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Research on the Impact of ESG Greenwashing on Audit Fees

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Abstract: *ESG, as a non-financial information used to evaluate a company's environmental, social, and corporate governance performance, is increasingly valued by information users, leading some companies to profit from false ESG information and affect the operation of the capital market. The article selects A-share listed companies from 2013 to 2022 as samples to empirically test the impact of ESG greenwashing on audit fees. The research results indicate that the degree of ESG greenwashing is positively correlated with the amount of audit fees, meaning that the higher the degree of greenwashing, the higher the audit fees. Heterogeneity analysis shows that in the sample group of auditors with strong professional competence and state-owned enterprises, ESG greenwashing has a more significant impact on audit fees.*

Keywords: *ESG greenwashing, audit fees, heterogeneity analysis*

1. Introduction

The connotation of ESG (Environmental, Social and Governance) not only aligns with the concept of green development, but also comprehensively considers and evaluates the long-term value and sustainable development level of enterprises. However, due to the voluntary disclosure of ESG information in China, the lack of mandatory and unified regulatory standards has given managers greater freedom to selectively disclose ESG information, leading to the spread of greenwashing in the capital market[1]. This interferes with the fairness and transparency of the investment market, increases the difficulty for investors to make decisions, and may trigger a series of chain reactions such as intensified fluctuations in corporate profits and obstacles to external fundraising. Therefore, in-depth research on the economic effects and mechanisms of ESG greenwashing in daily management activities of enterprises is of great significance for deepening the understanding of ESG greenwashing and promoting high-quality development of the economic market.

As a bridge connecting enterprises and the market, audit institutions have become increasingly dependent on ESG information as the market's attention to ESG information increases. Faced with companies experiencing ESG greenwashing, auditors may face higher reputation risks and other uncertainties when assessing corporate risks, resulting in higher audit fees to compensate for the risks. At the same time, China's green market is inherently an information asymmetry market, and ESG greenwashing by enterprises exacerbates this phenomenon and damages the trust of external stakeholders in the enterprise. In this situation, auditors need to spend more time and effort verifying the ESG information of the company to ensure the accuracy and reliability of the audit opinion, thereby increasing audit fees. Therefore, this article selects A-share listed companies in China from 2013 to 2022 as the research object, and through empirical testing, explores the impact and mechanism of ESG greenwashing on audit fees, providing some suggestions for enriching the ESG audit system.

2. Theoretical analysis and research hypotheses

ESG greenwashing refers to the excessive exaggeration of a company's achievements in environmental protection, deliberate concealment of its bad deeds, and the characteristic of "too much talk but too little action", such as beautifying carbon emission related data, exaggerating green finance environmental performance, etc[2]. The audit pricing model indicates that audit fees are mainly influenced by audit inputs and risk premium compensation[3]. ESG greenwashing by enterprises can affect auditors' judgment of environmental risks, thereby affecting audit fees. From the characteristic of

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"talking too much and acting too little" in ESG greenwashing, companies tend to disclose more detailed and seemingly positive environmental information to the outside world, generating a "high-quality" ESG report.When companies adopt this environmental information disclosure strategy, if problems arise due to environmental risk exposure, auditors will bear higher reputation risks for failing to accurately identify and disclose the issues. In order to reduce this potential risk, auditors will increase audit investment and adopt stricter and more detailed audit procedures to identify the authenticity of environmental information disclosed by enterprises, thereby increasing audit fees. With the continuous deepening of audit procedures, auditors have found that the environmental behavior of the enterprise does not match the disclosed information during the audit process. In order to reduce reputation and litigation risks, they will be more inclined to issue non-standard audit opinions. The audited enterprise may tend to pay high audit fees to purchase audit opinions in order to maintain its corporate image and attract investors.

