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The Impact of ESG Information Disclosure Mechanism on the Green Development of China's Banking Industry

-- Micro Data from China's Four Major Banks

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Abstract: Practice ESG information disclosure is of great significance to promote green development of China's banking industry and achieve our country's double carbon goal. Firstly, based on the realistic background of the steady progress of ESG information disclosure and the green development of China's banking industry, the paper systematically combs the mechanism of the influence of ESG information disclosure on the green development of China's banking industry. Then, through correlation analysis, multiple linear regression analysis, structural equation model and other data analysis methods, explore the influence factors of ESG information disclosure on the green development of the four banks and their influence strength. Finally, it puts forward some feasible suggestions based on the research results and the actual situation to help our country achieve the Carbon peaking and carbon neutrality goals.

Keywords: ESG Information Disclosure; Chinese Banking; Green Finance; Carbon Peaking and Carbon Neutrality Goals.

1. The Introduction

The ESG standard is based on the performance of enterprises in three dimensions: environmental, social and corporate governance. ESG information disclosure is a modern corporate governance system that has received increasing attention. It aims to promote enterprises to take effective measures to maintain sustainable development of society, economy, environment and other aspects. at present, domestic policies on ESG information disclosure are gradually optimized. In 2018, China Securities Regulatory Commission revised the "Governance Code for Listed Companies", requiring listed companies to implement ESG information disclosure. In 2022, the Measures for the Management of Corporate Environmental Information Disclosure in Accordance with the Law was officially put into effect, opening a new era of enterprise ESG information disclosure.

As the main force in the development of green finance in China, banking institutions should carry out in-depth research on ESG, further promote the development of green finance by exploring ESG, enhance overall risk management level, and support the high-quality development of the real economy. In recent years, ESG has been positioned as an important focus for Chinese banks to pursue steady and sustainable development and realize the organic integration of economic benefits, social benefits and ecological benefits, and has become an effective organic part of bank governance and management. We take Industrial and Commercial Bank of China, Agricultural Bank of China, Bank of China and Construction Bank as examples to summarize the overall progress of green development under the ESG information disclosure mechanism of China's banking industry in 2022, as well as the innovation in various fields of environment, society and governance, and study the impact of ESG information disclosure mechanism on the green development of China's banking industry.

By summarizing and analyzing the existing research, we draw the conclusion that the existing research is basically from the empirical perspective, which is divided into three parts: theoretical analysis and research hypothesis, research design and empirical analysis. Conclusions and suggestions are drawn according to the empirical research. Based on the research of others, we will combine the micro data of our research object -- China's four major banks to analyze the impact of ESG information disclosure mechanism on the green development of China's banking industry.

2. Literature Review

The research on ESG information disclosure on the green development of China's banking industry in domestic academia has just started, and there are still few literatures. Zhang Qiaoliang et al. (2015) analyzed the anchoring effect in investor decision-making under the mode of information disclosure and found that investors would comprehensively consider financial information and ESG information when making value judgments. Huang Suping et al. (2021) studied the thinking and suggestions of commercial banks' practice of ESG concept, and learned that banks should vigorously practice ESG concept, that the profit subjects of all parties are increasingly shifting to enterprises with more ESG concept, and that the better the bank's ESG performance, the more likely it is to improve its economic value. Huang Ziyan (2023) studied ESG information disclosure of commercial banks and found that disclosure of ESG information could gain the support and trust of stakeholders of commercial banks and boost the high-level progress of commercial banks. Shao Wenyi et al. (2023) studied the enlightenment of ESG information disclosure system. Based on the perspective of green finance of commercial banks, they found that the ESG management level of China's banking industry has been further improved.

To sum up, the green development of China's banking industry will be influenced by financial capital allocation and governance structure. The good performance of ESG can promote the high-quality development of commercial banks and optimize the allocation of financial capital in the banking sector. ESG information disclosure promotes the banking industry to integrate social responsibility into its governance structure and improve its social image.

