The Impact of ESG Performance on Bank Credit Decisions: A Case Study of China's Heavily Polluting Enterprises

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Abstract

The central position of China's commercial banks in resource allocation determines their important role in promoting the implementation of sustainable development strategies. However, commercial banks' credit decisions in China are currently faced with problems such as a weak foundation, the lack of an effective mechanism and an imperfect organisational system. To address this issue, this study takes listed companies in China's heavy pollution industry as the research object, and finds that after the release of the Green Credit Guidelines, the ESG performance of heavy polluters has a greater impact on banks credit decisions. Heterogeneity analyses show that the ESG performance of non-state-owned, highly profitable heavy polluters has a significant impact on banks' credit decisions. The mechanistic analysis demonstrates that the good ESG performance of heavy polluters influences bank credit decisions by lowering banks' business risk expectations and reducing banks' ex post monitoring costs. Robustness tests, including replacing independent factors, using the instrumental variable technique, comparing propensity scores, and adding potentially omitted variables, all support the conclusion. In conclusion, through clarifying the internal reasoning behind how highly polluting companies' ESG performance influences bank loan choices, this study contributes to the body of knowledge on the impact of corporate ESG performance on bank credit decisions. In addition, it serves as a guide for banks in developing acceptable credit criteria and corporate strategy decisions, which is critical for optimizing credit resource allocation and supporting high-quality, long-term economic growth.

Keywords: Bank Credit Decisions, Heavy Polluters, ESG Perform

Introduction

In recent years, climate and environmental issues have garnered increasing global attention due to growing concerns over climate change. The effects of climate change, such as melting glaciers, rising sea levels, and frequent natural disasters, are having serious consequences on ecosystems and human health (Antonio, 2009). As environmental degradation, resource depletion, and pollution become more pronounced, the economic implications of these changes are drawing increased interest from scholars worldwide. Financial institutions,

particularly commercial banks, face significant challenges from climate change, which brings both physical and transitional risks that threaten the stability of the financial sector. In response, sustainable development has become a critical focus for the international community (Arora et al., 2018). The concept of sustainable development, introduced at the United Nations' Stockholm Conference, promotes a model that meets present needs without compromising the ability of future generations to meet theirs. This approach emphasizes balancing social, economic, and environmental objectives. Sustainable development has since become a global priority, with countries aligning their efforts to achieve shared goals (Linnér & Selin, 2013). For instance, the Paris Agreement, signed during the 21st United Nations Climate Change Conference in 2015, set long-term targets to limit the global temperature rise to 2°C above pre-industrial levels, aiming for a further reduction to 1.5°C. The United Nations also adopted the 2030 Agenda for Sustainable Development, which includes 17 Sustainable Development Goals (SDGs) that address social, economic, and environmental challenges, such as poverty reduction, improved education, and environmental protection (Seneviratne et al., 2018).

With 193 member states committed to these SDGs, there has been a global shift towards low-carbon, sustainable development models. Supporting these efforts, the Basel Committee on Banking Supervision (BCBS) created a High-Level Working Group on Climate-Related Financial Risks in 2020 to strengthen the banking sector's management of climate-related risks (Iacobuţă et al., 2021). In 2021, at the 26th Conference of the Parties (COP26) in Glasgow, over 100 countries pledged to halt deforestation by 2030. China has also taken significant steps towards sustainable development. In 2015, the State Council issued the "Overall Programme for the Reform of the Ecological Civilisation System," which highlighted the need to accelerate ecological progress (Sun & Nan, 2023). In 2020, China announced its "dual carbon" strategy, committing to peak carbon emissions by 2030 and achieve carbon neutrality by 2060 (Yang et al., 2022). At the 20th National Congress, China reaffirmed its commitment to green development, stressing the importance of balancing human progress with environmental preservation to meet its carbon goals (Kuhn, 2018).