On the other hand, ESG greenwashing by companies is driven by management's pursuit of profit maximization, manipulating the disclosure of corporate environmental information, increasing audit risks, and ultimately affecting audit fees. Based on the principal-agent theory, there is often a certain conflict of interest between managers and shareholders[4]. In order to maintain their own position and competitiveness, managers will actively or passively strengthen the profit seeking motivation of the enterprise, greenwashing the ESG information of the enterprise, which can shape a good green image at a lower cost, establish the reputation of the enterprise more easily, and win the favor of investors. However, it will also attract attention from various aspects such as the media and government regulatory departments, making the enterprise in a high state of environmental supervision. In this scenario, the auditor's audit opinion on the enterprise will also receive attention from multiple parties, so the audit institution will bear significant litigation and reputation risks. At this point, auditors will strengthen the identification of potential greenwashing behavior in enterprises, expand the scope of substantive procedural implementation, and thereby increase audit fees in order to control audit risks within a reasonable range. Based on the above analysis, hypotheses are proposed:

H1:The higher the degree of greenwashing of enterprises, the higher the audit fees.

3. Research design

3.1 Sample selection and data sources

This article takes A-share listed companies in China from 2013 to 2022 as the research object, and excludes the financial and insurance industries, ST and ST *, and sample companies with missing data. In the end, this article obtained 9231 valid sample observations. To ensure the accuracy of subsequent empirical analysis, this article performed a truncation process at the top and bottom 1% level on all continuous variables to eliminate possible interference caused by extreme values. All data used in this article are sourced from the Guotai An database.

3.2 Variable definition

The dependent variable is audit fees (Ofee). Audit fees are the fees charged by accounting firms to the audited entity after completing the audit work. This article uses the natural logarithm of the audit fees for the year of listing to measure them.

Explanatory variable:ESG greenwashing (GW). Following Yu's method[5], measure ESG greenness by comparing the difference between a company's ESG disclosure rating and its actual performance. The calculation method is as follows:

$$GW_{i,t} = \frac{ESGdis_{i,t} - \overline{ESGdis}_{i,t}}{\sigma_{dis}} - \frac{ESGact_{i,t} - \overline{ESGact}_{i,t}}{\sigma_{act}} \quad (1)$$

Among them, $ESGdis$ is the rating of corporate information disclosure, measured by Bloomberg ESG score, which reflects the amount of ESG data disclosed by the company to the public; $ESGact$ is the true performance of corporate ESG, measured by the Huazheng rating score.Due to the range of values and industry differences between the two, the ESG greenness index is obtained by subtracting the industry average from the sum and then taking the standardized difference.

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Control variables: Referring to previous research, select asset liability ratio (Lev), return on total assets (Roa), Tobin Q value (TobinQ), company size (Size), company age (Age), whether there are "Big Four" audits (Big4), the shareholding ratio of the largest shareholder (Top1), and dual employment as control variables, while controlling for the influence of industry and year. The specific variable definitions are shown in Table 1.

Table 1 Variable Definition

Type	name	symbol	definition explanation
Explained Variable	Audit fees	Afee	Natural logarithm of annual audit fees
explanatory variable	ESG Greenwashing	GW	The difference between ESG disclosure rating and actual performance
control variable	Asset liability ratio	Lev	Total liabilities at the end of the period/Total assets at the end of the period
	Return on total assets	Roa	Net profit/total assets at the end of the period
	Tobin's Q value	TobinQ	The ratio of asset market value to reset value
	Enterprise size	Size	Take the natural logarithm of total assets
	enterprise age	Age	Company listing period
	Is it the "Big 4" audit	Big4	If the company is audited by the "Big Four", it is assigned a value of 1; otherwise, it is assigned a value of 0
	Shareholding ratio of the largest shareholder	Top1	Shareholding ratio of the top ten shareholders
	duality	Dual	When the chairman and general manager serve concurrently, take 1; otherwise, take 0
	Industry	Industry	Industry dummy variables
	Year	Year	Year dummy variable

3.3 Model settings

To verify hypothesis H1, construct the following formula:

$$AFEE_{i,t} = \alpha_0 + \alpha_1 GW_{i,t} + \alpha_2 Control_{i,t} + \sum Year + \sum Industry + \varepsilon_{i,t} \quad (2)$$

Among them, $AFEE_{i,t}$ represents the annual audit fee of the enterprise i in the year t, $GW_{i,t}$ represents the ESG drift value of the enterprise i in the yea t r, $\mathrm{Control}_{i,t}$ represents the control variable, and $\varepsilon_{i,t}$ is a random disturbance term.

