SIN-CHN SCIENTIFIC PRESS PTE.LTD.

Resource Management and Policy 2025, 1(1), 933.
https://doi.org/10.62617/rmp933

Article

Environmental information disclosure and audit costs

Ze Dong, Zhuofan Shi, Xuanming Zhang*

School of Insurance, University of International Business and Economics, Beijing 100029, China
*** Corresponding author:** Xuanming Zhang, wxczxm20020706@163.com

CITATION

Dong Z, Shi Z, Zhang X. Environmental information disclosure and audit costs. Resource Management and Policy. 2025; 1(1): 933. https://doi.org/10.62617/rmp933

ARTICLE INFO

Received: 27 November 2024
Accepted: 27 December 2024
Available online: 8 January 2025

Abstract: Enterprises, as major consumers of environmental resources and major producers of environmental pollution, should pay attention to the fulfillment of their environmental responsibilities while pursuing economic interests. The auditor needs to provide reasonable assurance that the financial statements of the audited entity are free from the risk of material misstatement, and the audit procedures performed and the audit risk assumed to adjust the audit fee. It remains to be explored whether auditors take the level of environmental information disclosure of audited units into account when pricing audit services. This paper combed and analyzed the relevant literature, took A-share listed companies as the research object, and selected 2013–2022 as the sample period to test the relationship between environmental information disclosure and audit fees and the moderating effect of media attention. The empirical results show that firms' level of environmental disclosure significantly increases audit fees, that media attention reinforces this positive effect, and that the results remain robust to tests such as lagged one-period treatment. Further analysis also reveals that the positive relationship between the level of environmental information disclosure and audit fees is more significant among state-owned enterprises and non-heavily polluting enterprises, and before the implementation of the new Environmental Protection Law. This paper enriches the research on the influence factors of audit fees and makes some contributions to improve the environmental information disclosure system and the audit fee model.

Keywords: environmental information disclosure; audit costs; media attention

1. Introduction

As China's economy shifts to high-quality development, the role of the ecological environment in supporting sustainable economic development is becoming increasingly prominent. General Secretary Xi Jinping and the report of the 20th Party Congress have emphasized the importance of a high-quality ecological environment and green development, and environmental governance has risen to the core of national strategy. As the main body of economic activities, the behavior of enterprises directly affects environmental conditions and economic sustainability, and their environmental information disclosure has become the key to external understanding of the environmental protection situation of enterprises. In order to enhance the standardization of disclosure, the State has introduced a series of policies, from the initial establishment of the environmental information disclosure system to the beginning of the era of mandatory disclosure, and has continued to promote corporate environmental transparency. Environmental information disclosure not only reflects corporate social responsibility, but also affects the high-quality development of the economy and the realization of the "double carbon" goal. At the same time, it serves as an important consideration for auditors in assessing the risk of financial statements and affects the allocation of audit resources and fees. Audit fees, as the core of audit

service transactions, reflect the quality and value of services and market supply and demand, and are strictly regulated by the Government. Relevant laws and regulations are constantly being improved to ensure that audit fees are reasonable and fair. Despite the extensive research on the factors affecting audit fees, the relationship between environmental disclosure and audit fees is less studied and divergent. Therefore, this paper focuses on exploring the association between environmental disclosure and audit fees and its mechanism of action.

This paper extends the existing research in two ways: first, it focuses on the impact of the level of environmental disclosure on audit fees by using the data of A-share companies from 2013–2022, and includes the media attention factor, which enriches the research on the impact factors of audit fees; Second, it explores the economic consequences of environmental information disclosure from an auditing perspective, filling the research gap on its impact on audit fees and providing a reference for subsequent research. This study helps enterprises to recognize the supervisory role of auditors and media on their environmental behavior and actively fulfill their environmental obligations; Auditors realize the impact of the quality of environmental information disclosure on the auditing process and price it reasonably; investors pay attention to corporate environmental awareness and urge corporations to disclose environmental information; and the government and regulatory authorities understand the quality of corporate environmental information disclosure and improve related policies.

2. Literature review

Most scholars believe that the larger the firm size, the higher the audit fee charged. Liu et al. [1] measured firm size by business revenue, number of certified public accountants and number of practitioners, and all three methods confirmed the hypothesis that large firms charge higher audit fees. However, Liu et al. [2] used the number of clients audited in the firm's 2001 annual report to rank the firms in order to differentiate between the top twenty and the non-top twenty, and the results showed that the firm size does not have a significant impact on the audit fee. Industry specialization, most scholars now agree that auditor's industry specialization can increase audit fees. Song et al. [3] classified audit project team industry expertise into two categories: "product-based" and "low-cost", and concluded that audit project teams with "product-based" industry expertise can obtain higher audit fees and firms with "product-based" industry expertise can also charge higher audit fees. They concluded that audit project teams with "product-oriented" industry expertise can obtain higher audit fees, and firms with "product-oriented" industry expertise can also charge higher audit fees. Auditor change, scholars have examined the impact of auditor change on audit fees from different perspectives and basically agree that auditor change increases audit fees. Sharma et al. [4] state that mandatory audit partner rotation leads to significantly higher audit fees and that this effect is more pronounced for non-Big 4 auditors, large clients, and non-industry-specialist audit offices. Kamarudin et al. [5] found that firms from countries with mandatory audit firm rotation requirements and strong auditing and reporting standards charge higher audit fees.

Factors on the part of the auditee, in terms of the firm's own characteristics, existing research suggests that factors such as firm size, business complexity, operational risk, litigation risk, internal control, social status, ESG-rated governance structure, and executive characteristics can have an impact on audit fees. It is generally recognized that the larger the audited entity, the more complex its operations, the higher the operational risk, the more capable its management, the lower its ESG rating, and the more lax its internal controls, the higher the audit fee the auditor will charge it. And, firms with gender-diverse boards and highly narcissistic CEOs will have higher audit fees. With regard to management characteristics, scholars have offered different opinions, with some suggesting that the higher the competence of management, the higher the audit fee, while others have suggested that management's extensive academic experience can reduce audit fees. Kalelkar et al. [6] argued that when the incumbent CEO has financial expertise, the auditor's audit risk is reduced and the auditor charges lower fees. Lai et al. [7], after accounting for self-selection bias and control variables, find that firms with a diverse board of directors by gender are willing to pay more for high-quality audit services and are more likely to choose industry-specialized auditors. Shen et al. [8] found that executives with extensive academic experience reduce a company's manipulable accrued surpluses and improve the robustness of the company's accounting, which reduces the inherent risk of the company, and consequently, reduces the audit fees. Gul et al. [9] found that the higher the management competence in companies facing financial distress, the more capable they are of manipulating financial reports, which increases audit risk and leads to higher audit fees. Accounting information characteristics, it is generally accepted that the more effective the accounting information of a firm, the lower the audit fee. Xie et al. [10] noted that the weaker the comparability of accounting information of audited entities, the higher the audit fee charged by the auditor. Abernathy et al. [11] found that firms with poorer readability of the footnotes in their annual reports have a longer lag time in the audit report, and they pay higher audit fees. The level of corporate innovation, most scholars believe that an increase in the cost of innovation in a company raises audit risk and audit inputs, thus increasing audit fees, while the value of innovation can send good signals and reduce audit fees. Zhang et al. [12] found that the increase in the company's R&D investment on the one hand will directly lead to the auditor to increase the audit procedures, on the other hand, it will increase the risk of material misstatement, the auditor will charge a risk premium, and at the same time, the auditor in order to reduce the risk of checking will correspondingly increase the audit procedures, which ultimately brings about an increase in the audit fee. Bu et al. [13] argued that innovation inputs will enhance corporate risk, and based on audit cost and risk premium considerations, auditors will increase audit fees. External factors, in terms of external factors, scholars have mainly explored the impact of external environmental regulation and media attention on audit fees. It was found that the stricter the external environmental regulations and the higher the media attention to which a company is subjected, the higher the audit fee. Yu et al. [14], using a sample of private, heavily polluted listed companies, found that the stronger the environmental regulations of local governments, the more business complexity and audit risks faced by auditors intensify, and audit fees increase. Using the enactment of China's new Environmental Protection Law as an exogenous shock, Liu et al. [15] find that the new

environmental protection law exacerbates the environmental and auditing risks of heavily polluting firms, and auditors charge these firms higher auditing fees as compensation. Gilley et al. [16] found that the stronger the local environmental regulation, the higher the risk of environmental violations of heavily polluting firms, the higher the operational and financial risks of the firms, and the higher the audit risk premium charged by the auditor.