The concept of ESG (Environmental, Social, and Governance) was first introduced by the United Nations Global Compact in its Who Cares Wins report, marking a key shift towards sustainable development (Teixeira Dias et al., 2023). This report outlined six principles and 34 recommendations, urging investors to consider environmental protection, social responsibility, and corporate governance in their decision-making processes. Since then, these principles have evolved into a critical investment framework, helping investors assess the sustainability and operational health of businesses. Over time, the ESG framework has gained global recognition, extending beyond Europe and the United States to become a widely accepted investment system. Leading international asset management institutions have embraced ESG as a core part of their strategy. According to the Global Sustainable Investment Alliance, the global value of ESG assets has grown by 13% in recent years, far outpacing the average 6% growth rate of the broader asset management industry. This trend highlights the growing acceptance of ESG principles among investors worldwide.

In China, the transition towards higher-quality economic growth is increasingly driven by the need for sustainable innovation. China's development strategy, centered on the belief that "green mountains are golden mountains," promotes green development and the harmonious

coexistence of humans and nature. ESG principles offer a structured approach to evaluating a company's sustainable growth and ethical impact. These principles cover a wide range of factors, including climate change, energy management, waste reduction, gender equality, labor practices, corporate responsibility, and corporate governance. By assessing companies from these multiple dimensions, ESG ratings encourage a balance between economic, environmental, and social benefits, supporting China's green transformation and aligning with the nation's dual-carbon strategy. As China enters a new phase of high-quality growth, financial institutions, particularly commercial banks, should strengthen their ESG frameworks. This includes refining their organizational structures, aligning strategic objectives with ESG goals, investing more in sustainable practices, and improving transparency in ESG disclosures. By doing so, banks can better manage the risks associated with climate change, environmental challenges, and corporate social responsibility while advancing broader goals in green finance and sustainable development.

Research Hypothesis
Impact Analysis of Green Credit on ESG Performance of Enterprises
China's environmental problems are closely related to its industrial structure, with overcapacity in the supply side of high-energy-consuming and high-polluting enterprises and a lack of capital for small- and medium-sized green enterprises leading to serious pollutant emissions. Financial institutions allocate resources through financial services and influence the pattern of industrial development. At present, the financing method of Chinese enterprises occupies the majority of indirect financing, with a high degree of dependence on exogenous funds, and credit resources can be called the "blood" of industrial development. However, there will be contradictions between traditional financial services and environmental protection goals, the essence of which is the contradiction between resource allocation and positive externality gains.

Compared with traditional financial services, green finance can better reconcile the conflict between the two, internalize the negative externalities generated by corporate pollution emissions, and dynamically adjust the opportunity cost of environmental pollution through credit channels (Zhu et al., 2023). He et al. (2022), based on A-share listed polluting enterprises from 2015 to 2018, found that green finance can force enterprises to green social responsibility, especially environmental social responsibility. Yin et al. (2021) found that commercial banks' green credit can improve their green reputation, but it has no significant effect on their performance. Using the Green Credit Guidelines as a quasi-natural experiment, Lv et al. (2023) found that green credit policy can promote the possibility of front-end governance and green office, accelerate the transformation of corporate pollution management from the end to other ways, and significantly improve corporate environmental social responsibility. In conclusion, as an important part of green finance, green credit can be a good solution to environmental problems, and it mainly improves the ESG performance of enterprises through capital formation and information transfer.

In order to secure sufficient credit resources, enterprises will take the initiative to improve their own business behavior and enhance their ESG performance to send signals to financial institutions. Better ESG performance not only reduces financing costs but also enhances market value, and emerging companies will choose energy-saving or energy-alternative projects as their main business in the future, which will have a positive impact on the

sustainability of economic green transformation. Comprehensive related literature can be found; the current stage of domestic research on green credit policy is relatively rich, which provides a solid theoretical basis for this paper. The empirical part of the research of Jain et al. (2017) is scientific and rigorous, which is also an important revelation for the subsequent modeling and empirical analysis of this paper. However, most of the existing research focuses on corporate investment and financing behavior, green innovation, and energy saving and emission reduction, and there is little literature that explores the policy effects of green credits from the perspective of the ESG performance of corporations. Therefore, this paper innovatively explores the relationship between green credit policy and firms' ESG performance and proposes that this policy mainly affects firms' ESG performance through capital formation and information transfer. To summarize, this paper puts forward the following hypotheses:

H1: Green credit will promote the ESG performance of enterprises.

