

Research on the Impact of Carbon Information Disclosure Quality on the High Quality Development of Enterprises

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Abstract

China's economy has stepped into the stage of high-quality development from the stage of high-speed growth. At the current stage, vigorously developing the Low-carbon economy and accelerating green innovation are the keys to help China achieve high-quality development. As the main force in the wave of economic and social development, listed companies actively respond to the call for a green economy, reduce carbon emissions, and regulate carbon information disclosure, which will help China successfully achieve high-quality development goals. Starting from the current carbon emission information disclosure system in China and combining with the research status, this article selects data from A-share listed companies in Shanghai and Shenzhen from 2013 to 2020 as a sample to conduct empirical research on the relationship between the quality of carbon information disclosure by listed companies and the high-quality development of enterprises. The aim is to provide reference and basis for guiding and urging enterprises to regulate carbon information disclosure behavior and accelerate their low-carbon transformation, Further contribute to promoting high-quality economic and social development.

Keywords

Quality of Carbon Information Disclosure; High-quality Development of Enterprises; Signalling Theorie.

1. Introduction

In 2020, the Central Committee of the Communist Party of China once again emphasized in the 14th Five Year Plan that in the first five years of the new journey of comprehensively building a socialist modernized country, the economy and society must prioritize the quality of development, with the theme of promoting high-quality development, and face the profound and complex changes faced by China's development environment. In the process of modernization construction in the new era, balancing the relationship between the quality of economic development and the speed of development is of utmost importance. Enterprises are the most active component of the economic market and the micro main body of the economy and society. Achieving high-quality development of enterprises is the foundation for the high-quality development of the entire economic market. Therefore, how to achieve high-quality development of enterprises has gradually become a hot topic in the academic community in recent years.

In the context of the Low-carbon economy development model and the concept of sustainable development, accelerating green transformation and controlling carbon emissions are the key to achieving high-quality development goals for enterprises. Numerous enterprises have actively responded to policy calls, promoted and implemented green strategic transformation. Sinopec completed the Shaanxi Dali wind power project in 2021, and formulated and launched a special plan for hydrogen energy development; Since September 2020, CCCG has been innovating in transportation hub planning and design, as well as in the flexible public

transportation economic model, to promote green upgrading of transportation infrastructure; In order to reduce carbon emissions and consumption, conch cement uses yellow phosphorus slag with lower calcination temperature as a raw material, and vigorously develops biomass to replace traditional fuel systems. With the proposal of the dual carbon goal, the public's attention to low-carbon environmental protection is constantly increasing, and the government is also continuously introducing relevant policies. In 2021, China officially launched carbon emissions trading. In order to urge enterprises to effectively implement low-carbon transformation policies and ensure the healthy and orderly operation of the carbon market, carbon information disclosure by enterprises may shift from voluntary to mandatory. But currently, it seems that China's carbon information disclosure system is not yet sound enough, and most enterprises' participation in carbon information disclosure is not high, and the overall quality of carbon information disclosure is not high. Carbon information disclosure is an important part of a company's green strategic transformation, which will affect its strategic development direction and ultimately affect its high-quality development. Therefore, under the current policy driven and practical background, conducting empirical research on the impact of carbon information disclosure quality on the high-quality development of enterprises, exploring the mechanism of action between the two, can timely improve relevant policies for relevant departments in China, further standardize carbon information disclosure, promote high-quality development of enterprises, and thus play a promoting role in achieving high-quality economic development.

At present, existing literature mainly elaborates on the economic consequences of carbon information disclosure quality from aspects such as capital cost (Li Li et al., 2019), financial performance (Pan Shiqin and Wang Feng, 2019), and enterprise value (Du Xianghong and Wu Yiling, 2016). Macroenvironmental factors such as market environment (Chen Taiyi et al., 2020), environmental regulation (Shi Daqian et al., 2019), and enterprise innovation (Zhao Chenyu et al., 2021) Capital structure (Fan Yuxian et al., 2021) and internal control (Zhang Guangsheng and Meng Maoyuan, 2020) have studied the influencing factors of high-quality development of enterprises, and there are relatively few research results directly studying the relationship between the quality of carbon information disclosure and high-quality development of enterprises. Currently, carbon information disclosure in enterprises is more often treated as one of environmental information disclosure or social responsibility information disclosure, Instead of studying it as an independent variable. In recent years, research in various fields has gradually refined, and carbon information disclosure, as one of its branches, has also attracted the attention of scholars both domestically and internationally. An increasingly comprehensive scoring system has been constructed, providing a research foundation for this project. Exploring the relationship between the quality of carbon information disclosure and the high-quality development of enterprises is very in line with the current background needs, and has high research value, and there is an urgent need to enrich relevant research.