Regarding the research on the motivation and economic consequences of environmental information disclosure, the motivation of environmental information disclosure can be categorized into internal and external factors. The internal factors mainly include the size of the enterprise, the shareholding structure, the characteristics of the board of directors, the characteristics of the executives and the internal control. External factors include, among others, government policy and oversight, public pressure, capital market liberalization, and the news media. For internal factors, Lewis et al. [17] concluded that firms with newly appointed CEOs and CEOs with MBAs are more likely to disclose environmental information, while firms led by lawyers are less likely to respond. Qiao et al. [18] found that the effect of internal control effectiveness on the quality of environmental information disclosure is significantly positive and this effect is more significant after the release of the Guidelines on the Application of Internal Control in Enterprises in 2011. Li et al. [19] found that the percentage of controlling shareholders' ownership, the degree of equity checks and balances, the percentage of institutional investors' ownership, and the nature of equity all significantly and positively affected the level of environmental information disclosure. Luo et al. [20] found that the level of environmental information disclosure is higher in enterprises with large scale, high pollution level, and low state-owned holding ratio. Lv [21] pointed out that board chain relationship increases the isomorphic pressure of the company, which is conducive to improving the quality of board decision-making, thus enhancing the quality of corporate environmental information disclosure. Meanwhile, the study also found that the board chain relationship has a greater impact on non-financial environmental information disclosure. External factors, most scholars believe that media attention, capital market opening, macro policy guidance, and high level of marketization process can effectively enhance the level of environmental information disclosure of enterprises; However, some scholars have found that online media attention and investor attention reduce the level of environmental information disclosure by firms. Rupley et al. [22] found that firms voluntarily disclose environmental information in order to cope with negative media coverage brought about by the receipt of environmental penalties. Liu et al. [23] found that the level of environmental disclosure of coal companies is significantly and positively related to the strength of the government's macro policies.

The economic consequences of environmental information disclosure, the current research of scholars on the economic benefits brought by environmental information disclosure mainly focuses on financing constraints, enterprise value and other aspects. Financing constraints, it is generally recognized that environmental information disclosure by enterprises can alleviate the financing constraints they are subject to. Some scholars found a dynamic relationship between the two after further research. Ma et al. [24] found that enterprises improve the quality and level of environmental information disclosure can effectively alleviate the financing constraints of heavily

polluting enterprises. Li [25] found that the quality of firms' environmental disclosure is positively related to the size of bank financing and inversely related to the cost of bank financing. Li et al. [26] found that firms with a high level of environmental information disclosure have a better social reputation and are able to attract more loans from financial institutions and promote external financing (mainly debt financing). firm value, existing studies have found that firms' level of environmental disclosure can increase their own value, but may require firms to meet certain conditions for environmental disclosure. Ren et al. [27] categorized corporate environmental disclosure into hard and soft disclosure, and found that only hard disclosure information would have a substantial impact on firm value through the expected cash flow effect. Gerged et al. [28] examined the relationship between corporate environmental disclosure and firm value in the Gulf Cooperation Council (GCC) countries and found a significant positive correlation. Tang et al. [29] found that the improvement in the quality of corporate environmental information disclosure can significantly contribute to the increase in corporate value through three channels: the market process effect, the cash flow effect, and the discount rate effect.

With regard to the research on the relationship between environmental information disclosure and audit fees, scholars hold different opinions on the relationship between the level of environmental information disclosure and audit fees. Some scholars believe that corporate disclosure of environmental information can simultaneously reduce audit inputs and audit risks, thereby reducing audit fees. Kim [30] found that a firm's environmental fulfillment performance reduces the auditor's investment of audit resources in the audit process, which in turn reduces audit costs. However, some scholars say that the manipulability of environmental information increases the risk faced by auditors, and in order to reduce this risk, auditors are bound to invest more resources, which in turn raises audit fees. Zhu et al. [31] argued that the disclosure of socially responsible information has a positive impact on audit fees because auditors need to invest more resources and take greater risks in order to verify the authenticity of the information. He et al. [32] examined the impact of forward-looking environmental information disclosure on audit fees and found that the manipulability of forward-looking environmental information disclosure increases the auditor's risk perception, increases the auditor's workload, and thus enhances audit fees.

2.1. Research methods

Literature research method, reviewing the information literature and organizing and analyzing it, to comprehensively understand the development status of corporate environmental information disclosure and its interaction with audit fees, to form a systematic and valuable theoretical framework, and to provide a theoretical basis for the next stage of research design.

Empirical analysis, this paper puts forward 2 research hypotheses on the basis of literature analysis method, and constructs a research model accordingly, takes the relevant data of China's A-share listed companies from 2013 to 2022 as the research object, and carries out a quantitative research by using the Stata software to analyze

the relationship between corporate environmental information disclosure and auditing fees, and finally draws the relevant conclusions through the analysis results.

2.2. Main contributions

Compared with existing studies, the main contributions of this paper are mainly as follows: this paper investigates the impact of the level of environmental information disclosure on audit fees from an audit perspective and verifies the robustness of the results. Existing studies mostly focus on the internal economic consequences of environmental information disclosure on enterprises, and few explore its impact on audit fees from a third-party perspective. This paper constructs a comprehensive analytical framework that incorporates media attention, explores its impact on the relationship between environmental disclosure and audit fees, and explores the differences in this relationship across different firm characteristics and regulatory environments, providing a new direction for the study of environmental disclosure in the field of auditing.

3. Theoretical analysis and hypothesis

3.1. Environmental disclosure and audit fees of listed companies

Audit fees consist of the cost of audit resources, risk premium and firm profit. Corporate environmental disclosure affects the auditor's judgment of the risk of material misstatement and inspection risk, which in turn affects the audit fee. According to the audit risk model, higher risk implies more investment of audit resources and higher audit fees. Information asymmetry theory states that high-quality environmental information disclosure can reduce information asymmetry, but environmental information is easy to manipulate, and firms may selectively disclose or exaggerate environmental behaviors for opportunistic motives, increasing operational and litigation risks. Therefore, a high level of environmental disclosure may hide higher risks, and auditors need to increase the risk premium and perform more audit procedures, resulting in higher audit fees. Based on this, it is hypothesized that a high level of environmental disclosure increases audit fees. H1: The level of environmental disclosure of listed companies is positively related to audit fees.

3.2. Reconciliation of media attention

According to audit insurance theory, auditors need to obtain information to reduce audit risk. Media attention, as an important source of information, influences auditor judgment. High media attention makes it possible for companies to manipulate environmental disclosures to manage impressions, increasing operational risk and raising the audit risk premium. At the same time, high exposure may also cause firms to reduce disclosure to avoid external pressures, resulting in less information for auditors and higher audit costs. In either case, media attention may reduce the effectiveness of environmental disclosure, increase audit risk and investment, and affect audit fees. Therefore, Hypothesis H2: Media attention reinforces the positive relationship between the level of environmental disclosure and audit fees is proposed.