Moderating Effects of Commercial Credit
As an important complement to credit resources, commercial credit is widely used by businesses in all countries. Based on the theory of alternative financing, commercial credit mainly comes from credit rationing, and some enterprises cannot obtain credit resources no matter how high the interest rate they pay due to the limitation of credit threshold. In the supply chain, enterprises and suppliers often have an long-term trade partnerships and have in-depth understanding of the credit status of the enterprise and the prospects and risks of the industry in which the enterprise is located, and the information asymmetry between the two parties is less problematic. Some scholars have found that the substitutability of business credit for bank credit is significant. If the punitive effect of green credit plays a role, enterprises will avoid the financing cost increase caused by green credit through commercial credit, and at the same time, in order to realize the rapid sale of products, suppliers will provide commercial credit to their high-quality customers, which solves the problem of enterprise's shortage of funds to a certain extent and leads to the weakening of the role of green credit.

On the other hand, the business credit of enterprises will affect their environmental social responsibility through financing constraints. Beck (2007) found that business credit has a mitigating effect on the financing constraints of enterprises, especially on the growing enterprises with large capital demand. Higher commercial credit means that firms face fewer external financing constraints, and compared with firms with low commercial credit, firms have better cash flow and lower investment-cash flow sensitivity, which helps firms to form capital for expansion, and the incentives for firms to obtain green credits through higher ESG performance will be weakened. In summary, based on the two scenarios of financing substitution and financing constraints, commercial credit will weaken the promotion effect of green credit on the ESG performance of enterprises. Therefore, this paper proposes the following hypothesis:

H2: Commercial credit will weaken the role of green credit in promoting firms' ESG performance.

ESG Disclosure and Credit Availability

The most important risk that commercial banks need to guard against when making credit decisions is credit risk. Enterprises are highly subjective and hidden when disclosing information about the environment, social responsibility and corporate governance, which also exacerbates the degree of information asymmetry between banks and enterprises and the mismatch of credit resources (Wang et al., 2023). The supplementation of such incremental information can help to visually convey the long-term future business risks and positive information to banks and other creditors. Banks can obtain information about the risks and development opportunities that enterprises may face in the future from ESG information, and their credit decisions are based on more transparent information. Therefore, good ESG information of enterprises can provide certain theoretical basis for banks' decision-making and enhance the credit availability of enterprises themselves (Abramova, 2024).

ESG information focuses on reflecting firms' sustainable development and the health of their long-term operations, which enables banks to make a more intuitive and comprehensive comparative assessment of firms' sustainability and provides banks with a basis for evaluating long-term ESG information can enable banks to make a more intuitive and comprehensive comparative assessment of the sustainability of enterprises and provide a basis for them to evaluate long-term credit risks and thus provide more long-term loans. The higher the quality of corporate ESG disclosure, the more effective it is in conveying long-term strategic signals such as environmental, social responsibility and corporate governance to banks. The more accurately banks and other creditors can predict the future operating performance and cash flow of enterprises, the more likely they are to provide more long-term loans to alleviate the phenomenon of "short-term lending and long-term investment", optimize the debt maturity structure of enterprises, and at the same time provide more credit financing facilities by offering lower loan costs.
H3: Good ESG performance has a positive impact on banks' credit decisions.

Sample Selection and Data Sources
This paper investigates the impact of ESG performance on bank credit decisions by analyzing annual data from listed companies in China's heavy polluting industries, covering the period from 2009 to 2021. The timeframe begins in 2009 to avoid any distortions from the 2008 financial crisis. To ensure the robustness of the analysis, the sample excludes financial firms, ST and ST* firms, non-heavy polluting firms, and those with significant data gaps. To further refine the data, all continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of extreme values. This process results in a final sample of 6,371 observations. The financial data are sourced from the Wind, CSMAR, and CSI databases, while media reports are obtained from the China Research Data Service Platform (CNRDS).

