexibility, leaving ample room for further exploration.

In response, this paper takes into account the importance of achieving the national “dual carbon” goals and summarizes existing research on the economic consequences and influencing factors of low-carbon transformation. The paper also reviews the current state of research on corporate financial flexibility and delves into how low-carbon transformation impacts financial flexibility. Through this study, it enriches the theoretical foundation surrounding low-carbon transformation and financial flexibility, offering important theoretical insights and practical recommendations for the government. These insights can help policymakers develop effective supporting policies that guide businesses in their transition to low-carbon operations, while also maintaining financial stability and promoting sustainable economic development.

This research not only advances our understanding of the interplay between low-carbon transformation and financial flexibility but also provides valuable implications for both policymakers and business leaders aiming to balance environmental and economic objectives.

2. Research on Low-Carbon Transition

Against the backdrop of the "dual carbon" goals, the green and low-carbon transformation has become a new direction for China's economic development. Among them, "low-carbon" refers to lower emissions of greenhouse gases such as carbon dioxide, ozone, nitrous oxide, and methane, with a focus on lower carbon dioxide emissions. The low-carbon transformation of enterprises is the process in which companies shift from a resource-intensive, high energy consumption, and high emission growth model to an environmentally friendly development model characterized by resource efficiency and low carbon emissions.[6]

From existing research, it can be seen that the low-carbon transformation of enterprises increases the funds required for developing green and low-carbon innovative technologies and implementing clean production. Green technology innovation is characterized by large financial investments, long payback periods, and unpredictable risks, which can expose the enterprise's capital chain to certain risks. However, according to Porter's hypothesis, these R&D investments can enhance a company's competitiveness by improving environmental quality and increasing output through technological innovation. Therefore, it is evident that existing studies have not yet reached a unified consensus on the economic consequences of low-carbon transformation. Specifically, research on the economic impacts of enterprise low-carbon transformation can be broadly classified into two opposing views. On one hand, some scholars believe that low-carbon transformation has a significant positive effect on a company's performance in the capital market. CHANG's study suggests that corporate green information disclosure can reduce asset pricing bias and lower corporate risks through two pathways: reducing information asymmetry and influencing future cash flow expectations[2]. Wang Zhi argues that low-carbon transformation has a significant positive impact on a company's ESG performance[3]; Zhou Kuo found that green low-carbon transformation can suppress the risk of stock price crashes[4]; Xu Feng believes that green low-carbon transformation can enhance corporate profitability[5]. On the other hand, some scholars argue that due to environmental regulations, low-carbon transformation cannot improve corporate profitability[3,7].

How can the low-carbon transformation of enterprises be measured? Existing research has made considerable efforts, and the main approaches are as follows: (1) Measuring through the number of green patent applications and granted patents; (2) Using the level of corporate carbon emissions as a proxy variable; (3) Selecting keywords and searching for the frequency of these keywords in the annual reports of listed companies[8].

3. Research on Financial Flexibility

Financial flexibility is an indicator used to measure a company's ability to finance and mobilize

its financial resources in response to uncertain events[9]. It can also be interpreted as a company's ability to quickly recover from cash flow difficulties[10]. Some scholars define financial flexibility as a company's ability to obtain funds at low cost and adjust its capital structure[11]. Existing research has pointed out that when companies face economic uncertainty during their development, they are more likely to retain the ability to quickly allocate existing financial resources to respond to changing economic conditions[12]. During the 2008 financial crisis, companies that held more cash and had greater borrowing capacity faced less financial constraint, which greatly enhanced their ability to seize investment opportunities[13]. Under policy environment uncertainty, financial flexibility also encourages companies to adjust their capital structure to a reasonable level in order to improve their risk-taking ability[14].

As seen above, financial flexibility is a highly desirable ability for enterprises. So, how can companies acquire financial flexibility? Is it always better to have higher financial flexibility? DeAngelo pointed out that companies mainly acquire financial flexibility through three avenues: holding cash, maintaining debt financing capacity, and equity financing capacity. Therefore, corporate financial flexibility is primarily obtained through cash flexibility, debt financing flexibility, and equity financing flexibility[15]. However, in China’s financial system, which is dominated by banks, credit funds are the main source of corporate funding. As a result, companies mainly acquire financial flexibility through debt flexibility and cash flexibility[13,16].

Based on existing research, once financial flexibility is obtained, it is not necessarily better to have a higher level of it. Specifically, excessive financial flexibility suggests overly high cash holdings and debt capacity, which inevitably increases agency costs and leads to principal-agent problems. On the other hand, insufficient financial flexibility means that a company lacks the ability to resist risks and seize favorable investment opportunities, which may result in cash flow difficulties and missed investment opportunities[17].