4. Research design

4.1. Sample selection and data sources

In this paper, the relevant data of China's A-share listed companies from 2013 to 2022 are selected as samples for research and analysis. After obtaining the initial sample, it is screened and excluded according to the following criteria: (1) Excluding firms in the financial sector; (2) Firms that have been treated by ST, *ST, and PT during the sample period are excluded; (3) Sample firms had complete data for the sample period, otherwise they were excluded; (4) Excluding firms that changed their industry during the sample period. After processing, 10,820 sample firms were finally obtained. In order to minimize the possible impact of outliers on the estimation results, this paper shrinks all continuous variables by 1% and 99% on the basis of data exclusion. The data on the level of environmental information disclosure as well as the data on corporate finance and auditing in this paper are obtained from the Cathay Pacific (CSMAR) database, and the data related to media attention are obtained from the China Listed Companies Financial News Database (CFND) in the China Research Data Service Platform (CNRDS).

4.2. Variable selection

4.2.1. Dependent variable

The explanatory variable in this paper is audit fee (LnFee). Referring to scholars such as Liang and Li [33] and Zheng et al. [34], the natural logarithm of the amount of domestic audit fees in the Cathay Pacific (CSMAR) database is used to measure it. In order to minimize the loss of sample size, this paper draws on Zhai et al. [35], and Wang and Wu [36], and uses the amount of audit fees in the current period to measure the explanatory variables. Meanwhile, in order to ensure robustness, this paper lags the explanatory and control variables by one period in the robustness analysis, and the results are still significant.

4.2.2. Independent variable

The explanatory variable of this paper is the level of environmental disclosure (CED). Referring to Wang et al. [37], this paper selects the scoring data of listed companies' environmental management, environmental liabilities, environmental performance and governance, disclosure vehicles, and certification by independent organizations or external awards in the environmental research module of the CSMAR database, and sums them up to measure the level of corporate environmental disclosure. The indicator has a total score of 37, and the higher the score, the higher the level of environmental information disclosure of the enterprise.

4.2.3. Adjust variable

The moderating variable in this paper is media attention (Medianeg). In this paper, we refer to Liu et al. [38] and Zhang et al. [39], who utilize data from the China Financial News Database of Listed Companies (CFND) to measure media attention. CFND covers more than 400 online media (including Hexun.com, Sina Finance, Oriental Fortune, etc.) and more than 600 newspaper publications (including eight mainstream newspapers such as China Securities Journal, Shanghai Securities News,

etc.), with a total of tens of millions of news data, which can fully meet the research needs. Moreover, CFND is able to recognize the positive, neutral, and negative tones of news reports more accurately, with an accuracy rate of up to 85% within the sample.

Considering that compared with some positive reports, negative information reports in the media are more capable of arousing public interest, and that the media's excavation of negative information about listed companies is more conducive to unveiling the risks faced by the companies, and its impact on the auditor's decision-making will be more significant, this paper selects the data of negative reports in the CFND to be analyzed. In order to avoid the effect of extreme values, make the data satisfy normal distribution as much as possible, and take into account the possibility that the company's annual news coverage may be zero, this paper will +1 the number of times that the company receives negative publicity in the year and do the logarithmic treatment to serve as a proxy variable for media attention.

4.2.4. Control variable

Table 1. Variable design.

Type of variable	Variable name	Variable symbol	Variable Definition
Explained Variables	Audit fees	LnFee	Natural logarithm of current audit fees
Explanatory Variables	Level of environmental information disclosure	CED	Referring to the practice of Wang et al. [37] to construct the evaluation system
Moderating variable	Media attention	Medianeg	The number of negative news reports in CNRDS plus one to take the logarithm
Control Variables	Nature of ownership	Soe	1 for state-controlled enterprises, otherwise 0
	Board Size	Board	The total number of board of directors of listed companies takes logarithm
	Years of Listing	Age	The number of years the enterprise has been listed is taken as logarithmic
	Enterprise Size	Size	Natural logarithm of total assets
	Tobin's Q	TobinQ	Market capitalization/total assets
	Gearing Ratio	Lev	Total liabilities/total assets at the end of the year
	Return on Total Assets	ROA	Net profit/total assets
	Enterprise Loss	Loss	Net profit of the year is less than 0 take the value of 1, otherwise take 0
	Type of Audit Opinion	Op	Audit opinion for the standard unqualified audit opinion for 1, otherwise 0
	Firm size	Big4	Accounting firms for the international "Big Four" take the value of 1, otherwise 0
	Time effect	year	Dummy variable, in the year take 1, otherwise take 0
	Industry effect	ind	Dummy variable, in the industry take 1, otherwise 0

This paper controls for the effects of variables such as return on total assets (Roa), gearing (Lev), firm size (Size), year of listing (Age), type of audit opinion (Op), and firm size (Big4) on the results of the study at the three levels of firm finance, corporate governance, and firms. The specific control variables and their measures are shown in **Table 1**. In addition, to exclude the effects of industry and year, this paper sets industry

dummy variables (IND) and year dummy variables (YEAR) to control for industry fixed effects and year fixed effects.

In our model, we recognize the importance of selecting control variables that significantly impact the explanatory power of our results. Prior research has indicated that a company's asset size is a crucial factor influencing audit fees. Consequently, we have incorporated the company's asset size as a control variable in our analysis. Specifically, we measure the company's size using the natural logarithm of total assets (Size). The inclusion of this variable helps us more accurately capture the impact of company size on audit fees and ensures that our results are not attributable to differences in company size. By incorporating this variable into our model, we find that company asset size is significantly and positively associated with audit fees, which aligns with previous literature suggesting that larger companies tend to pay higher audit fees.

4.3. Model construction

Based on the assumptions made through the theoretical analysis above, the samples and variables selected, the following regression model was determined and the treatment of robust standard errors was used to guarantee the robustness of the regression results.

(1) Benchmark model, In order to analyze the impact of the level of corporate environmental information disclosure on audit fees to test hypothesis 1, this paper constructs model (1):

$$\mathrm{LnFee}_{i,t} = \beta_0 + \beta_1 \mathrm{CED}_{i,t} + \beta_2 \mathrm{Controls}_{i,t} + \beta_i \sum \mathrm{year}_i + \beta_j \sum \mathrm{ind}_j + \varepsilon_{i,t} \quad (1)$$

In this model, i denotes the sample firm, t denotes the sample time, $\mathrm{LnFee}_{i,t}$ denotes the audit fee, and $\mathrm{CED}_{i,t}$ denotes the firm's level of environmental disclosure in the year. $\mathrm{Controls}_{i,t}$ denotes all the control variables, $\beta_i \sum \mathrm{year}_i$ and $\beta_j \sum \mathrm{ind}_j$ denote time dummy variables and industry dummy variables, respectively. $\varepsilon_{i,t}$ denotes the randomized perturbation term. If the regression results show that the coefficient β_1 of $\mathrm{CED}_{i,t}$ is significantly positive, It indicates that the sample data supports hypothesis 1 that the level of corporate environmental disclosure is positively related to audit fees.

