ESG Performance and Textual Information of Key Audit Matters

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Abstract

We examine the relationship between ESG performance and key audit matters(KAM) textual - features information using data of Chinese A - share listed companies from 2017 to 2022. We find that a higher ESG rating is associated with less KAM textual information in the form except for readability in essence. Good ESG performance can reduce the risk volatility perceived by auditors, thereby influencing KAM textual information. The arrest of enterprise senior executives and industry - specialized auditors can increase textual information. Only a regulatory inquiry letter can assist auditors in enhancing text readability. Our results are robust under endogeneity checks.

Keywords: ESG; Key audit matters; Text features information; Audit quality ; Risk volatility

1. Introduction

A substantial number of studies have demonstrated that excellent ESG performance can assist companies in gaining the recognition and trust of stakeholders, thus augmenting the company's profits(Han et al.2024). It can also drive the stable elevation of enterprise value(Adzis and Abdul,2021; Marsat and Sylvain,2016). Moreover, good ESG performance has the ability to alleviate the financing constraints of the company and reduce its financial risks(Starks and T. 2021). Most of the current research on the economic consequences of ESG is centered on the company itself. Research on whether ESG disclosure will affect auditors' risk judgments is still uncertain .

The information within ESG system can facilitate decision - making among stakeholders such as investors, creditors, and suppliers. Auditors will gather and focus on the enterprise ESG data released by rating agencies, which helps them in making risk - assessment decisions(Liu and Frank,2024). As the final outcome of auditors' auditing work, the key audit matters(KAM) in the audit report are an significant representations of auditors' subjective reflection of risk perception during the auditing process(Lee and Few,2023; Orta-Pérez and Manuel,2019).

To investigate the relationship between ESG performance and the textual information of KAM, we collect data on Chinese A-share listed companies from 2017 to 2022 and attempt to answer the research question from the perspective of business risk and agency cost. The possible marginal contributions of this study are as follows: First, it thoroughly validates the influence of

ESG information on the disclosure of the textual features of key audit matters. The most affected KAM text features are the quantity and length of disclosure, as well as precision and similarity, while readability is the least affected one. Second, We deeply identify risk perception using cross - validation. Risk perception is measured from two perspectives, namely the risk fluctuations at the enterprise level and the pre-audit risk perception at the auditor level.

2. Theoretical background and research hypotheses

2.1. The economic consequences of ESG

The ESG is one of the key indicators for investors in decision - making,. It comprehensively evaluates the company's sustainable development ability from three aspects: social, environmental, and governance.Most of the existing research on the economic consequences of ESG performance mainly focuses on the company itself, such as financing constraints, corporate value, customer stability, spillover effects, etc(Han et al.,2024; Koh and Lenny.,2017; Marsat and Sylvain., 2016; Rock and Bjoern., 2022; Starks and T.,2021). The disclosure of ESG information by listed companies reduces audit fees by suppressing the company's information risk and operational risk. Prior research shows that audit costs will be reduced and auditors tend to issue unqualified audit opinions when the ESG performance is better.

2.2.ESG disclosure and the textual information of KAM

From the perspective of the identification of the risk of material misstatement, good ESG performance can effectively restrain managers' earnings - manipulation, reducing the risk of material misstatements. Key audit matters are the risk perception and risk response of auditors during the audit process, and the disclosed content depends on the auditors' risk - judgment ability(Asante-Appiah and Bright.,2020; Lee and Few.,2023; Liu and Frank.,2024; Orta-Pérez and Manuel.,2019; Zhang.,2020). Firstly, companies with better ESG performance have better governance mechanisms and stronger external supervision. A higher ESG rating means higher internal - governance and information - disclosure levels. Secondly, companies with higher ESG ratings usually draw more attention and supervision from external attention, and face higher costs of losing credibility. To avoid public pressure and litigation risks, managers will disclose accounting information more honestly.