4. Empirical result analysis

4.1 Descriptive statistics

The descriptive statistical results of the main variables are shown in Table 2. The mean audit fee is 14.30, the standard deviation is 0.759, the maximum value is 16.95, the minimum value is 12.61, and the median is 14.22, indicating significant differences in audit fees among different enterprises; The mean, median, standard deviation, maximum value, and minimum value of ESG greenwashing for enterprises are -0.322, -0.421, 1.091, 3.238, and -2.858, respectively. This indicates that the majority of enterprises in China have not undergone greenwashing, but there are significant behavioral differences among them. The country still needs to make efforts to regulate corporate greenwashing behavior. The distribution of other control variables is basically consistent with previous literature, and will not be repeated in this article.

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Table 2 Descriptive statistics of main variables

Variable	N	Mean	SD	Max	p50	Min
Ofee	9231	14.30	0.759	16.95	14.22	12.61
GW	9231	-0.322	1.091	3.238	-0.421	-2.858
TobinQ	9231	2.008	1.542	14.20	1.501	0
Roa	9231	0.0482	0.0630	0.296	0.0400	-0.255
Lev	9231	0.473	0.196	0.927	0.483	0.0592
Board	9231	8.948	1.827	15	9	5
Top10	9231	59.62	15.75	92.84	59.84	21.93
Dual	9231	0.207	0.405	1	0	0
Indep	9231	37.59	5.596	60	36.36	30
Size	9231	23.28	1.271	27.16	23.17	20.32
Soe	9231	0.510	0.500	1	1	0
Big4	9231	0.128	0.334	1	0	0
Age	9231	13.93	7.170	29	14	1

4.2 Benchmark result analysis

Table 3 presents the regression results of the impact of ESG greenwashing on audit fees. Column (1) only includes control variables and does not introduce industry and time effects. The regression coefficient of GW is 0.0537 and significant at the 1% level. After introducing industry and time effects in column (2), although the regression coefficient has decreased, it is still significant at the 1% level. The regression coefficient of GW is 0.0473, indicating that when the degree of ESG greenwashing in enterprises increases, audit fees will significantly increase, which verifies hypothesis H1.

Table 3 Benchmark Regression Results

	(1) Ofee	(2) Ofee
GW	0.0537***	0.0473***
	(11.97)	(11.11)
TobinQ	0.0058	0.0026
	(1.58)	(0.70)
Roa	-0.9760***	-0.8656***
	(-10.57)	(-9.67)
Lev	-0.2208***	-0.0003
	(-6.96)	(-0.01)
Board	-0.0029	-0.0001
	(-0.96)	(-0.04)
Top10	0.0011**	0.0012***
	(3.24)	(3.65)
Dual	0.0314*	0.0229
	(2.53)	(1.94)
Indep	0.0010	-0.0002
	(1.08)	(-0.19)
Size	0.4206***	0.4181***
	(80.63)	(78.16)
Soe	-0.1141***	-0.0935***
	(-10.18)	(-8.19)
Big4	0.5233***	0.5247***
	(33.66)	(35.26)
Age	0.0017*	0.0023**
	(2.27)	(2.92)
_cons	4.5496***	4.5488***
	(39.75)	(35.07)
Industry	No	Yes
Year	No	Yes
N	9231	9213
R2	0.646	0.694
adj. R2	0.645	0.691