(2) Moderating effect model, In order to analyze the impact of media attention on the relationship between corporate environmental disclosure level and audit fees to test hypothesis 2, this paper adds the cross-multiplier term of corporate environmental disclosure level and media attention into the model and constructs model (2):

$$\mathrm{LnFee}_{i,t} = \beta_0 + \beta_1 \mathrm{CED}_{i,t} + \beta_2 media_{i,t} + \beta_3 \mathrm{CED}_{i,t} * media_{i,t} + \beta_4 \mathrm{Controls}_{i,t} + \beta_i \sum \mathrm{year}_i + \beta_j \sum \mathrm{ind}_j + \varepsilon_{i,t} \quad (2)$$

In model (2), $media_{i,t}$ denotes the media attention received by the firm, and the definitions of the rest of the variables are consistent with model (1). If the coefficient β_3 of $\mathrm{CED}_{i,t} * media_{i,t}$ is significantly positive, Then it indicates that the sample data supports hypothesis 2 that media attention enhances the positive relationship between environmental disclosure quality and audit fees.

To further control for unobserved company-specific factors that may influence our results, we have included company fixed effects in our model. This approach allows us to control for factors at the company level that may affect audit fees but are

not directly observed in our model. By introducing company fixed effects, we can more accurately estimate the impact of environmental disclosure on audit fees while reducing the likelihood of omitted variable bias. We detail how company fixed effects are incorporated into our regression model in the '4.3 Model Construction' section and present the estimation results including company fixed effects in the '4.4 Empirical Results' section.

4.4. The empirical results

4.4.1. Descriptive statistics

Table 2 shows the results of descriptive statistics for the full sample. **Table 2** shows that the standard deviation of audit fees (LnFee) is 0.704, with a minimum value of 12.71 and a maximum value of 16.44, indicating that there is a wide variation in the audit fees charged by firms to enterprises. The standard deviation of the level of environmental information disclosure (CED) is 7.386, the minimum value is 0, the maximum value is 29, and the median is 6. This indicates that China's A-share listed companies have different attitudes toward environmental information disclosure, and that the market as a whole has a low level of environmental information disclosure. The maximum value of media attention (Medianeg) is 7.408, the median is 4.043, the minimum value is 1.609, and the standard deviation is 1.184, indicating that there is a large difference in the media attention received by the enterprises. The median value of the nature of ownership (Soe) is 0 and the mean value is 0.423, indicating that there are slightly more non-state-owned enterprises than state-owned enterprises in the sample. The mean and median of Board size (Board) and years of listing (Age) do not differ much, indicating that Board size (Board) and years of listing (Age) should basically conform to normal distribution. The standard deviation of enterprise size (Size) is 1.201, and the difference between the maximum value of 11.29 and the minimum value of 5.118 is large, indicating that there is a large difference in the size of the sample enterprises, which is in line with the status quo of listed companies in China. The standard deviation of Tobin's Q is 1.220, with a minimum value of 0.827 and a maximum value of 7.687, indicating that the enterprise value of the sample enterprises is uneven. The mean value of the gearing ratio (Lev) is 0.434, i.e., the average gearing ratio of listed companies in China is 43.40%, indicating that the capital structure of the sample enterprises is basically reasonable. The mean value of return on total assets (ROA) is 0.042, and the median is 0.036, indicating that the profitability of the sample firms is relatively balanced; however, its minimum value of −0.157 and maximum value of 0.209 indicate that the profitability of the firms is polarized. The mean value of the type of audit opinion (Op) is 0.984, which indicates that fewer firms received non-standard audit opinions. The average value of firm size (Big4) is 0.0710, indicating that most enterprises do not engage Big 4 accounting firms for audits.

Table 2. Descriptive statistics.

variable name	sample size	average value	upper quartile	standard deviation	minimum value	maximum values
LnFee	10,820	13.96	13.86	0.704	12.71	16.44
CED	10,820	8.011	6	7.386	0	29
Medianeg	10,820	4.130	4.043	1.184	1.609	7.408
Soe	10,820	0.423	0	0.494	0	1
Board	10,820	2.256	2.303	0.177	1.792	2.773
Age	10,820	2.600	2.639	0.515	1.386	3.401
Size	10,820	8.017	7.967	1.201	5.118	11.29
TobinQ	10,820	1.971	1.574	1.220	0.827	7.687
Lev	10,820	0.434	0.428	0.196	0.0620	0.869
ROA	10,820	0.0420	0.0360	0.0530	-0.157	0.209
Loss	10,820	0.0870	0	0.282	0	1
Op	10,820	0.984	1	0.124	0	1
Big4	10,820	0.0710	0	0.256	0	1

4.4.2. Correlation analysis

Table 3 shows the correlation statistics between the variables and **Table 4** shows the results of the multiple covariance test. As shown in **Table 3**, the Pearson correlation coefficient between audit fees (LnFee) and the level of environmental disclosure (CED) is 0.336 and is significant at the 1% level, which indicates that audit fees are significantly and positively correlated with the level of environmental disclosure, which preliminarily verifies Hypothesis 1. Meanwhile, all other variables were significantly correlated with audit fees (LnFee) at the 1% or 5% level, indicating the need to control for these variables by including them in the model.

Table 3. Correlation analysis.

	LnFee	CED	Medianeg	Soe	Board	Age	Size	TobinQ	Lev	ROA	Loss	Op	Big4
LnFee	1												
CED	0.336***	1											
Medianeg	0.232***	0.045***	1										
Soe	0.225***	0.175***	0.050***	1									
Board	0.193***	0.161***	0.107***	0.288***	1								
Age	0.384***	0.278***	−0.089***	0.463***	0.171***	1							
Size	0.637***	0.419***	0.288***	0.229***	0.238***	0.248***	1						
TobinQ	−0.298***	−0.164***	0.096***	−0.173***	−0.129***	−0.221***	−0.243***	1					
Lev	0.426***	0.125***	0.174***	0.275***	0.136***	0.338***	0.358***	−0.369***	1				
ROA	−0.048***	0.076***	0.078***	−0.095***	0.036***	−0.088***	0.090***	0.292***	−0.351***	1			

Table 3. (*Continued*).

	LnFee	CED	Medianeg	Soe	Board	Age	Size	TobinQ	Lev	ROA	Loss	Op	Big4
Loss	0.025***	−0.047***	−0.0120	0	−0.046***	0.056***	−0.064***	−0.032***	0.139***	−0.584***	1		
Op	−0.022**	0.040***	−0.0130	0.024**	0.00400	−0.019*	0.036***	0	−0.065***	0.143***	−0.153***	1	
Big4	0.441***	0.211***	0.197***	0.120***	0.095***	0.139***	0.287***	−0.080***	0.119***	0.049***	−0.030***	0.017*	1

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

The problem of multicollinearity is more common in practical analysis, but the key is to determine whether it is a complete multicollinearity. In order to avoid possible interference with the results of the study, this paper conducted a multicollinearity test for each variable before regression analysis. In this paper, with the help of the tool of VIF (Variance Inflation Factor) to judge, the test results are shown in **Table 1**, it can be observed that the Variance Inflation Factor of each variable does not break through the threshold of 10, and the mean value of the Variance Inflation Factor is 1.410, which is lower than the threshold value of 2, which indicates that there is no significant problem of multiple covariance among the variables, and the next step of regression analysis can be carried out.

Table 4. Results of multicollinearity test.