Dependent Variable
Building on prior research, this study assesses bank credit decisions through three key metrics: loan size, loan cost, and loan credit. For loan size, instead of using the firm's loan balance to represent the bank's credit decision for the current year, we use the ratio of newly added bank loans to the book value of total assets. This approach provides a clearer picture of current-year credit decisions. Additionally, the study separately examines the impact of ESG performance on both short-term and long-term loans. Regarding loan cost, the ratio of

interest expense to total borrowings is utilized as the measure. For the loan credit structure, the ratio of corporate credit loans to total borrowings serves as the metric.

Independent Variable
This paper utilizes the ESG rating system to assess the performance of enterprises in environmental, social, and corporate governance aspects. The CSI ESG rating system is employed, which is structured around three core dimensions of ESG. It features a hierarchical evaluation system, consisting of three primary indicators, 14 secondary indicators, 26 tertiary indicators, and over 130 quaternary indicators, as detailed in Table 1. The purpose of this rating system is to provide market participants with comprehensive ESG ratings for Chinese A-share, Hong Kong stock, and other listed companies. The CSI rating system categorizes companies into nine grades, ranging from C to AAA. These grades correspond to a numeric scale from 1 to 9, with 1 representing the lowest ESG performance and 9 the highest. In this paper, we adopt the nine-point scoring system of the CSI ESG evaluation method, where a higher score indicates better ESG performance. This approach allows for a clear and consistent assessment of the ESG performance of enterprises.

Control Variables
Building on existing research, this study accounts for various factors that may influence banks' credit decisions. These factors include firm size (SIZE), return on assets (ROA), book-to-market ratio (BM), leverage ratio (LEV), firm age (AGE), the proportion of shares held by the largest shareholder (Top), total remuneration of top management (Salary), and institutional investor shareholding (Ins). Additionally, the study controls for fixed effects related to both the year and industry to ensure robust results.

Table 1
ESG Evaluation System for Chinese Securities

Variable Type	Variable Name	Definition Independent variable
Dependent variables	Loan	The ratio of a firm's new bank loans to the book value of its total assets for the year
	Credit	
	Debt	
	ESG	Average of the company's scores on indicators at the environmental, social and corporate governance levels
Independent variable	SIZE	The natural logarithm of total assets
	ROA	The net profits to total assets ratio
Control variables	LEV	The total liabilities to total assets ratio
	BM	The Ratio of book equity to market equity
	AGE	The natural logarithm of the total number of years since the company's establishment.
	Top	Shareholding ratio of the largest shareholder
	Salary	Logarithm of total remuneration of the top three members of management
	Ins	Institutional investor shareholding

Analysis and Discussion

Baseline Regression Results

The statistics analysis findings are shown in Table 1.2. The mean ratio of new loans to total assets for listed companies in China's heavy pollution industry is 1.57%, with a standard deviation of 0.0831, as seen for the dependent variables. The ratio of new long-term borrowings to total assets is slightly lower than that of new short-term borrowings. The mean ratio of credit loans is 0.4760, with a standard deviation of 0.3300, ranging from a minimum of 0.0012 to a maximum of 1.0000. This wide range indicates significant variability in credit loan ratios among the heavy polluters in the sample. The mean loan cost is 0.4032, with a standard deviation of 1.6894, suggesting considerable differences in financing costs among the sampled enterprises. The annual mean ESG performance score is 4.0846, with a standard deviation of 0.9604 and a median of 4.0000. This suggests that, overall, the ESG performance of heavy polluting enterprises in the sample is at a medium-low level, with notable variation in how these enterprises fulfill their ESG responsibilities. The descriptive statistics for the remaining control variables are broadly in line with the results of previous research.