From operation risk perspective, good ESG performance attracts more investors. A higher ESG rating leads to lower financing costs and more external funding support, enhancing financial stability. It also implies a long - term, favorable interaction with stakeholders such as customers and suppliers, maintaining a stable and sustainable relationship. High - level ESG information disclosure reveals managers' stronger environmental and social responsibility and higher moral

quality, enabling them to follow laws and regulations more strictly during investment, thus reducing risks and increasing returns.

Based on the above analysis, we infer that when a company has good ESG performance, relying on lower risk of material misstatement and operational risk assessments, auditors will reduce risk perception. Thus, in KAM disclosures, the variability of the text will be reduced.

3. Data and empirical design

3.1. Sample selection and data sources

Our sample consists of Chinese A-share companies. Since the Key Audit Matters (KAM) data is disclosed since 2017, and there are significant differences in the missing data among different ESG databases, the ESG rating data are sourced from Huazheng institution, and key audit matters data are obtained from the CSMAR database and CNRDS database from 2017 to 2022. Following convention, we exclude samples under special conditions (ST and *ST). We winsorize all continuous variables at the 1 % level on both ends. The final dataset comprising 20,717 firm-year observations.

3.2. Variable description

(1) Dependent variable

The dependent variable was the textual information of key audit matters(KAM). There are seven measurement indicators for KAM(Zhang.,2020), including the number of KAM items(Kamnum), the natural logarithm of the length of the KAM description section(Dlength), the natural logarithm of the length of the response section(Mlength), the natural logarithm of the total length of the item (Tlength), the frequency of the amount appearance in the KAM section represents precision(Kamacc), the readability of KAM disclosure(Readability), and the similarity of KAM disclosure(Similarity).

To measure the text readability (Readability) of key audit matters:

a.Use Word Embedding to transform unstructured info into structured, converting words to fixed-length vectors so semantically similar words are closer in vector space.

b.Optimize with Negative Sampling and Hierarchical Softmax, considering each dictionary word in probability expression to get sentence generation probability.

c.Take the log-likelihood mean of sentence generation probabilities to obtain Readability. Larger Readability indicates easier text understanding and stronger readability. This method is based on Naive Bayes Model assumptions, presuming text sentences are independent, overcoming traditional text readability measurement limitations.(Zhang.,2020). The specific measurement method is shown as following:$\text{Readability} = \frac{1}{N}\sum_{s=1}^{N} \text{LogP}_s$, N represents the number of KAM

sentences, and P_s represents the probability of generating sentence s.

To measure the text similarity (Similarity) of key audit matters, we use the TF-IDF method to calculate the median value of the similarity between the key audit matter text and that of other enterprises in the same industry. The construction process is as follows: segment the text of key audit matters, clean the results of segmentation, calculate the TF-IDF value by using the weighted technique of information retrieval and data mining, and use the most widely - used cosine function to measure Similarity. The larger the value is, the more homogeneous the text content of the key audit matters is.

(2) Independent variables

This study used the China Huazheng Index (CHI) ESG rating index to measure ESG performance (ESG). The results were categorised into eight grades: leading (AA, AA, and A), average (BBB, BB, and B), and lagging (CCC, CC, and C). We assigned ESG ratings from one to nine (1–8) in descending order. For example, a company with an ESG rating of CCC, scored one, while a company with an ESG rating of AA scored eight

(3) Control variables

Ten variables were chosen as controls, based on extant studies, including firm size (Size), financial leverage (Lev), return on asset (ROA), Company growth(Growth), Company age(Age), Board size(Board), audit firm rank(Big4), CEO-Chairman role situation (Dual).

Table 1 summarises the variables used in this study. See Appendix A for detailed information on all variables.

3.3. Model settings

To examine the relationship between ESG performance and the textual information of key audit matters, we use the following Model(1):

$$\mathrm{Kam}_{i,t} = \beta_0 + \beta_1 \mathrm{ESG}_{i,t} + \sum \mu \mathrm{CV}_{i,t} + \sum \mathrm{Firm} + \sum \mathrm{Year} + \sum \mathrm{Ind} + \varepsilon_{i,t} \quad (1)$$

where subscripts i, t denote firms and years, respectively. CV denotes control variables ,Kam is the main dependent variable that quantifies the textual information of key audit matters, which includes seven measurement indicators.