Variable	VIF	1/VIF
ROA	1.980	0.504
Size	1.640	0.610
Lev	1.610	0.623
Loss	1.600	0.625
Age	1.490	0.669
Soe	1.390	0.718
TobinQ	1.350	0.743
CED	1.300	0.770
Media Neg	1.230	0.810
Board	1.140	0.875
Big4	1.130	0.884
Op	1.030	0.967
Mean VIF	1.410	

4.4.3. Regressive analysis

In order to test the effect of the level of corporate environmental disclosure on audit fees in Hypothesis 1, a multiple linear regression of model (1) was conducted, and the regression results are shown in **Table 5**. The regression was conducted firstly on the univariate variables, secondly by controlling for the time and industry effects, and finally by adding all the control variables. The results of univariate regression are shown in column (1) of **Table 5**. The results show that the regression coefficient of the audit fee (LnFee) and the level of environmental disclosure (CED) is 0.032, with a t-value of 0.001, which is significant at the 1% level, which suggests that the higher

the level of environmental disclosure of the firms, the higher the audit fee, irrespective of the influence of other factors. Column (2) of **Table 5** shows the regression results after adding time fixed effects and industry fixed effects, and the regression results are basically the same as those in column (1), indicating that the level of corporate environmental information disclosure still has a positive contribution to audit fees after fixing the industry and time. Column (3) is the regression result of adding control variables on the basis of univariate regression, and the result shows that the regression coefficient of audit fee (LnFee) and the level of environmental information disclosure (CED) is 0.002, which is significant at the 1% level, which indicates that, taking into account the effects of control variables such as the nature of property rights (Soe) and the size of the board of directors (Board), the level of environmental information disclosure of the enterprise The higher the level, the higher the audit fee. Finally, column (4) shows the regression results after simultaneously adding time fixed effects, industry fixed effects and all other control variables, which show that the regression coefficient of audit fees (LnFee) and the level of environmental disclosure (CED) is 0.003 with a *t*-value of 0.001, which is still significant at the 1% level, suggesting that after taking into account the time, industry fixed effects and all other control variables, the level of environmental disclosure level is significantly and positively related to audit fees. Summarizing the above regression results, Hypothesis 1 is supported by the sample data.

The regression results of the control variables of model (1) show that the selected control variables basically play a certain role in controlling the model. As can be seen from column (4) of **Table 5**, the regression coefficient of the nature of property rights (Soe) is −0.086, which is significant at the 1% level, indicating that state-owned enterprises have strong resource endowments, their business risks are smaller relative to non-state-owned enterprises, and according to the deep-pocket theory the auditor's auditing risk is also smaller, and therefore the auditing costs are lower. Board size (LnFee) and audit fees (LnFee) are significantly positive at the 1% level, which may be due to the fact that a large board size leads to an increase in agency costs and the phenomenon of "free-riding", which increases the likelihood of making incorrect decisions and the level of risk of material misstatement of the firm, which in turn raises the audit fees. The regression coefficients of the number of years of listing (Age) and the size of the enterprise (Size) are 0.123 and 0.286 respectively, both of which are significantly positive at the 1% level, indicating that the larger the size of the enterprise and the longer the time of listing, the more manpower, material, and financial resources are invested by the auditor in the auditing process, and the higher the auditing fee. Tobin's Q (TobinQ) and audit fees (LnFee) are significantly negative at the 1% level, indicating that the higher the value and growth of the firm, the less risky it is, and the auditor will reduce the audit fees as a result. The regression coefficient of gearing ratio (Lev) is 0.383, which is significantly positive at the 1% level, this is because high gearing ratio implies high financial risk, and to cope with the exacerbated risk, the management is more motivated to manipulate surpluses, which leads to higher audit risk and higher audit fees. The regression coefficient of the firm's loss (Loss) is significantly positive at the 5% level, indicating that when a firm has negative net profit, it faces higher business risk, the higher the likelihood of risk of material misstatement, and the auditor raises his fees. The regression coefficient for the type of

audit opinion (Op) is −0.130, which is significantly negative at the 1% level, suggesting that the issuance of a standard audit opinion by an auditor implies that he or she believes that misstatements are less likely to occur in the audited entity, and that the auditor faces less audit risk and requires less audit input, thus reducing audit fees. The regression coefficient for firm size (Big4) is significantly positive at the 1% level, suggesting that larger firms tend to be more reputation-oriented, and the quality of the audit services they provide tends to be higher, which gives them an advantage in the bargaining process, and therefore they will charge higher audit fees.

Table 5. Regressive analysis.

	(1)	**(2)**	**(3)**	**(4)**
	LnFee	**LnFee**	**LnFee**	**LnFee**
CED	0.032***	0.031***	0.002***	0.003***
	(33.742)	(31.629)	(2.771)	(3.968)
Soe			−0.079***	−0.086***
			(−7.230)	(−7.989)
Board			0.055*	0.081***
			(1.895)	(2.858)
Age			0.252***	0.123***
			(24.643)	(10.357)
Size			0.261***	0.286***
			(51.194)	(53.586)
TobinQ			−0.044***	−0.025***
			(−11.803)	(−6.002)
Lev			0.541***	0.383***
			(18.273)	(12.322)
ROA			0.029	−0.073
			(0.262)	(−0.659)
Loss			0.067***	0.047**
			(3.183)	(2.366)
Op			−0.142***	−0.130***
			(−3.962)	(−3.632)
Big4			0.731***	0.695***
			(31.490)	(30.080)
_cons	13.701***	13.712***	11.038***	11.138***
	(1586.308)	(1605.978)	(135.703)	(135.381)
N	10,820.000	10,820.000	10,820.000	10,820.000
r2	0.113	0.235	0.557	0.598
r2_a	0.113	0.233	0.556	0.597
ind	No	Yes	No	Yes
year	No	Yes	No	Yes

In order to test the effect of media attention on the relationship between the level of corporate environmental information disclosure and audit fees in Hypothesis 2,

multiple linear regression was performed on model (2), and the regression results are shown in **Table 6**. Column (1) in **Table 6** presents the regression results after controlling for time and industry effects, which show that the coefficients on audit fees (LnFee) and the level of environmental disclosure (CED) as well as the cross-multiplier term (Medianeg*CED) are all significantly positive at the 1% level, which preliminarily verifies Hypothesis 2. Column (2) of **Table 6** shows the regression results after adding both time, industry fixed effects, and other control variables, which show that the regression coefficient for audit fees (LnFee) and the level of environmental disclosure (CED) is 0.001, which is significantly positive at the 5% level; The regression coefficient for the audit fee (LnFee) and the cross-multiplier term (Medianeg*CED) is 0.004, which is significantly positive at the 1% level. This result indicates that media attention (Medianeg) will positively moderate the positive relationship between the level of environmental disclosure (CED) and audit fees (LnFee), validating Hypothesis 2.

Table 6. Regression analysis for regulatory effects.

	(1)	**(2)**
	LnFee	**LnFee**
CED	0.021***	0.002**
	(24.302)	(2.249)
Medianeg	0.235***	0.090***
	(37.234)	(17.175)
Medianeg*CED	0.009***	0.004***
	(12.784)	(6.774)
Soe		−0.079***
		(−7.216)
Board		0.096***
		(3.336)
Age		0.107***
		(8.673)
Size		0.260***
		(45.711)
TobinQ		−0.042***
		(−9.365)
Lev		0.318***
		(9.871)
ROA		−0.208*
		(−1.856)
Loss		0.012
		(0.571)
Op		−0.092**
		(−2.439)

Table 6. (*Continued*).