2. Theoretical Analysis and Research Hypotheses

Firstly, from the perspective of signal transmission theory and reputation mechanism, enterprises with effective implementation of environmental policies and relatively standardized carbon emission behavior tend to voluntarily disclose and disclose more carbon emission information. Higher quality carbon information disclosure can more effectively convey the environmental management information of enterprises. Improving the quality of carbon information disclosure can promote information transparency of enterprises, enable the public to better understand the efforts and achievements made by enterprises in low-carbon areas, help enterprises create and enhance a good corporate reputation, establish a

positive image of low-carbon environmental protection, enhance public recognition of corporate social responsibility, obtain reputation resources, and help enterprises improve market competitiveness and development quality. Huang Sujian et al. (2018) defined "high-quality development of enterprises" from two perspectives: target state and development paradigm, and identified seven core characteristics of high-quality development of enterprises, namely social value driven, outstanding resource capabilities, first-class product and service, transparent and open operation, effective management mechanism, excellent comprehensive performance, and good social reputation. Therefore, a high level of environmental information disclosure quality is beneficial for enterprises to achieve high-quality development.

Secondly, from the perspective of stakeholder theory, it emphasizes that enterprises should not only pursue the interests of individual entities, but also pay attention to balancing the overall interests of all stakeholders (Freeman R E, 1984). The development of enterprises not only depends on the capital invested by investors, but also on the heterogeneous resources brought to the enterprise by other stakeholders. Enterprises should not only take responsibility for various stakeholders in economic and legal aspects, but also take corresponding responsibilities in environmental protection and moral aspects. The information disclosed by enterprises should not only have useful value to investors, but also meet the information demands of other stakeholders. Improving the quality of carbon information disclosure by enterprises can help various stakeholders enhance their understanding of the fulfillment of corporate social responsibility, convey positive signals to stakeholders, balance and satisfy the interests of all parties, and help enterprises maintain and enhance a positive image of responsibility and responsibility, thereby having a beneficial impact on their long-term development.

Based on the above analysis, this article proposes hypothesis 1:

H1: The quality of carbon information disclosure is positively correlated with the quality of enterprise development, that is, the higher the quality of carbon information disclosure, the higher the quality of enterprise development.

3. Research Design

3.1. Sample Selection and Data Sources

This article conducts empirical testing based on the data of A-share listed companies in China's Shanghai and Shenzhen stock markets from 2013 to 2020. To ensure the accuracy of the research, the sample data is processed as follows: firstly, the financial enterprise sample is deleted; Secondly, delete ST enterprises and enterprises delisted during the period; Third, reduce the interference of Outlier, and conduct 1% and 99% tail shrinking processing for all microscopic data. The carbon information quality data of this paper is obtained by using Li Li and Liu Quanqi (2016) to score the carbon information disclosure level of sample enterprises using the Content analysis method, and other data are from the Guotai'an Database (CSMAR). In order to avoid the impact of extreme values, this study performed Winsorize treatment on all continuous variables at the 1% and 99% levels. The main data processing and analysis tool used in this article is Stata17.

3.2. Variable Definition

3.2.1. Carbon Information Disclosure Quality (CID).

This paper uses the Content analysis method to score the quality of carbon information disclosure of sample enterprises with reference to Li Li et al. (2016), and builds an evaluation system for the quality of carbon information disclosure of enterprises on this basis.

3.2.2. Quality of Enterprise Development (TFP_LP).

This paper refers to Wu Zhongxin and Wei Jiajia (2022), uses enterprise Total factor productivity to measure the level of high-quality development of enterprises, takes Total factor productivity calculated by LP method as the explained variable, and conducts robustness test with the results calculated by OLS method and OP method.

3.2.3. Control Variables.

The asset liability ratio (Lev), return on equity (Roe), total asset turnover (Ato), cash flow ratio (Cashflow), revenue growth rate (Growth), top five shareholders' shareholding ratio (Top5), and Tobin Q value (Tobin Q) were selected as the control variables.

3.3. Model Construction

To test H1, this article constructs a model as follows:

$$TFP_LP_{i,t} = \alpha_0 + \alpha_1 CID_{i,t} + \sum \alpha_n Controls_{i,t} + \sum year + \sum industry + \varepsilon_{i,t} \quad (1)$$

4. Empirical Results and Analysis

4.1. Descriptive Statistics

The descriptive statistical results of the main variables are shown in Table 1. The average value of the development quality of sample enterprises (TFP_LP) between 2014 and 2020 was 9.776, with a minimum value of 6.050 and a maximum value of 13.050, indicating significant differences. The average carbon information disclosure quality (CID) is 0.070, with a median of 0.045, a minimum value of 0.000, and a maximum value of 0.649, indicating that the overall carbon information disclosure quality of listed companies in China is relatively low, and there are significant differences among different enterprises. Most companies still have significant room for improvement.