In the mechanism test section, we measure the business risk of enterprises by using excessive audit fees according to Model (2). Companies with residuals greater than 0 have excessive audit fees, and their business risk is valued at 1.

$$\mathrm{Auditfee}_{i,t} = \beta_0 + \beta_1 \mathrm{Asset}_{i,t} + \beta_2 \mathrm{Loss}_{i,t} + \beta_3 \mathrm{Roa}_{i,t} + \beta_4 \mathrm{Lev}_{i,t} + \beta_5 \mathrm{Employ}_{i,t} + \beta_6 \mathrm{Delay}_{i,t} + \beta_7 \mathrm{Au}$$
$$\mathrm{size}_{i,t} + \beta_8 \mathrm{Big4}_{i,t} + \beta_9 \mathrm{Current}_{i,t} + \beta_{10} \mathrm{Acinv}_{i,t} + \beta_{11} \mathrm{Big8}_{i,t} + \sum \mathrm{Ind} + \sum \mathrm{Year} + \varepsilon_{i,t} \quad (2)$$

4. Result analysis

4.1. Summary statistics

Table 1 presents the descriptive statistics of the main variables. The table implies a large variation in the frequency of the amount appearance in the KAM section. Approximately 61.62 % of the companies obtain an ESG score lower than 4, only 0.85% of the companies obtain ESG score over 7, indicating that the ESG performance of listed companies needs to be improved.

Insert Table1

4.2. Baseline regression results

Columns (1) to (7) of Table 2 present the regression results for Model (1). The coefficients of ESG support that the better an enterprise's ESG performance, the fewer key audit matter disclosures, shorter text descriptions and responses, lower text accuracy, and lower text heterogeneity. The negative correlation between ESG and the readability of the KAM is not significant. Auditors tend to reduce the information content in the form of the text and will not make substantial adjustments to the readability of the text.

Insert Table2

3.3.Regression of ESG's detailed dimensions

To test which ESG dimension impacts auditors more, we use the ratings of E (Environment), S (Society), and G (Corporate Governance) as proxy variables for regression analysis respectively.The regression results are shown in Table 3. Among the three dimensions, the governance and social responsibility dimensions mainly play a key role and significantly affect auditors' risk perception.

Insert Table3

4.4. Alternative ESG score measures

To further distinguish the internal differences in ESG scores, we assign ESG values from 1 to 3 to ESG ratings from low to high and then conduct a regression. The regression results are shown in Table 4 and consistent with the main results.

Insert Table4

4.5. Endogeneity issues

4.5.1.Instrumental variable

We employ the average ESG rating of other enterprises within geographical regions and the same industry for the corresponding year as instrumental variables. To address potential endogeneity issues, the Two - Stage Least Squares (2SLS) technique is employed.Table5 presents the results of 2SLS. In the first stage, the instrumental variable and ESG are significantly positively correlated. After controlling endogeneity, the second - stage regression results are

basically consistent with the main regression results. A higher ESG rating reduces the perceived audit risk, and the number of text disclosures for risk description and response shows a downward trend, with reduced disclosure similarity.

Insert Table5

4.5.2. Regression with ESG lagged one period

To alleviate the endogeneity issue due to reverse causality, we conduct regression with the explanatory variable lagged one period. The regression results are shown in Table6 and are consistent with the benchmark regression results.

Insert Table6

5. Further research

5.1. Mechanism analysis

5.1.1. Perception of business risk

ESG performance can help enterprises obtain economic resources, increase reputation capital and reduce business risks, thereby influencing the disclosure of key audit matters.We conduct the mechanism test of business risks through the profit volatility of the enterprise (Risk1) and the risk volatility perceived by the auditor (Risk2), that is, the excess audit fees respectively. The results are shown in Table7-1 and Table7-2.Results show that better enterprise ESG performance leads to lower operational risks at the enterprise level and lower auditor - risk perception measured by excess audit fees, thus reducing the degree of differentiation in disclosed content.