Table 2

Results of Descriptive Statistics

VarName	Obs	Mean	SD	Min	P25	Median	P75	Max
Loan	6371	0.0157	0.0831	-0.7233	-0.0225	0.0102	0.0554	0.2613
Loan*s	6371	0.0074	0.0630	-0.4105	-0.0205	0.0046	0.0377	0.1863
Loan*l	6371	0.0061	0.0494	-0.2713	-0.0116	0.0000	0.0199	0.1866
Credit	6371	0.4760	0.3300	0.0012	0.1602	0.4630	0.7763	1.0000
Debt	6371	0.4032	1.6894	0.0156	0.0659	0.0948	0.1790	18.9641
ESG	6371	4.0846	0.9604	1.0000	3.5000	4.0000	4.7500	7.2500
SIZE	6371	22.8025	1.3169	19.3167	21.8247	22.6357	23.6714	26.4523
ROA	6371	0.0362	0.0582	-0.3730	0.0094	0.0308	0.0631	0.2473
LEV	6371	0.4925	0.1787	0.0438	0.3592	0.4968	0.6245	0.9079
BM	6371	35.4304	15.2500	8.0204	23.4962	33.6038	45.7925	75.8434
AGE	6371	14.4429	0.7402	12.0137	13.9542	14.4193	14.8663	16.8819
Top	6371	50.4725	23.1609	0.1013	35.2764	51.7300	67.1077	121.8072
Salary	6371	2.9272	0.3212	1.0986	2.7726	2.9957	3.1355	3.6109

Before conducting the benchmark regression, this paper conducts a difference-in-difference test on the ESG performance of Chinese heavy polluters and the means of loan size, credit loan ratio, and cost of loans by setting the median ESG performance of heavy polluters in the sample at 4.0000, defining firms with ESG performance higher than the median as 1, and firms with ESG performance lower than the Firms with median ESG performance were defined as 0. To find out how the two sets of data differed, a one-sample t-test was utilized. The results of the test are reported in Table 3. The mean values of the loan size related variables for the group 0 with poor ESG performance are 0.0016, the proportion of long-term loans and short-term loans is 0.0005 and 0.0008 respectively, with a credit loan ratio of 0.4230 and a cost of loan ratio of 0.0230, while the loan size related variables for the group 1 with better ESG performance are 0.0210. The proportion of long-term loans and short-term loans is 0.0011 and 0.0005 respectively, with a credit loan ratio of 0.4990 and a cost of loan of 0.2000. As can be seen from Table 3, the loan size, loan cost ratio and credit loan ratio of group 1 with better ESG performance are higher than those of group 0 with poorer ESG performance, which demonstrates the existence of a greater association between ESG performance and bank decision making.

Table 3
Univariate t-test

variable	average value		Difference in values
	0	1	
Loan	0.0016	0.0210	-0.0050**
Loan*s	0.0008	0.0011	-0.0030*
Loan*l	0.0005	0.0005	-0.0010
Credit	0.4230	0.4990	-0.0760***
Debt	0.0230	0.2000	0.0030***

Note: ***, ** and * indicate significant at 1%, 5% and 10% levels, respectively.

Table 4 displays the results of a regression research looking at the impact of Chinese large polluters' ESG performance on bank lending decisions. The findings indicate a significant positive association between loan amount and ESG performance. This relationship is statistically significant at the 1% level, with a coefficient of 0.0035. This shows that enterprises with high ESG performance can obtain greater bank funding. For short-term loan size, the ESG performance is also positive, with a coefficient of 0.0014, and is significant at the 10% level. In comparison, long-term loan size shows a stronger positive relationship with ESG performance, significant with a coefficient of 0.0015. This shows that enterprises with strong ESG performance are more likely to receive long-term loans than short-term loans. When considering the credit loan ratio as the dependent variable, the ESG performance of heavy polluting firms with an estimated coefficient of 0.0370. This indicates that enterprises with superior ESG performance can receive a greater proportion of credit loans. In terms of debt interest expense, the results show a significantly negative relationship with ESG performance at the 5% level, with a coefficient of -0.0532. This indicates that firms with better ESG performance can reduce their loan costs. These findings support Hypothesis 1 and Hypothesis 2, indicating that ESG performance plays a key role in affecting bank credit decisions, and ESG performance impact on the proportion of long-term loans is more significant than the impact on the proportion of short-term loans. Specifically, good ESG performance enables banks to relax lending constraints, allowing firms to access more long-term and short-term loans, increase the total loan amount, and lower borrowing costs, particularly increase in credit borrowing.