* p < 0.05, ** p < 0.01, *** p < 0.001

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4.3 Robustness test

To further verify the robustness of the research findings, this study performed regression analysis after removing specific years, fixing individual effects, and performing lagged treatment. Firstly, the Shanghai Stock Exchange and the Shenzhen Stock Exchange of China joined the United Nations Sustainable Exchange Initiative in 2017, marking a greater role for the two exchanges in supporting sustainable development and promoting green finance construction, while also requiring listed companies within the exchanges to disclose more environmental information. The Beijing Stock Exchange was officially established in 2021, with relatively complete disclosure of ESG information. Furthermore, this article only excludes data from years before 2018 and selects companies listed on the main board for regression analysis., To increase the accuracy of the main effect test and further control for the impact of inherent company characteristics that may not have been considered and do not change over time on the regression results, this paper introduces an individual fixed effects model. Finally, to mitigate the impact of the bidirectional causal relationship between ESG greenwashing and audit fees on empirical testing, this study lagged the explanatory variables by one period and two periods respectively. The above robustness test results are basically consistent with the benchmark regression results, which proves the robustness of the research conclusions in this paper. Due to space limitations, detailed results of robustness testing will not be presented.

4.4 Heterogeneity analysis

4.4.1 Professional ability grouping of auditors

Auditors with strong professional abilities are more familiar with the production and operation processes and risks in various industries, and have higher independence. They pay more attention to the impact of audit quality on their own reputation. In order to minimize the losses caused by audit errors and maintain a good industry image, they will take stricter review measures for potential risk factors and strive to maintain the estimation of audit risks at a stable and controllable level. Therefore, compared to the economic pressure that higher audit fees bring to the audited company, high-level auditors are more concerned about the impact of the audit quality of the business on their own or the company's reputation. Enterprises with a high degree of ESG greenwashing have higher operational and reputational risks. Although high-level auditors have rich experience and strong risk identification abilities, they still adopt strict and in-depth audit procedures to reduce their own audit risks and maintain their professional image.

This article measures the professional competence of auditors by whether a company is audited by the Big 4 accounting firms. If the Big Four provide audit services to enterprises, then Big4 is assigned a value of 1, indicating that auditors have strong professional competence; otherwise, it is assigned a value of 0, indicating that auditors have weak professional competence. The regression results of the grouping are shown in columns (1) and (2) of Table 4. The positive relationship between ESG greenwashing and audit fees is significant at the 1% level in both groups, but the regression coefficient of the strong professional ability audit personnel group is significantly higher than that of the weak professional ability audit personnel group.

4.4.2 Grouping of Property Rights Nature

Due to the special nature of their own property rights, state-owned enterprises have a "model student" expectation for their moral standards among the public. Compared to non-state-owned enterprises, they are also subject to more government supervision and policy constraints, while assuming more social responsibilities. Non state-owned enterprises, on the other hand, aim to maximize profits as their business objective. Their practice of ESG and disclosure of environmental information are mostly aimed at gaining the favor of investors and improving their financing level. Their greenwashing behavior is more seen as a market game, and audit fees reflect more direct financial risks. For auditors, the multi-party supervision of state-owned enterprises means that audit opinions will also receive attention from multiple parties. Once a state-owned enterprise is found to be engaging in ESG greenwashing, if the auditor fails to discover or disclose it, it will bring greater reputation risks than if the audited company is a non-state-owned enterprise, which will raise doubts about the auditor's professional competence and social responsibility.

Therefore, this article speculates that compared to non-state-owned enterprises, the degree of ESG greenwashing in state-owned enterprises has a greater impact on audit fees. This article divides the sample into state-owned holding and non-state-owned holding according to the nature of property

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rights for group testing. The regression results are shown in columns (3) and (4) of Table 4. The positive relationship between ESG greenwashing and audit fees is significant at the 1% level in both groups, but the GW coefficient is 0.0655 in the state-owned enterprise group and 0.0252 in the non-state-owned enterprise group.