5.1.2. Agency cost

The external supervision pressure encourages management to standardize their behaviors, reducing self - interested behaviors that harm shareholders' interests and thus lowering agency costs. Meanwhile, ESG makes enterprises pay more attention to long - term strategies and consider shareholders' long -term interests, reducing agency costs from horizon problem.The results are shown in Table7-3. The results indicate that better ESG performance means lower agency cost, more standardized corporate governance, and reduced risk of material misstatement at the statement level, which further reduces the differentiation degree of disclosure content.

Insert Table7

5.2. Moderating effect tests

Negative media coverage. From the perspective of external supervision, negative media coverage can disclose the bad news of enterprises. Table 8-1 shows whether auditors will re-evaluate ESG information after regarding negative coverage.

Executives being arrested. Auditors assess the stability of the senior management team

during risk assessment to ensure business stability. Table 8-2 examines auditors' risk perception and response when senior executives are arrested for illegal activities.

Inquiry letter from the supervisor. As part of regular regulatory supervision, regulatory inquiry letters can improve corporate governance through regulatory constraints.Also, it can convey risk signals to the outside. Table 8-3 shows whether auditors will re-evaluate ESG information after regarding inquiry letter.

Auditor's industry expertise. Auditors' industry expertise can enhance the information content of key audit issues. Table 8-4 shows whether auditors with industry expertise can further identify ESG risk differences and disclose differentiated key audit issues to respond.

Based on above analysis, our moderating analysis shows that if the senior executives of an enterprise are arrested, the perception of audit risk will increase, and the information of text features will also increase; when auditors are more prominent in the industry, the text feature information will also increase. However, when the media reports negatively, the length of the KAM text will increase. And auditors will increase the readability when the enterprise receives a regulatory inquiry letter.

Insert Table8

6. Conclusions

This paper demonstrates that ESG performance and the textual information of KAM for listed companies through several perspectives. Firstly, greater ESG rating correlates with lower KAM textual information in form except readability in substance . Secondly, our mechanism analysis shows that the risk volatility can reduce the impact of ESG performance on the textual information of KAM. Thirdly, arrest of enterprise senior executives increases audit risk perception and text - feature information. More prominent industry - specialized auditors also increase this information. Negative media reports increase the KAM text length. Only regulatory inquiry letter to the enterprise help auditors increase text readability.

We recommend several points. Firstly, regulatory authorities can remind audit work to understand and identify the risks of ESG information disclosure. Also, proper attention to the content of regulatory inquiries can help auditors increase the information content of KAM. Secondly, auditors need to strengthen the cultivation of personnel with industry expertise and make full use of it in project assignment to cope with industry risks. Lastly, listed companies should strengthen corporate governance and enhance ESG information disclosure.

Appendix A

Variable Definitions.

Symbol	Definition
Kamnum	Number of key audit items.
Dlength	Natural logarithm of the length of the description section of the key audit item.
Mlength	The natural logarithm of the length of the response section.
Tlength	The natural logarithm of the total length of the item section.
Kamacc	The frequency of the amount appearance in the KAM section.
Readability	The readability of KAM disclosure.
Similarity	The similarity of KAM disclosure.
ESG	ESG ranking from China Huangzheng Index, the value is from 1 to 8
E	Environmental score
S	Social score
G	Governance score
Size	Natural logarithm of total assets.
Lev	Long-term debt and current liabilities over book values of total assets.
Roa	Net incomes over total assets.
Growth	Revenue growth rate.
Age	Natural logarithm of the company age plus 1.
Board	The total number of members on the board of directors.
Big4	If the audit firm is the big 4 international firms, it is 1; otherwise, it is 0.
Dual	If CEO and chairman are the same person, it is 1; otherwise, it is 0.
Mechanism Variables	
Risk1	The profit volatility of the enterprise.
Risk2	If the excess audit fee is over o,it is 1;otherwise, it is 0.
Agcost	Appropriation of funds by large shareholders.
Moderating Variables	
Excu	A dummy equal to 1 if the corporate executives are arrested in the current year , and 0 otherwise.
Negm	A dummy equal to 1 if there are negative media reports, and 0 otherwise.
Cmletter	A dummy equal to 1 if the enterprise receives inquiry letter, and 0 otherwise.
Instrumental Variable	
Mesg	The average ESG rating of other enterprises within the same geographical regions and the same industry in the same year.