	(1)	(2)
	LnFee	**LnFee**
Big4		0.628***
		(26.670)
_cons	12.816***	11.022***
	(514.657)	(130.865)
N	10,820.000	10,109.000
r2	0.359	0.613
r2_a	0.357	0.612
ind	Yes	Yes
year	Yes	Yes

4.4.4. Robust test

Lagged one-period treatment, taking into account the possible lagged effect of the impact of environmental information disclosure on audit fees, this paper lags one period for the explanatory variables and control variables, and the test results are shown in **Table 7**. The first column in **Table 7** lags the explanatory variable, level of environmental disclosure (CED), and all control variables by one period, and the results show that the regression coefficient of lagged one period between level of environmental disclosure (L.CED) and auditing fees (LnFee) is 0.003, which is significantly positive at the 1% level, and it is consistent with the previous section, i.e., the higher the level of environmental disclosure of the firms, the higher the auditing fees will also be. Column (2) in **Table 7** adds media attention (Medianeg) and the cross product of media attention and environmental disclosure level (Medianeg*CED) to the regression, and the results show that the regression coefficients of the lagged one-period cross multiplier term (L. Medianeg*CED), the environmental disclosure level (L.CED), and the audit fee (LnFee) are significantly positive at the 1% and 5% levels are significantly positive, which is consistent with the previous results, i.e., compared to firms with lower media attention, the level of environmental information disclosure has a more pronounced effect on the enhancement of audit fees in firms with higher media attention It can be concluded that the regression results for the explanatory and control variables lagged one period are consistent with the previous section, again confirming Hypotheses 1 and 2.

Table 7. Lagged regression results for one period.

	(1)	(2)
	LnFee	**LnFee**
L.CED	0.003***	0.002**
	(4.425)	(2.157)
L.Medianeg		0.096***
		(17.773)
L.Medianeg*CED		0.004***
		(6.781)

Table 7. (*Continued*).

	(1)	(2)
	LnFee	**LnFee**
L.Soe	−0.110***	−0.097***
	(−9.586)	(−8.531)
L.Board	0.080***	0.080***
	(2.620)	(2.733)
L.Age	0.111***	0.102***
	(8.949)	(8.381)
L.Size	0.282***	0.248***
	(50.033)	(43.337)
L.TobinQ	−0.023***	−0.039***
	(−4.992)	(−8.588)
L.Lev	0.436***	0.394***
	(13.166)	(12.032)
L.ROA	0.179	0.112
	(1.514)	(0.959)
L.Loss	0.046**	0.010
	(2.062)	(0.480)
L.Op	−0.137***	−0.105**
	(−3.308)	(−2.567)
L.Big4	0.675***	0.610***
	(27.756)	(25.034)
_cons	11.225***	11.153***
	(126.313)	(128.608)
N	9738.000	9738.000
r2	0.580	0.596
r2_a	0.578	0.595
ind	Yes	Yes
year	Yes	Yes

Instrumental variable method test, in order to minimize the possible impact of endogeneity issues such as omitted variables and bidirectional causality on the results of the study, the instrumental variable method (2sls) is used in this paper to conduct a further robustness test of the model to ensure the reliability of the results. In this paper, the results of the explanatory variable environmental information disclosure level lagged one period (L.CED) are regressed as an instrumental variable. The selection of this instrumental variable satisfies the following two conditions: on the one hand, the result of the explanatory variable lagged one period (L.CED) is significantly correlated with the current explanatory variable (CED), which satisfies the correlation requirement of the instrumental variable; On the other hand the level of environmental disclosure in the lagged period is theoretically independent of the random disturbance term, which satisfies the exogeneity requirement of instrumental variables. The regression results of the instrumental variables approach are shown in **Table 8**.

From column (1) of **Table 8**, the regression coefficient between the explanatory variable (CED) and the instrumental variable (L.CED) in this paper is 0.785, which is significantly positive at the 1% level, indicating that the instrumental variable fulfills the requirement of being correlated with the explanatory variable. Column (2) of **Table 8** shows the results of the regression of the instrumental variable as an explanatory variable against the explanatory variable (LnFee), which shows a regression coefficient of 0.004, which is significantly positive at the 1% level, consistent with the results of the previous study. And, the Kleibergen-Paap rk LM statistic of 2196.762 in the non-identification test is significant at the 1% level, indicating that there is no under-identification. In the weak instrumental variable test, the Cragg-Donald Wald F and Kleibergen-Paap rk Wald F statistics are 1.4×10^4 and 9956.218, respectively, which both exceed the 10% critical value of 16.38 for the weak identification test, i.e., there is no weak instrumental variable, and the above results indicate that the instrumental variable selection is valid. Therefore, based on the above analysis, after the instrumental variables test, the regression results are still consistent with the previous paper, indicating that there is no significant endogeneity problem in the model, and again verifying the robustness of the regression results.

Table 8. Test results of instrumental variable method.

	(1)	**(2)**
	CED	**LnFee**
L.CED	0.785***	
	(99.781)	
CED		0.004***
		(4.281)
Soe	0.374***	−0.102***
	(3.653)	(−8.996)
Board	0.205	0.077**
	(0.864)	(2.546)
Age	0.398***	0.130***
	(3.734)	(9.881)
Size	0.488***	0.284***
	(10.556)	(49.652)
TobinQ	−0.010	−0.026***
	(−0.253)	(−5.924)
Lev	0.260	0.404***
	(0.977)	(12.202)
ROA	3.293***	−0.118
	(3.072)	(−1.003)
Loss	−0.179	0.045**
	(−1.027)	(2.210)
Op	0.414	−0.129***
	(1.450)	(−3.457)

Table 8. (*Continued*).

	(1)	(2)
	CED	**LnFee**
Big4	0.584***	0.667***
	(3.017)	(27.775)
_cons	−3.871***	11.289***
	(−5.592)	(120.989)
N	9738.000	9738.000
r2	0.738	0.585
r2_a	0.737	0.584
ind	Yes	Yes
year	Yes	Yes
Kleibergen-Paap rk LM statistic	2196.762***	
Cragg-Donald Wald F statistic	1.4×10^4	
Kleibergen-Paap rk Wald F statistic	9956.218	
10% maximal IV size	16.38	

In research examining the impact of the level of environmental disclosure (CED) on auditing fees (LnFee), including individual fixed effects as a robustness check is crucial. Fixed effects control for unobserved firm-specific factors, such as management style or corporate culture, that may influence both CED and auditing fees. By isolating within-firm variation, fixed effects help address potential endogeneity, where unobserved characteristics simultaneously affect both variables. This approach improves the precision of the model by accounting for firm-specific traits that remain constant over time, leading to more accurate and reliable estimates of the relationship between CED and auditing fees. As shown in **Table 9**, CED and LnFee are still significantly positive at the 1% level, indicating that the conclusions of this paper are more robust.

Table 9. Robustness tests—Individual fixed effects.

	(1)
	LnFee
CED	0.005***
	(0.002)
Soe	0.003*
	(0.001)
Board	−0.011***
	(0.004)
Age	−0.010
	(0.008)
Size	−0.002
	(0.005)
TobinQ	0.001

Table 9. (*Continued*).

	(1)
	LnFee
	(0.001)
Lev	−0.000
	(0.001)
ROA	−0.000
	(0.000)
Loss	0.000
	(0.003)
Op	0.001
	(0.007)
Big4	−0.000
	(0.000)
_cons	−0.003
	(0.033)
N	10762
r2	0.745
r2_a	0.744
ind	Yes
Firm	Yes
year	Yes

4.5. Further analysis

Based on the test of heterogeneity in the nature of property rights, there are differences in the nature of property rights and resources between state-owned and non-state-owned enterprises, which affect the auditor's decision-making and the impact of environmental information disclosure on audit fees. The management of SOEs may manipulate environmental disclosure to conceal risks due to dual identity pressures, and is more likely to selectively disclose or embellish information due to high social responsibility and attention, increasing the auditor's perceived risk of material misstatement and leading to higher audit fees. At the same time, state-owned enterprises have high regulatory requirements, and enhancing the level of environmental disclosure requires more resources from auditors, which also increases audit fees. As shown in **Table 10**, empirical evidence shows that the level of environmental disclosure in state-owned enterprises has a significantly more positive effect on audit fees than in non-state-owned enterprises.