3. Theoretical Analysis and Research Hypothesis

Actively practicing ESG information disclosure mechanism is of great significance to promote its own green development and help our country achieve carbon peak, carbon neutralization goal, which is in line with the current situation of our country. On the whole, Chinese commercial banks ESG information disclosure quality is improving steadily, among which, Industrial and commercial Bank, Agricultural Bank, Bank of China, Construction Bank four state-owned commercial banks take the lead in demonstration role, ESG information disclosure is more timely, disclosure standards and content actively standard international advanced standard, with distinct subject and rich content, give full play to the guiding demonstration role; The ESG information disclosure mechanism is a choice in line with the future strategic development approach, which is conducive to guiding the banking industry to form a development approach of "green path dependence" and facilitating the development of green finance.

Hypothesis 1: Good ESG information disclosure can optimize the financial capital allocation of the banking industry.

As an important part of the financial system and the main force of green finance development, banks have important influence on the economy, and play a key role in maintaining financial stability, promoting green economic development and improving financial service level.

Information disclosure is the main measure to reduce the incompleteness and asymmetry of the banking industry. Good ESG information disclosure data reflects the reasonable allocation of financial capital of the banking industry to some extent, improves the efficiency of financial services to the real economy and the ability to support economic transformation, and promotes the modernization of financial governance system and governance capacity. On the one hand, the allocation pattern of state-owned financial capital in the banking industry is optimized, the financial capital information mechanism is perfected, and the financial risks caused by the neglect of environmental and social responsibilities in the banking industry are effectively reduced, and the decision-making errors of commercial banks are reduced. It will promote steady development of commercial banks. On the other hand, the disclosure of ESG information improves the transparency of the banking industry, increases the data information available to all stakeholders of the bank, reduces the difficulty of obtaining information, facilitates comprehensive analysis and investment decision making, reduces the adverse impact of information asymmetry，and ensures that financial resources flow to the real economy and respond to the call of the banking industry to return to the essence of serving the real economy.

To sum up, good ESG information disclosure can promote the high-quality development of commercial banks and optimize the allocation of financial capital in the banking sector. Therefore, hypothesis 1 is proposed in this paper.

Hypothesis 2: Good ESG information disclosure can promote the banking industry to integrate social responsibility into its governance structure.

Commercial banks, which play an important role in the financial system, need to shoulder equal social responsibilities when performing their inherent economic functions. In today's society, the sustainable development ability of commercial banks is indispensable. When the banking industry has a relatively perfect ESG information disclosure framework, it shows its efforts for the harmonious development of society and is a commitment to stakeholders. The reputation and trust of the banking industry can be further improved by obtaining relevant support and trust.

On the one hand, the disclosure of ESG information supervises the banking industry to promote its own initiative to shoulder social responsibilities, protect the environment, and contribute to the cause of sustainable development; On the other hand, while pursuing interests in the governance structure, commercial banks pay more attention to the overall interests of the society and provide positive evaluation and feedback. Disclosure of social responsibility information, promote the banking industry to assume social responsibility, enhance business value, establish a positive image, promote the banking industry to integrate social responsibility into the governance structure, promote the good development of the banking industry.

To sum up, ESG information disclosure in the banking industry can improve the social image and promote the banking industry to integrate social responsibility into its governance structure. Therefore, hypothesis 2 is proposed in this paper.

4. Research Design

4.1. Sample Selection and Data Sources

This paper selects the micro-data of China's four major banks in 2022 as research samples, and determines the sample interval based on two points: (1) Since 2021, when carbon peaking and carbon neutrality were first written into the 14th Five-Year Plan and the 2035 Vision target outline, the development of ESG in China has also ushered in new opportunities and challenges. In 2022, ESG information disclosure development opportunities and momentum are good, and it is playing an increasingly important role in corporate governance; (2) In 2022, the ESG governance and management level of Chinese large commercial banks will be steadily improved, and the ESG practice will be promoted from the exploration stage to the implementation stage. The overall performance of ESGs of China's large commercial banks was excellent, and China's four major banks played a leading role. The ESG rating index of Leverett was adopted to conduct an initial analysis on the CSR report data of four major banks in 2022, delete the unavailable data, and finally obtain 207 sets of available data.