Table 1

Summary Statistics.

variable	N	mean	p50	sd	min	max
Kamnum	20717	2.018	2	0.628	1	4
Dlength	20717	6.991	7.041	0.541	5.447	8.144
Mlength	20717	7.533	7.577	0.416	6.246	8.443
Tlength	20717	8.011	8.045	0.417	6.827	8.951
Kamacc	20717	4.461	4	2.682	0	14
Readability	20717	0.181	0.173	0.057	0.080	0.391
Similarity	20717	0.074	0.070	0.032	0.018	0.183
ESG	20717	4.164	4	1.112	1	8
Size	20717	22.36	22.16	1.312	19.85	26.46
Lev	20717	0.418	0.411	0.197	0.0530	0.919
ROA	20717	0.033	0.038	0.102	-4.865	0.254
Growth	20717	0.155	0.104	0.366	-0.652	3.081
Age	20717	2.167	2.303	0.853	0	3.401
Board	20717	2.102	2.197	0.195	1.609	2.639
Big4	20717	0.063	0	0.242	0	1
Dual	20717	0.314	0	0.464	0	1
Excu	20717	0.115	0	0.319	0	1
Negm	20717	0.015	0	0.121	0	1
Cmletter	20717	0.697	1	0.460	0	1
Risk1	20717	0.038	0.019	0.056	0.001	0.427
Risk2	20717	0.485	0	0.500	0	1
Agcost	20717	0.015	0.006	0.029	0	0.726
Mesg	14000	4.214	4.167	0.745	1	8

Note: Table 1 presents the descriptive statistics. The final sample includes 21000 observations. All variables are defined in Appendix A.

Table 2

ESG and KAM Text: Baseline Regression.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Kamnum	Dlength	Mlength	Tlength	Kamacc	Readability	Similarity
ESG	-0.033***	-0.009**	-0.012***	-0.011***	-0.072***	-0.000	-0.001***
	(-7.66)	(-2.52)	(-4.16)	(-3.84)	(-3.89)	(-0.71)	(-3.63)
Size	0.091***	0.071***	0.045***	0.053***	0.160***	0.002***	0.004***
	(18.79)	(17.53)	(13.82)	(16.61)	(7.51)	(5.08)	(16.56)
Lev	0.123***	0.087***	0.124***	0.112***	0.467***	0.004*	0.007***
	(4.24)	(3.50)	(6.32)	(5.70)	(3.70)	(1.67)	(5.00)
ROA	-1.299***	-0.872***	-0.566***	-0.671***	-3.924***	0.011*	-0.055***
	(-17.11)	(-14.66)	(-11.88)	(-14.18)	(-11.92)	(1.75)	(-14.59)
Growth	0.063***	0.046***	0.037***	0.040***	0.230***	-0.001	0.003***
	(4.80)	(4.29)	(4.39)	(4.77)	(3.94)	(-0.65)	(4.66)
Age	-0.041***	-0.032***	-0.041***	-0.037***	0.111***	-0.004***	-0.002***
	(-6.84)	(-6.08)	(-10.02)	(-8.96)	(4.32)	(-7.03)	(-7.41)
Board	0.046**	0.036*	0.018	0.025	0.171*	-0.009***	0.002*
	(1.99)	(1.85)	(1.13)	(1.63)	(1.70)	(-4.31)	(1.71)
Big4	-0.140***	0.182***	-0.065***	0.030**	-0.526***	0.010***	0.009***
	(-6.69)	(12.01)	(-4.69)	(2.23)	(-5.87)	(5.45)	(7.76)
Dual	0.054***	0.051***	0.044***	0.046***	0.104**	-0.001	0.004***
	(5.63)	(6.14)	(6.84)	(7.22)	(2.50)	(-1.12)	(7.17)
_cons	0.118	5.352***	6.405***	6.721***	0.740	0.155***	-0.024***
	(1.10)	(58.78)	(90.07)	(94.43)	(1.51)	(15.26)	(-4.53)
N	20717	20717	20717	20717	20717	20717	20717
adj. R^2	0.073	0.076	0.053	0.058	0.039	0.021	0.069