Table 10. Heterogeneity test results based on property rights.

	nationalized business	**non-state enterprise**
	(1)	**(2)**
	LnFee	**LnFee**
CED	0.005***	0.001
	(4.765)	(0.905)
Board	0.203***	−0.009
	(4.281)	(−0.292)
Age	0.057***	0.185***
	(2.600)	(13.203)
Size	0.358***	0.225***
	(41.989)	(35.871)
TobinQ	−0.017**	−0.032***
	(−2.125)	(−6.612)
Lev	0.359***	0.469***
	(7.127)	(12.046)
ROA	0.419**	0.012
	(2.068)	(0.095)
Loss	0.045	0.067***
	(1.387)	(2.844)
Op	−0.064	−0.149***
	(−0.929)	(−3.564)
Big4	0.649***	0.672***
	(21.283)	(21.228)
_cons	10.301***	11.642***
	(66.945)	(124.704)
N	4573.000	6247.000
r2	0.618	0.566
r2_a	0.615	0.564
ind	Yes	Yes
year	Yes	Yes

Table 11. Heterogeneity analysis results based on pollution level.

	non-heavy pollution	**heavy pollution**
	(1)	**(2)**
	LnFee	**LnFee**
CED	0.004***	0.002*
	(3.377)	(1.658)
Soe	−0.048***	−0.159***
	(−3.536)	(−8.788)
Board	−0.096***	0.376***
	(−2.881)	(7.409)

Table 11. (*Continued*).

	non-heavy pollution	heavy pollution
	(1)	(2)
	LnFee	LnFee
Age	0.117***	0.133***
	(7.851)	(6.533)
Size	0.271***	0.324***
	(42.953)	(31.993)
TobinQ	−0.041***	0.009
	(−7.829)	(1.322)
Lev	0.413***	0.288***
	(10.578)	(5.763)
ROA	−0.173	−0.028
	(−1.247)	(−0.150)
Loss	0.050**	0.037
	(2.055)	(1.058)
Op	−0.125***	−0.153**
	(−2.981)	(−2.280)
Big4	0.741***	0.595***
	(28.806)	(13.397)
_cons	11.686***	10.136***
	(120.356)	(69.838)
N	7150.000	3670.000
r2	0.610	0.593
r2_a	0.608	0.590
ind	Yes	Yes
year	Yes	Yes
Intergroup coefficient	0.002*	

Based on the heterogeneity test of pollution degree, with the pressure of environmental protection and public awareness, enterprises disclose environmental information into a trend. Heavily polluted enterprises face stricter regulation and public opinion pressure due to high pollution and high risk, and tend to disclose true and detailed environmental information to reduce audit risk. Non-heavily polluted enterprises disclose more for impression management motives, increasing auditor risk and requiring more audit resources, thus pushing up audit fees. This paper classifies the sample into heavy pollution and non-heavy pollution industries according to the environmental protection sector, **Table 11** shows that environmental information disclosure in non-heavy pollution industries has a more significant effect on the enhancement of audit fees.

5. Research conclusions and suggestions

Using data from A-share listed companies from 2013–2022 as a sample, this

paper examines the relationship between the level of corporate environmental disclosure and audit fees and the moderating effect of media attention, taking into account the impact of corporate nature, the degree of pollution in the industry and the implementation of the new environmental protection law. The conclusions are as follows: the level of corporate environmental information disclosure is positively related to audit fees. Enterprises may enhance environmental information through impression management or covering up poor financial performance, increasing auditor risks and costs and leading to higher audit fees. Media attention positively moderates the relationship between environmental disclosure and audit fees. While the media can influence auditor decision-making, firms may use the media to glamorize their image or avoid exposing deficiencies, reducing the effectiveness of disclosure and increasing audit risk and investment. Heterogeneity analysis shows that environmental disclosure has a more significant effect on the increase of audit fees in state-owned enterprises, enterprises in non-heavily polluting industries, and before the implementation of the new environmental protection law. State-owned enterprises are more likely to bleed green information due to the dual status of management and environmental responsibility; Non-heavily polluting enterprises have stronger incentives to manipulate information; after the implementation of the new environmental protection law, there is less room for enterprises to use environmental information for impression management, and the audit risk is reduced.

5.1. Suggestions

At the level of regulatory authorities, in order to improve the regulation of environmental information disclosure and auditing, it is recommended that: the environmental information disclosure system be strengthened, the content, time and format of disclosure be clarified, regulation be strengthened, and review and rating agencies be set up, with clear rewards and penalties. Improve audit pricing standards, formulate base fees in conjunction with the situation of enterprises, allow reasonable fluctuations, publicize the details of audit fees, prevent private dealings, and maintain market order. Monitor the content of media reports to ensure that they are truthful and objective, encourage the media to pay attention to environmental protection and raise public awareness of environmental protection, while preventing unfair competition caused by malicious speculation. Improving the quality of environmental information disclosure and strengthening internal governance at the listed company level can reduce audit risks and corporate costs and create a good image. Listed companies should comply with disclosure and improve internal control to avoid management speculation. At the same time, they should establish a good relationship with the media, respond positively to questions, build a green image and enhance trust. Auditor-Level Auditors should pay attention to environmental disclosures, maintain professional skepticism, be alert to unusual representations, and assess risks in conjunction with financial reports. It is necessary to enhance professional competence, screen the authenticity of information, understand relevant laws and regulations, and keenly identify loopholes. Firms should strengthen team building and regular training to improve the quality of audit services.

This study distinguishes itself from extant literature by focusing on the nuanced relationship between environmental information disclosure and audit fees, incorporating the moderating role of media attention, and examining this within the context of China's A-share listed companies. Unlike previous studies that have predominantly concentrated on the direct impact of environmental disclosure on audit fees, our research extends the understanding by considering the influence of media attention, a factor often overlooked in the auditing literature. Our findings reveal that the level of environmental disclosure is positively associated with audit fees, and this relationship is exacerbated under heightened media scrutiny. This insight adds a new dimension to the audit fee determination process, emphasizing the role of external stakeholders in shaping audit pricing.

Furthermore, our research contributes to the literature by offering empirical evidence that environmental disclosure practices can have significant economic consequences, specifically impacting audit fees. This finding is particularly relevant in the wake of increasing environmental regulations and growing public concern over corporate sustainability. By shedding light on the economic implications of environmental disclosure, our study provides valuable insights for corporate decision-makers, auditors, and regulators. It suggests that companies should anticipate higher audit fees when enhancing their environmental transparency, especially when they are under the spotlight of media attention.

Our study also underscores the importance of considering the quality of environmental information disclosure in the auditing process. By demonstrating that higher levels of disclosure can lead to increased audit fees, we contribute to the ongoing debate on the cost-benefit analysis of corporate environmental transparency. This research not only fills a gap in the literature regarding the audit fee implications of environmental disclosure but also sets the stage for future studies to explore the broader implications of environmental accountability on corporate governance and financial reporting

5.2. Shortcomings and prospect

This paper investigates the relationship between corporate environmental disclosure and audit fees and the moderating effect of media attention, but suffers from the following shortcomings: the measurement of the level of environmental disclosure needs to be further improved; and control variables may be omitted; Future research can explore more internal and external influences. In addition, due to data limitations, this paper only focuses on listed companies, and related research on non-listed companies needs to be in-depth.

Author contributions: Conceptualization, XZ and ZD; methodology, ZD; software, ZD; validation, XZ, ZD and ZS; formal analysis, XZ; investigation, ZD; resources, XZ; data curation, ZD; writing—original draft preparation, ZD; writing—review and editing, ZD; visualization, XZ; supervision, XZ; project administration, ZD; funding acquisition, ZS. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflict of interest.