Table 1. Descriptive statistics of main variables

Variable	N	Mean	p50	SD	Min	Max
TFP_LP	5692	9.776	9.703	1.146	6.050	13.050
CID	5692	0.070	0.045	0.073	0.000	0.649
Lev	5692	0.483	0.492	0.195	0.077	0.884
Roe	5692	0.079	0.080	0.110	-0.456	0.360
Ato	5692	0.645	0.550	0.431	0.082	2.425
Cashflow	5692	0.056	0.054	0.064	-0.129	0.241
Growth	5692	0.126	0.086	0.304	-0.493	1.711
Top5	5692	0.549	0.548	0.163	0.191	0.913
TobinQ	5692	1.840	1.438	1.188	0.819	7.780

4.2. Regression Result Analysis

The regression results between the quality of carbon information disclosure (CID) and the quality of enterprise development (TFP_LP) of sample enterprises are shown in Table 2. From the results, it can be seen that the regression coefficient of the quality of carbon information disclosure (CID) is 2.690, which is significantly correlated at the 1% level. This indicates that the higher the quality of carbon information disclosure in enterprises, the higher their development quality. The two are significantly positively correlated, and hypothesis 1 is valid.

Table 2. Principal regression test results

Variable	(1)
	TFP_LP
CID	2.690***
	(0.167)
Lev	2.315***
	(0.063)
Roe	2.185***
	(0.113)
Ato	1.125***
	(0.026)
Cashflow	0.438**
	(0.173)
Growth	-0.040
	(0.034)
Top5	0.778***
	(0.063)
TobinQ	-0.163***
	(0.011)
constant	6.976***
	(0.103)
N	5543
r2	0.636
indcd	yes
year	yes

Standard errors in parentheses.

* p < 0.1, ** p < 0.05, *** p < 0.01.

4.3. Robustness Testing

Table 3. Robustness test results

Variable	(1)	(2)
	TFP_OP	TFP_OLS
CID	2.174***	3.619***
	(0.140)	(0.203)
Lev	1.921***	2.921***
	(0.056)	(0.075)
ROE	1.753***	2.460***
	(0.103)	(0.130)
ATO	0.941***	1.111***
	(0.024)	(0.031)
Cashflow	0.461***	1.126***
	(0.153)	(0.207)
Growth	0.028	-0.081**
	(0.032)	(0.041)
Top5	0.554***	1.032***
	(0.057)	(0.076)
TobinQ	-0.150***	-0.229***
	(0.010)	(0.013)
_cons	6.312***	8.860***
	(0.081)	(0.122)
N	5543	5543
r2	0.622	0.619
indcd	yes	yes
year	yes	yes

Standard errors in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01

In order to test the reliability of the regression results and ensure their credibility, this article uses the method of replacing the dependent variable to conduct a new regression test, and the results are shown in Table 3. According to the results in Table 3, the regression coefficient between the quality of carbon information disclosure (CID) and the quality of enterprise development (TFP_OP) is 2.174, which is significantly positively correlated at the 1% level. The regression coefficient between the quality of carbon information disclosure (CID) and the quality of enterprise development (TFP_OLS) is 3.619, which is significantly positively correlated at the 1% level. The above robustness test results are basically consistent with the main regression results.

5. Conclusion and Suggestions

After the above theoretical analysis and empirical testing, the research conclusion of this article is as follows: the quality of carbon information disclosure in enterprises is significantly positively correlated with their development quality, that is, the higher the quality of carbon information disclosure, the higher the quality of enterprise development. In response to the research conclusion, this article proposes the following suggestions. Firstly, in the context of high-quality economic development today, enterprises should increase their attention and investment in green and low-carbon transformation, continuously regulate carbon information disclosure behavior, improve the quality of carbon information disclosure, establish and enhance a good image of enterprises with a high sense of social responsibility, bring reputation resources to enterprises, enhance market competitiveness, and thus contribute to improving the quality of enterprise development. Secondly, with the proposal of the dual carbon target, the Chinese government has introduced a series of environmental protection policies, and relevant departments should actively respond to the national call to promote and implement the implementation of carbon information disclosure related policies. Regulatory authorities should increase their supervision of carbon information disclosure, introduce reward and punishment mechanisms for enterprises' carbon information disclosure behavior, and enhance the awareness and motivation of enterprises to consciously regulate carbon behavior. Thirdly, the China Securities Regulatory Commission should further improve the information disclosure system, accelerate the construction of a carbon information disclosure framework, further expand the scope of enterprises that should disclose carbon information, collaborate with highly authoritative professional rating agencies, continuously improve the carbon information disclosure rating system, improve information management level, and maintain the green and healthy development of the capital market.

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