Table 4 Heterogeneity Analysis

	(1) Big4=1	(2) Big4=0	(3) Soe=1	(4) Soe=0
GW	0.0669***	0.0352***	0.0655***	0.0252***
	(5.85)	(7.77)	(10.08)	(4.65)
TobinQ	0.0005	0.0021	0.0114	-0.0078
	(0.04)	(0.55)	(1.64)	(-1.90)
Roa	-1.5392***	-0.7255***	-1.3914***	-0.3348**
	(-4.91)	(-7.89)	(-8.81)	(-3.21)
Lev	-0.2172	0.0456	-0.1090*	0.1712***
	(-1.80)	(1.33)	(-2.17)	(3.92)
Board	-0.0089	-0.0010	0.0039	-0.0021
	(-1.22)	(-0.29)	(0.99)	(-0.45)
Top10	0.0037***	0.0009**	0.0023***	0.0006
	(3.53)	(2.67)	(4.29)	(1.40)
Dual	0.0979**	0.0081	0.0522*	-0.0001
	(2.70)	(0.66)	(2.15)	(-0.01)
Indep	-0.0019	-0.0020**	0.0004	-0.0018
	(-0.80)	(-2.04)	(0.29)	(-1.33)
Size	0.5058***	0.3966***	0.4397***	0.3693***
	(31.82)	(69.16)	(55.40)	(48.19)
Soe	-0.0323	-0.1049***		
	(-0.90)	(-8.81)		
Big4			0.5139***	0.5243***
			(24.86)	(24.72)
Age	-0.0065**	0.0043***	-0.0004	0.0052***
	(-2.88)	(5.00)	(-0.29)	(5.08)
_cons	3.5580***	5.0521***	4.0923***	5.3407***
	(9.78)	(36.32)	(21.96)	(27.99)
N	1179	8034	4695	4518
R2	0.776	0.586	0.719	0.679
adj. R2	0.762	0.582	0.714	0.673

5. Conclusion and Implications

This article selects A-share listed companies from 2013 to 2022 as samples to study the impact and mechanism of ESG greenwashing on audit fees. Based on empirical results, the following conclusions are drawn: (1) ESG greenwashing by companies will increase audit fees. (2) After distinguishing the heterogeneity of auditors' professional abilities, it was found that companies that hire auditors with strong professional abilities have a greater impact on audit fees due to ESG greenwashing; After distinguishing the heterogeneity of property rights, it was found that ESG greenwashing by state-owned enterprises has a deeper impact on audit fees.

Based on the above research conclusions, this article proposes the following countermeasures and suggestions: (1) Enterprises should establish ESG long-term development strategies and build a sustainable development system that covers the entire business process. Enterprises should enhance the understanding of ESG concepts and the hazards of greenwashing among managers at all levels through training or case studies. At the same time, ESG risk management should be integrated into the strategic decision-making process, and the ESG impact should be pre evaluated in major investments, mergers and acquisitions, and other activities to avoid the subsequent surge in audit fees caused by greenwashing behavior. (2) Auditors should strengthen their ability to identify substantive ESG risks and establish an ESG risk identification mechanism. Auditors should transcend conventional financial audit boundaries by collaborating with experts in environmental science, social responsibility, and related fields to conduct penetrative testing on high-risk greenwashing sectors. (3) Government departments should establish standardized and rigorous ESG information disclosure standards, and

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implement effective reward and punishment mechanisms to strengthen incentives and guidance for corporate ESG information disclosure. Simultaneously, government agencies should establish a joint disciplinary framework for greenwashing, offering tax breaks, low-interest loans, and other policy incentives to enterprises that proactively disclose ESG information. Audited greenwashing companies should be included in a credit blacklist, with their status linked to market access, financing approvals, and other processes, thereby creating a binding system where "one instance of greenwashing triggers universal restrictions."

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