Note: This table presents the results of the main regressions. * p < 0.1; ** p < 0.05; *** p < 0.01; robust standard errors are employed; t-statistics in parentheses.

Table 3

Three ESG dimensions and KAM.

Table3-1	Environmental dimension						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Kamnum	Dlength	Mlength	Tlength	Kamacc	Readability	Similarity
E	-0.010***	0.004	0.002	0.003	-0.005	0.001**	0.000
	(-2.69)	(1.21)	(0.99)	(1.19)	(-0.34)	(2.12)	(1.30)
CVs	control	control	control	control	control	control	control
N	20717	20717	20717	20717	20717	20717	20717
R^2	0.070	0.076	0.052	0.057	0.038	0.022	0.068
Table3-2	Social dimension						
S	-0.030***	-0.008**	-0.010***	-0.009***	-0.055***	-0.000	-0.001***
	(-7.37)	(-2.36)	(-3.57)	(-3.36)	(-3.04)	(-0.99)	(-3.25)
CVs	control	control	control	control	control	control	control
N	20717	20717	20717	20717	20717	20717	20717
R^2	0.073	0.076	0.053	0.058	0.038	0.021	0.069
Table3-3	Governance dimension						
G	-0.041***	-0.018***	-0.023***	-0.021***	-0.117***	0.000	-0.002***
	(-11.95)	(-6.46)	(-10.28)	(-9.47)	(-7.68)	(0.41)	(-8.65)
CVs	control	control	control	control	control	control	control
N	20717	20717	20717	20717	20717	20717	20717
adj. R^2	0.077	0.077	0.057	0.061	0.041	0.021	0.072

Note: This table presents the results of detailed ESG dimension regressions. To save space, the results of the control variables are all excluded from the table3. * p < 0.1; ** p < 0.05; *** p < 0.01; robust standard errors are employed; t-statistics in parentheses.

Table 4

Alternative ESG score measures.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Kamnum	Dlength	Mlength	Tlength	Kamacc	Readability	Similarity
ESG	-0.064***	-0.017**	-0.021***	-0.020***	-0.126***	-0.001	-0.002***
	(-6.12)	(-1.96)	(-3.02)	(-2.91)	(-2.76)	(-0.90)	(-2.80)
Size	0.087***	0.069***	0.043***	0.052***	0.150***	0.002***	0.004***
	(18.22)	(17.54)	(13.54)	(16.45)	(7.14)	(5.14)	(16.44)
Lev	0.132***	0.090***	0.128***	0.115***	0.490***	0.004*	0.008***
	(4.53)	(3.60)	(6.51)	(5.87)	(3.88)	(1.67)	(5.14)
ROA	-1.321***	-0.878***	-0.576***	-0.679***	-3.985***	0.012*	-0.056***
	(-17.42)	(-14.79)	(-12.08)	(-14.36)	(-12.14)	(1.77)	(-14.74)
Growth	0.064***	0.046***	0.038***	0.041***	0.232***	-0.001	0.003***
	(4.87)	(4.31)	(4.43)	(4.80)	(3.98)	(-0.65)	(4.69)
Age	-0.039***	-0.032***	-0.040***	-0.036***	0.116***	-0.004***	-0.002***
	(-6.56)	(-6.00)	(-9.83)	(-8.81)	(4.51)	(-7.06)	(-7.25)
Board	0.049**	0.037*	0.018	0.026*	0.177*	-0.009***	0.002*
	(2.11)	(1.89)	(1.19)	(1.69)	(1.76)	(-4.29)	(1.76)
Big4	-0.145***	0.181***	-0.067***	0.028**	-0.537***	0.010***	0.008***
	(-6.92)	(11.95)	(-4.82)	(2.12)	(-5.99)	(5.43)	(7.67)
Dual	0.055***	0.051***	0.044***	0.046***	0.106**	-0.001	0.004***
	(5.71)	(6.17)	(6.89)	(7.26)	(2.55)	(-1.11)	(7.21)
_cons	0.180*	5.368***	6.427***	6.741***	0.876*	0.156***	-0.023***
	(1.68)	(59.14)	(90.78)	(95.10)	(1.80)	(15.32)	(-4.27)
N	20717	20717	20717	20717	20717	20717	20717
adj. R^2	0.072	0.076	0.053	0.058	0.038	0.021	0.068