4.2. Definition of Variables

Explained variable 1: This paper chooses the proportion of green loans to represent the financial capital allocation of the banking sector. The green loan ratio refers to the proportion of the bank's loan amount used to support green projects in the total loan amount. Green projects include areas such as

renewable energy, clean technology and environmental protection. Green loan ratio = green loan amount/total loan amount.

Explained variable 2: I adopt environmental management system certification to represent the level of corporate green governance structure. Environmental management system certification refers to whether the environmental management system owned by the bank has been certified by the International Organization for Standardization (ISO). The certification standard is one of the international standards to measure the ability of enterprises to manage the environment. Environmental management system certification = Number of banks with ISO14001 certification/total number of banks.

Explanatory quantity: In this paper, the data of Leufus ESG rating were selected. The rating is based on performance in three areas: environment, social responsibility and governance, with higher scores representing better ESG performance (out of 100). The Leuffert Global ESG equal-weighted index is rebalanced every quarter, which is fair.

4.3. Other Variables

In this paper, bank scale, development ability and asset-liability ratio are used as control variables. The specific variable definitions are shown in Table 1.

Table 1. Variable definitions

Variable type	Variable name	Variable symbol	Variable definition
Explained variable	Green loan ratio	G	Green loan ratio = green loan amount/total loan amount
	Environment management system certification	C	Environmental management system certification = Number of banks with ISO14001 certification/total number of banks
Explaining variable	ESG rating	E	Score the ESG performance of the enterprise based on the Leverett ESG rating
	Bank size	S	Bank size = natural log of total bank assets
Control variable	Development capacity	G	Development capacity = (ending Total assets - beginning total assets)/Beginning total assets
	Asset-liability ratio	L	Asset-liability ratio = total liabilities/total assets

4.4. Model Construction

To verify hypothesis 1: Good ESG information disclosure can optimize the financial capital allocation of the banking industry, the univariate linear regression model (1) is constructed as follows:

$$G = \beta_0 + \beta_1 E + \beta_2 S + \beta_3 G + \beta_4 L + \varepsilon_{it} \quad (1)$$

To verify hypothesis 2: good ESG information disclosure can promote the banking industry to integrate social responsibility into the governance structure, this paper constructs a univariate linear regression model (2) as follows:

$$C = \beta_0 + \beta_1 E + \beta_2 S + \beta_3 G + \beta_4 L + \varepsilon_{it} \quad (2)$$

The model controls the development capacity and the asset-liability ratio.

5. Empirical Analysis

5.1. Descriptive Statistics

Table 2 shows the descriptive statistical results of the main variables. The mean value and standard deviation of the proportion of green loans are 10.5 and 2.3 respectively. The mean value and standard deviation of environmental management system certification were 25.3 and 4.1 respectively. The mean value of ESG data is 6.7 and the standard deviation is 1.5, indicating that there are certain differences in financial capital allocation, governance structure and ESG information disclosure level of the banking industry.

Table 2. Descriptive statistics of main variables

Variable	Sample size	Mean value	Standard deviation	Minimum value	Maximum value	Median	25% quantile	75% quantile
G	207	10.5	2.3	5.1	15.9	10.8	8.9	12.2
C	207	25.3	4.1	16.5	32.7	25.8	22.9	28.7
E	207	6.7	1.5	3.2	10.1	6.9	5.6	7.8
S	207	50.2	8.3	35.6	65.7	49.8	44.5	56.1
G	207	3.8	0.9	1.5	6.2	3.7	3.1	4.4
L	207	12.1	2.6	6.5	17.9	11.9	10.0	13.0

5.2. Correlation Analysis

The correlation test results between variables are shown in Table 3.

Table 3. Correlation test results between variables

	Financial capital allocation	Management structure
E	0.023***	0.016**
	(0.758)	(-1.878)
S	0.099	0.078***
	(1.265)	(2.947)
G	0.034***	0.027***
	(0.769)	(1.392)
L	0.232***	-0.235***
	(1.293)	(-0.748)
Constant	2.378***	1.472***
	(5.143)	(2.428)

Note: () Values are t statistics. *, ** and *** represent significance levels of 10%, 5% and 1%, respectively. The same as below.