According to current research conclusions, the measurement of financial flexibility mainly includes the following methods: single-indicator measurement, multi-indicator combined method, and multi-indicator composite method.

The single-indicator measurement method primarily judges the strength of a company's financial flexibility based on a single financial indicator, such as financial leverage or cash holdings. However, this method is relatively one-sided, and therefore, it is not commonly used in current research to determine financial flexibility.

The multi-indicator combined method refers to using two indicators, such as the financial leverage ratio and cash holdings, to assess the level of financial flexibility[16,18]. When cash holdings are high and financial leverage is low, the company's financial flexibility is considered good. On the other hand, when either cash holdings or financial leverage is at a good level, the financial flexibility is considered average.

4. The Relationship between Low-Carbon Transition and Corporate Financial Flexibility

The implementation of green and low-carbon transformation by enterprises is a current trend reflecting businesses’ alignment with national policies. This move not only supports the country’s “dual carbon” goals but also enhances corporate social responsibility. Against this backdrop, such reforms impact enterprises’ financing constraints through various channels.

On one hand, green and low-carbon transition policies signal the government’s commitment to assisting enterprises in this endeavor. To attract more investments from financial institutions and social capital, the government establishes special guiding funds to pool resources, helping enterprises achieve their transformation. Consequently, enterprises' financing channels expand, facilitating a smooth transition to low-carbon operations[19].

Moreover, environmental and social responsibilities are shared not only by the government and enterprises but also by financial institutions like commercial banks. In response to government initiatives, these institutions actively increase financial support for low-carbon transition enterprises. Through financial instruments such as green credit and green bonds, they improve enterprises' financial conditions. As a result, corporate financial flexibility is positively affected, further encouraging enterprises to implement low-carbon transition strategies.

On the other hand, according to the "reputation" effect, enterprises aiming to enhance their reputation will actively fulfill their social responsibilities. Under the influence of national low-carbon transition policies, companies will accumulate more moral capital by improving their environmental responsibilities through green production practices to maintain a positive social image. This can lead to relaxed regulatory constraints, thereby reducing the risks associated with future cash flows.

Once a company commits to a green and low-carbon transition, it becomes more willing to disclose additional environmental information to maintain and promote its strong social image. By enhancing the quality and quantity of environmental information disclosure, the degree of information asymmetry between enterprises and external investors decreases. This boosts the confidence of capital market institutions and small investors, mitigates the risk of stock price crashes, and encourages investors to hold the company's shares. Consequently, the company's financing pressure is further alleviated.

5. Summary and conclusion

Through a review and analysis of relevant literature, it is found that research on both low-carbon transformation and financial flexibility is abundant. At the same time, financing constraints are also a widely discussed topic. The research findings of scholars can be summarized as follows:

Through the induction and review of existing literature, the impact of low-carbon transformation on corporate financial flexibility has been explored. On one hand, low-carbon transformation may increase a company's R&D investment and financial risks; on the other hand, it may enhance the company's competitiveness through technological innovation, which in turn affects financial flexibility. This complexity has made it difficult to form a unified consensus on the economic consequences of low-carbon transformation. The literature also discusses various methods for measuring corporate low-carbon transformation, including green patents, carbon emission levels, and annual report keyword text analysis, providing methodological references for future research.

In terms of financial flexibility, the article synthesizes various scholars' viewpoints, noting that financial flexibility is a key ability for enterprises to respond to economic uncertainty. However, both excessively high and low levels of financial flexibility can lead to problems. The article also discusses the ways in which financial flexibility can be obtained and measured, emphasizing its importance in corporate financing, development, and risk management.

In terms of the impact of low-carbon transformation on corporate financial flexibility, government policies and support from financial institutions have a positive effect. Moreover, a company's social image and the quality of its information disclosure also influence its financing capacity. Therefore, as companies undergo low-carbon transformation, their information disclosure quality improves, and their social image is enhanced. This, in turn, strengthens their financing ability, thus influencing their financial flexibility.

In conclusion, this paper provides a comprehensive analysis of the economic consequences of low-carbon transformation, the theoretical foundations of financial flexibility, its measurement methods, and the relationship between the two. It offers a new perspective for research on low-carbon transformation and financial flexibility. Studying the impact of low-carbon

transformation on corporate financial flexibility holds significant academic value and practical implications for guiding enterprises in their green transformation process.

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