Note: This table change the ESG score measures. The ESG score is from 1 to 3. * p < 0.1; ** p < 0.05; *** p < 0.01; robust standard errors are employed; t-statistics in parentheses.

Table 5

Instrumental variable regression.

	Fist step	Second step						
	(1)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ESG	Kamnum	Dlength	Mlength	Tlength	Kamacc	Readability	Similarity
IV-Mesg	0.134***							
	(0.016)							
ESG		-0.141**	-0.113**	-0.095**	-0.103**	-0.351	-0.013**	-0.008**
		(0.062)	(0.053)	(0.040)	(0.040)	(0.268)	(0.006)	(0.003)
Size	0.317***	0.133***	0.113***	0.076***	0.090***	0.230**	0.006***	0.007***
	(0.011)	(0.021)	(0.018)	(0.014)	(0.014)	(0.091)	(0.002)	(0.001)
Lev	-0.832***	0.054	-0.021	0.063	0.032	0.510*	-0.004	0.002
	(0.069)	(0.066)	(0.056)	(0.043)	(0.043)	(0.285)	(0.006)	(0.003)
ROA	2.254***	-1.002***	-0.481***	-0.302***	-0.362***	-3.250***	0.054***	-0.030***
	(0.181)	(0.179)	(0.144)	(0.113)	(0.112)	(0.763)	(0.016)	(0.009)
Growth	-0.123***	0.033	0.005	0.014	0.009	0.201**	-0.003	0.001
	(0.032)	(0.021)	(0.017)	(0.013)	(0.013)	(0.091)	(0.002)	(0.001)
Age	-0.233***	-0.072***	-0.058***	-0.062***	-0.060***	0.078	-0.006***	-0.004***
	(0.015)	(0.017)	(0.015)	(0.011)	(0.011)	(0.075)	(0.002)	(0.001)
Board	-0.081	0.090***	0.095***	0.056**	0.066***	0.323**	-0.010***	0.005***
	(0.054)	(0.034)	(0.029)	(0.022)	(0.022)	(0.147)	(0.003)	(0.002)
Big4	0.147***	-0.063*	0.176***	-0.057***	0.036*	-0.442***	0.004	0.009***
	(0.046)	(0.035)	(0.025)	(0.022)	(0.021)	(0.150)	(0.003)	(0.002)
Dual	-0.080***	0.041***	0.033***	0.033***	0.032***	0.042	-0.001	0.003***
	(0.022)	(0.014)	(0.012)	(0.009)	(0.009)	(0.061)	(0.001)	(0.001)
_cons	-2.939***	-0.513**	4.624***	5.851***	6.094***	0.147	0.138***	-0.069***
	(0.313)	(0.236)	(0.200)	(0.149)	(0.150)	(1.047)	(0.022)	(0.011)
N	10307	10307	10307	10307	10307	10307	10307	10307
adj. R^2	0.165	0.075	0.078	0.055	0.062	0.045	0.013	0.070

Note: This table presents the results of instrumental variable regression. We use the average ESG rating of other enterprises within geographical regions and the same industry for the corresponding year as instrumental variables(Mesg). * p < 0.1; ** p < 0.05; *** p < 0.01; robust standard errors are employed; t-statistics in parentheses.