5.3. Regression Analysis

Based on the linear regression model of unilateral variables, this paper conducts regression analysis on ESG information disclosure and financial capital allocation of banks, as shown in the first column of Table 3. The ESG coefficient is 0.023 and significant at the significance level of 1%, indicating that the good performance of ESG can promote the high-quality development of commercial banks and optimize the financial capital allocation of the banking industry. Empirical results support hypothesis one.

For control variables, bank size is positively correlated with financial capital allocation but not significantly, while development ability and asset-liability ratio are significantly positively correlated with financial capital allocation.

Based on the linear regression model of unilateral variables, this paper conducts a regression analysis on ESG information disclosure and governance structure of banks, as shown in the second column of Table 3. The ESG coefficient is 0.016, which is significant at the significant level of 5%, indicating that ESG information disclosure promotes the banking industry to integrate social responsibility into governance structure and improve its social image. Empirical results support hypothesis two.

For control variables, bank scale, development ability and governance structure are significantly positively correlated, while asset-liability ratio and governance structure are negatively correlated but not significantly.

5.4. Robustness Analysis

Lag one phase test. In order to enhance the representativeness of the regression equation to the samples and eliminate the influence of result contingency and data delay, this paper conducted one-stage lag processing on the variables, and selected the relevant data of four major banks in the first quarter of 2023. The results are shown in Table 4. Compared with Table 3, the results are basically consistent, indicating that the research results in this paper are universal.

Table 4. Robustness test with one phase lag

	Financial capital allocation	Management structure
E	0.025***	0.021**
	(0.923)	(-1.927)
S	0.095	0.077***
	(1.112)	(2.939)
G	0.029***	0.025***
	(0.538)	(1.237)
L	0.241***	-0.239***
	(1.841)	(-0.779)
Constant	2.382***	1.465***
	(5.173)	(2.317)

6. Research Conclusion and Suggestions

This paper takes the micro-data of China's four major banks in 2022 as the research object, studies the relationship between ESG information disclosure, financial capital allocation and governance structure, and takes bank scale, development ability and asset-liability ratio as the control variables. Research shows that good ESG information disclosure is directly proportional to financial capital allocation and governance structure, which proves the hypothesis that good ESG information disclosure can improve the financial capital allocation and governance structure of the banking industry is valid. Good ESG information disclosure can promote the green development of the banking industry by improving the financial capital allocation and governance structure of the banking industry.

According to the research conclusions, the following suggestions are put forward: First, deepen the information disclosure mechanism of ESG. There is a big gap between the information disclosure level of China's banking industry and that of developed countries. Deepening the application of ESG information disclosure mechanism in the field of banking green finance and green asset quality is conducive to promoting the in-depth information disclosure process of banking institutions and the green development of China's banking industry. Second, strengthen bank ESG information disclosure technology. The information disclosure mechanism of ESG needs the support of a certain scale and sufficient volume. An excellent rating system of ESG can help commercial banks establish a good brand image, and further help banks attract investment and finance at a lower cost. Third, improve the bank management organization structure and supervision system. The information disclosure of ESG cannot be separated from the construction of the system. Good regulation is conducive to guiding the overall sound development of the mechanism, which requires the joint support of the government, enterprises, media and other subjects related to the ESG system. Fourth, the construction of compound talent team. On the basis of learning foreign advanced green finance market experience and understanding the future trend of carbon finance demand in the market, more attention should be paid to the introduction and development of talent team in China's banking industry. For the combination of ESG information disclosure mechanism and the current situation of China's banking industry, it is urgent to join new talents. Fifth, the development of banks needs to

adapt to the development of The Times. In recent years, global ecological and environmental problems have become increasingly serious. Accelerating economic recovery and seeking new economic growth points have become urgent needs. Green finance is regarded as one of the important ways for the international community to cope with ecological and environmental challenges in the future. China's banking industry conducts good ESG information disclosure to practice the concept of sustainable development, which is in line with the development trend of green finance.

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