Table 4
Baseline Regression Results

	Loan	Loan*s	Loan*l	Credit	Debt
ESG	0.0035***	0.0014*	0.0015**	0.0329***	-0.1002***
	(3.0041)	(1.7965)	(2.3843)	(3.6807)	(-3.2392)
SIZE	0.0015	0.0010	0.0001	0.0426***	0.0299
	(0.9748)	(0.9900)	(0.1686)	(2.8708)	(0.7125)
ROA	0.1185***	0.0584***	0.0610***	-0.0824	1.9223***
	(4.4313)	(2.8621)	(4.5215)	(-0.5776)	(2.9574)
BM	0.0175***	0.0126***	0.0018	-0.1118**	-0.2364
	(2.7705)	(2.8537)	(0.5003)	(-2.1422)	(-1.3028)
LEV	0.1089***	0.0547***	0.0378***	-0.6270***	-1.4528***
	(12.0742)	(8.4648)	(8.9379)	(-8.4649)	(-5.6478)
AGE	0.0001	0.0001	0.0001	0.0019**	0.0067**
	(1.3962)	(1.3828)	(0.9580)	(2.0645)	(2.0911)
Top	0.0020	0.0000	0.0020**	0.0210	0.1550**

	(1.0971)	(0.0359)	(2.2003)	(1.2440)	(2.2856)
Salary	-0.0001**	-0.0001**	-0.0000	0.0004	0.0019
	(-2.1037)	(-2.5508)	(-0.0216)	(0.6282)	(1.2245)
Ins	-0.0237***	-0.0139***	-0.0077***	0.1425***	0.2087**
	(-4.8506)	(-4.1669)	(-3.5693)	(3.2439)	(2.1921)
_cons	-0.0611*	-0.0172	-0.0336*	-1.0566***	-2.3025**
	(-1.8158)	(-0.7442)	(-1.8330)	(-3.4342)	(-2.1303)
Indcode FE*	yes	yes	yes	yes	yes
Year*	yes	yes	yes	yes	yes
N*	6371	6371	6371	6371	6371
Adj. R2*	0.0676	0.0460	0.0356	0.1836	0.0842

Replacement of Independent Variables

To confirm the robustness and reproducibility of the test results, this research re-estimates the original model with the CSI database's median ESG ratings. The results, reported in Table 5, show that the coefficients for ESG ratings remain positive and significant at the 1% level. These findings are congruent with the results of the benchmark regression from prior studies, which reinforces the validity of the conclusions.

Table 0

Replacement of Independent Variables

	Loan	Credit	Debt
ESG	0.0039***	-0.1046***	0.0344***
	(3.1212)	(-3.3345)	(4.1680)
_cons	-0.0544	-2.2753**	-1.0782***
	(-1.5647)	(-2.1085)	(-3.5000)
Ind_FE*	Yes_	Yes_	Yes_
Year_*	Yes_	Yes_	Yes_
N_*	6371	6371	6371
Adj. R_2*	0.0649	0.0839	0.1900

Replacement of Dependent Variables

Following the approach outlined in Ardic's study, this paper measures loan size using the enterprise's new loans for the year, adjusted by total operating income, and the change in value of long-term and short-term loans, also adjusted by operating income. Loan costs are calculated using the net finance charge divided by total debt, where net finance charge includes interest expense, fee expense, and other finance charges. The loan credit structure is assessed by the percentage of secured loans. Table 6 presents the regression results; these findings are congruent with those mentioned in the previous section.