References

1. Liu XX, Li MH, Lu W. Accounting Firm Size and Audit Pricing: An Empirical Study Based on Local Chinese Firms. Finance Theory and Practice; 2012.
2. Liu B, Ye JZ, Liao YY. An Empirical Study on the Factors Influencing the Audit Fees of Listed Companies in China--Empirical Evidence from the 2001 Annual Reports of Shenzhen and Shanghai Markets. Auditing Research; 2003.
3. Song ZL, Yu YM. Audit project team industry expertise type, audit fee premium and audit quality. Accounting Research; 2018.
4. Sharma DS, Tanyi PN, Litt BA. Costs of Mandatory Periodic Audit Partner Rotation: Evidence from Audit Fees and Audit Timeliness. Auditing: A Journal of Practice & Theory. 2016; 36(1): 129-149. doi: 10.2308/ajpt-51515
5. Kamarudin KA, Islam A, Wan Ismail WA, et al. The effect of mandatory audit firm rotation and the auditing and reporting standards on the auditor competition and audit fees relationship: Evidence from emerging markets. International Journal of Auditing. 2022; 26(2): 252-278. doi: 10.1111/ijau.12276
6. Kalelkar R, Khan S. CEO Financial Background and Audit Pricing. Accounting Horizons. 2016; 30(3): 325-339. doi: 10.2308/acch-51442
7. Lai KMY, Srinidhi B, Gul FA, et al. Board Gender Diversity, Auditor Fees, and Auditor Choice. Contemporary Accounting Research. 2017; 34(3): 1681-1714. doi: 10.1111/1911-3846.12313
8. Shen HY, Zhang J, Yu YM. Executive academic experience, external governance level and audit fees. Auditing Research; 2018.
9. Gul FA, Khedmati M, Lim EK, et al. Managerial Ability, Financial Distress, and Audit Fees. Accounting Horizons. 2017; 32(1): 29-51. doi: 10.2308/acch-51888
10. Xie SW, Deng ZX, Wang Q. Accounting Information Comparability and CPAs' Audit Decisions—Empirical Evidence from the Chinese Securities Market. Auditing and Economic Research; 2017.
11. Abernathy JL, Guo F, Kubick TR, et al. Financial Statement Footnote Readability and Corporate Audit Outcomes. Auditing: A Journal of Practice & Theory. 2018; 38(2): 1-26. doi: 10.2308/ajpt-52243
12. Zhang JM, Bu MW. Does corporate R&D investment affect audit fees and audit opinions. Modern Economic Discussion; 2019.
13. Bu DL, Wu X, Lian J, et al. Corporate innovation and audit pricing. Auditing Research; 2020.
14. Yu HZ, He N, Xia CY. Local Government Environmental Regulation and Audit Fees—Empirical Evidence from Private Heavily Polluted Listed Companies. Auditing Research; 2018.
15. Liu X, Xu H, Lu M. Do auditors respond to stringent environmental regulation? Evidence from China's new environmental protection law. Economic Modelling. 2021; 96: 54-67. doi: 10.1016/j.econmod.2020.12.029
16. Ji L, Mou JQ, Dong YH. Environmental Regulation, Environmental Investment Strategies and Audit Fees of Heterogeneous Firms. Finance and Economics; 2022.
17. Lewis BW, Walls JL, Dowell GWS. Difference in degrees: CEO characteristics and firm environmental disclosure. Strategic Management Journal. 2013; 35(5): 712-722. doi: 10.1002/smj.2127
18. Qiao YH, You X. Empirical evidence on the relationship between internal control effectiveness and environmental information disclosure quality. Statistics and Decision Making; 2015.
19. Li MJ, Zhang MM. Research on the impact of equity structure and executive characteristics on environmental information disclosure. Friends of Accounting; 2019.
20. Luo Y, Xiao M, Cai Y, et al. Research on the Influencing Factors of Corporate Environmental Information Disclosure. Accounting for Township and Village Enterprises in China; 2020.
21. Lv LX. Board Chain Relationships and Corporate Environmental Information Disclosure-Evidence Based on A-share Listed Companies in Shanghai and Shenzhen. East China Economic Management; 2023.
22. Rupley KH, Brown D, Marshall RS. Governance, media and the quality of environmental disclosure. Journal of Accounting and Public Policy. 2012; 31(6): 610-640. doi: 10.1016/j.jaccpubpol.2012.09.002
23. Liu YL, Gao Y. Research on Influencing Factors of Environmental Information Disclosure in Coal Enterprises. Inner Mongolia Science and Economy; 2022.

24. MA HZ, Meng CW, Wang YM. Study on the Relationship between Environmental Information Disclosure and Financing Constraints of Listed Companies: An Empirical Analysis Based on Heavily Polluted Enterprises. Journal of Harbin University of Commerce (Social Science Edition); 2022.
25. Li Q, Ruan W, Shi H, et al. Corporate environmental information disclosure and bank financing: Moderating effect of formal and informal institutions. Business Strategy and the Environment. 2022; 31(7): 2931-2946. doi: 10.1002/bse.3055
26. Li ZD, Li F, Zhao YT. Financing effects of environmental information disclosure: Evidence from heavily polluting firms. Auditing and Economic Research; 2024.
27. Ren L, Hong Z. Research on the impact of environmental information disclosure on corporate value. Economic Management; 2017.
28. Gerged AM, Beddewela E, Cowton CJ. Is corporate environmental disclosure associated with firm value? A multicountry study of Gulf Cooperation Council firms. Business Strategy and the Environment. 2020; 30(1): 185-203. doi: 10.1002/bse.2616
29. Tang YJ, Ma WC, Xia L. Environmental Disclosure Quality, Internal Control "Level" and Corporate Value: Empirical Evidence from Listed Companies in Heavy Pollution Industries. Accounting Research; 2021.
30. Kim HA, Jung NC. The Effect of Corporate Social Performance on Audit Hours: Moderating Role of the Emphasis of Matter Paragraphs in Audit Report. Sustainability. 2020; 12(3): 931. doi: 10.3390/su12030931
31. Zhu M, Liu Z, Shi XW. Does Disclosure of Social Responsibility Information Affect Audit Fees—Empirical Evidence Based on Listed Companies in China. Journal of Shanxi University of Finance and Economics; 2015.
32. He CY, Zheng Y. Forward-looking environmental information disclosure and audit fees. Finance and Economics Monthly; 2023.
33. Liang RX, Li Y. Annual Report Text Tone and Audit Fees: Empirical Data from China's A-share Listed Companies. Auditing Research; 2021.
34. Zheng, MH, Jin FY, Liu YG. Does Firm Cost Structure Affect Audit Pricing? Auditing Research; 2023.
35. Zhai SB, Xu HR, Liu YS, et al. Controlling shareholders' equity pledge and auditor risk response. Management World; 2017.
36. Wang XZ, Wu LS. Are Auditors Charging Clients a Debt Risk Premium? Auditing Research; 2020.
37. Wang WJ, Zhu HB, Zhang B. Capital market liberalization and environmental information disclosure quality. Management Science; 2021.
38. Liu QL, Lu KS, Li Y, et al. Negative Media Coverage and the Governance of Executive Corruption. Accounting Research; 2022.
39. Zhang K, Liu X, Wang J. Exploring the relationship between corporate ESG information disclosure and audit fees: evidence from non-financial A-share listed companies in China. Frontiers in Environmental Science. 2023; 11. doi: 10.3389/fenvs.2023.1196728