Table 6
Replacement of Dependent Variables

	Loan	Credit	Debt
ESG	0.0315**	-0.0010**	1.6349**
	(2.3132)	(-2.4746)	(2.1729)
_cons	-0.7879	0.0348***	346.3161***
	(-1.5537)	(2.5906)	(13.8298)
Ind_FE	yes	yes	yes
Year	yes	yes	yes
N	6371	6371	6371
Adj. R^2	0.4291	0.3073	0.2298

Instrumental Variables Approach
To address potential issues of endogeneity, which may arise from unidentified factors and reverse causality affecting both corporate ESG performance and bank credit decisions, this study employs an instrumental variable approach. Specifically, the instrumental variable employed is the average yearly ESG performance of other companies in the same industry, excluding the company under consideration. The 2SLS (Two-Stage Least Squares) method is employed to reevaluate the correlation between business ESG performance and bank credit decisions. The rationale for choosing this instrumental variable is that companies in the same industry and year are likely to be influenced by similar policies, leading to some convergence in their ESG ratings. However, the ESG ratings of other companies within the industry are unlikely to directly impact the loan size or cost for a specific company. Table 8 presents the results of the instrumental variable analysis, providing a clearer understanding of the relationship under study.

The weak instrumental variable test results indicate that the F-statistic values are 30.601, 31.473, and 24.335, respectively, with a P-value of 0.0000. These results reject the null hypothesis, confirming that the selected instrumental variables are strong. Additionally, the overidentification Hansen-Sargan J test results, with chi-square values of 0.227 (P=0.634), 0.884 (P=0.347), and 0.745 (P=0.397), support the assumption that the instrumental variables are exogenous. This suggests that the chosen instrumental variable is both theoretically and statistically valid. According to the first-stage regression results of the instrumental variable technique, the average annual ESG performance of the industry is significantly positive compared to the ESG performance of individual enterprises. The second-stage regression findings show that, after controlling for endogeneity, the ESG performance coefficient is still significant at the 5% and 1% levels. This finding is consistent with the earlier conclusions presented in this study.

Adding Potential Omitted Variables
To address potential endogeneity issues arising from the omission of industry-specific factors, firm characteristics associated with heavy pollution, and city-specific factors, this study re-estimates the model with several fixed effects models. These adjustments account for potential omitted variables. The results, presented in Table 7, show that the regression outcomes remain consistent, indicating that the initial findings are robust and unaffected by these additional controls.

Table 7
Adding potential omitted variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ESG	0.0043***	0.0049**	0.0049**	-0.1123***	-0.0745**	-0.0745**	0.0385***	0.0173***	0.0173***
	(3.1795)	(2.4220)	(2.3755)	(-3.4014)	(-2.2788)	(-2.2350)	(4.0093)	(2.8000)	(2.7324)
_cons	-0.0398	-0.4321***	-0.4321***	-2.3748**	-2.4970	-2.4970	-1.1224***	1.9758***	1.9758***
	(-1.1214)	(-3.0716)	(-3.0127)	(-2.1228)	(-1.3251)	(-1.2997)	(-3.5576)	(4.2076)	(4.1059)
Ind_FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year	yes	yes	yes	yes	yes	yes	yes	yes	yes
indcodeyear	yes	yes	yes	yes	yes	yes	yes	yes	yes
id city	yes	yes	yes	yes	yes	yes	yes	yes	yes
citycodeyear	yes	yes	yes	yes	yes	yes	yes	yes	yes
N	6371	6371	6371	6371	6371	6371	6371	6371	6371
Adj. R^2	0.0830	0.0998	0.0607	0.0781	0.2752	0.2437	0.1827	0.6829	0.6649

Mechanism Test Analysis: Corporate ESG Performance Affects Bank Credit Decisions
The financial distress index influences banks' expectations regarding a company's business conditions. According to stakeholder theory and reputation theory, ESG performance can gain the trust and support of stakeholders., reducing volatility and uncertainty in the company's future development, thereby lowering the risk of financial distress. In this study, the financial distress index is used to measure a company's operational conditions and is incorporated into the regression analysis to explore this impact. Column (1) of Table 8 reports the effect of firms' ESG performance on business risk. The regression results show that when the explanatory variable is financial distress (Meton), the ESG performance coefficient is significantly positive at the 1% level. This indicates that firms with higher ESG scores tend to have lower business risk. Furthermore, ESG performance enhances the quality of information disclosure. Theoretical analysis indicates that organizations with good ESG performance are more likely to release positive information to the public. When the explanatory variable is disclosure quality, the regression coefficient of the annual mean ESG score is 0.1398, significant at the 1% level. Media attention is another important factor influencing banks' credit decisions. Firms with higher media attention are more likely to be noticed by banks. Table 8 shows the impact of firms' ESG performance on the number of newspaper financial reports and analyst attention. As illustrated in Table 11, firms with good ESG performance receive more attention from financial media, with an annual mean ESG score of 0.8585. These firms also attract more attention from analysts, with a coefficient of 1.7110. Both of these results are significantly positive at the 1% level. These results support Hypothesis 3.

Table 1
Mechanism testing

	Financial Difficulties	Disclosure Quality	Financial Reports	Analyst Focus
ESG	0.1975***	0.1398***	0.8585***	1.7110***
	(4.1694)	(10.7835)	(3.4987)	(2.7916)
_cons	-0.3505	-0.7534*	-97.1948***	-237.9196***
	(-0.1814)	(-1.9265)	(-11.1102)	(-9.4509)
Ind_FE	yes	yes	yes	yes
Year	yes	yes	yes	yes
N	6371	6371	6371	6371
Adj. R2	0.5081	0.2528	0.4547	0.4246

Conclusions

This paper utilizes quarterly data from 6,000 listed companies in China from 2009 to 2021. First, it measures the impact of ESG factors on the credit risk level of Chinese commercial banks through a two-way fixed-effects model, revealing the relationship between ESG ratings and commercial banks' credit decisions. Second, based on stakeholder theory, legitimacy theory, and reputation theory, this study analyze the general mechanism by which ESG ratings affect commercial banks' credit decisions and examine the role of green credit guidelines on the relationship between ESG ratings and credit risk. Subsequently, an empirical model is built to assess the impact of ESG ratings on the risk of credit decision-making in Chinese commercial banks and to explore the heterogeneity of this impact in terms of firm type, cost-to-income ratio, and size. On this basis, this paper builds a mediation effect model to examine how ESG ratings affect credit risk through the "risk" channel, "information" channel, and "profitability" channel, and further elucidate these mechanisms. Finally, in the context of the release of green credit guidelines, this paper examines the moderating effect of green credit guidelines on commercial banks' ESG ratings and green credit guidelines.

The findings of this paper focus on the following aspects. First, the analysis of commercial banks' ESG ratings finds that green credit guidelines for heavy polluters play a significant role in ESG after 2012. Second, the analysis of the level of credit risk of commercial banks shows that there are significant differences between different types of firms. Specifically, the ESG performance of state-owned firms has a low impact on bank credit decisions, while the ESG performance of private firms has a relatively high impact on bank credit decisions. Third, higher ESG ratings significantly reduce the credit risk faced by Chinese commercial banks. By committing to environmental protection, social responsibility, and corporate governance, these banks enhance their overall reputation in these areas.

Fourth, higher environmental, social, and governance ratings help to reduce commercial banks' credit risk through three main channels: reducing risk exposure, reducing information asymmetry, and improving profitability. In the "exposure" channel, banks can reduce adverse selection and moral hazard problems by taking sustainability considerations into account when granting loans. This practice helps to reduce NPL ratios and prevents the spread of credit risk as it spreads, thereby reducing overall credit risk. In terms of the "information" channel, an improved ESG rating enhances a company's reputation, which in turn reduces information asymmetry between the bank and its customers. The better the reputation, the higher the trust, the greater the stability of the business and the less likely the risk exposure,

thus reducing credit risk. In the "profitability" channel, better ESG ratings increase customer loyalty and strengthen a firm's competitive position. This not only attracts more customers but also leads to higher-quality loans and deposits, positively impacting the bank's profitability.

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