Table 6

Regression with ESG lagged one period.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Kamnum	Dlength	Mlength	Tlength	Kamacc	Readability	Similarity
l_ESG	-0.009**	-0.015***	-0.006**	-0.009***	-0.033	0.001	-0.001***
	(-2.01)	(-3.81)	(-2.03)	(-2.85)	(-1.58)	(1.52)	(-3.73)
Size	0.077***	0.069***	0.040***	0.050***	0.136***	0.002***	0.004***
	(13.65)	(14.84)	(10.96)	(13.83)	(5.32)	(3.24)	(13.55)
Lev	0.190***	0.101***	0.145***	0.128***	0.725***	0.005	0.010***
	(5.72)	(3.57)	(6.55)	(5.73)	(4.82)	(1.54)	(5.66)
ROA	-1.000***	-0.654***	-0.411***	-0.496***	-3.094***	0.013**	-0.043***
	(-12.13)	(-9.75)	(-8.39)	(-9.71)	(-9.00)	(2.03)	(-10.57)
Growth	0.000	0.000*	0.000***	0.000***	-0.000	0.000**	0.000*
	(0.11)	(1.89)	(5.15)	(3.16)	(-0.30)	(2.55)	(1.70)
Age	-0.036***	-0.037***	-0.043***	-0.039***	0.123***	-0.003***	-0.002***
	(-4.94)	(-5.60)	(-8.47)	(-7.70)	(3.72)	(-3.97)	(-6.36)
Board	0.040	0.042*	0.031*	0.036**	0.129	-0.006**	0.003**
	(1.45)	(1.82)	(1.72)	(2.00)	(1.05)	(-2.35)	(2.30)
Big4	-0.094***	0.216***	-0.051***	0.054***	-0.396***	0.005**	0.011***
	(-3.37)	(10.80)	(-2.87)	(3.12)	(-3.20)	(2.11)	(7.15)
Dual	0.069***	0.058***	0.052***	0.054***	0.093*	-0.002	0.004***
	(6.14)	(6.09)	(7.00)	(7.28)	(1.85)	(-1.46)	(6.73)
_cons	0.347***	5.422***	6.448***	6.748***	1.463**	0.152***	-0.022***
	(2.67)	(50.29)	(75.72)	(79.35)	(2.40)	(11.82)	(-3.38)
N	15451	15451	15451	15451	15451	15451	15451
adj. R^2	0.065	0.074	0.049	0.056	0.033	0.016	0.067

Note: This table presents the results of regression with ESG lagged one period. * p < 0.1; ** p < 0.05; *** p < 0.01; robust standard errors are employed; t-statistics in parentheses.

Table 7

Mechanism analysis

Table7-1	Mechanism analysis:perception of business risk1							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Risk1	Kamnum	Dlength	Mlength	Tlength	Kamacc	Readability	Similarity
ESG	-0.006***	-0.031***	-0.009**	-0.011***	-0.010***	-0.066***	-0.000	-0.001***
	(0.000)	(-7.12)	(-2.50)	(-3.84)	(-3.64)	(-3.55)	(-0.23)	(-3.31)
Risk1		0.338***	-0.004	0.135**	0.080	0.931**	0.030***	0.010*
		(3.19)	(-0.04)	(2.01)	(1.17)	(2.18)	(3.54)	(1.92)
CVs	control	control	control	control	control	control	control	control
N	20717	20717	20717	20717	20717	20717	20717	20717
adj. R^2	0.205	0.074	0.076	0.053	0.058	0.039	0.022	0.069
Table7-2	Mechanism analysis:perception of business risk2							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Risk2	Kamnum	Dlength	Mlength	Tlength	Kamacc	Readability	Similarity
ESG	-0.037***	-0.029***	-0.006	-0.009***	-0.008***	-0.062***	-0.000	-0.001***
	(0.003)	(-6.80)	(-1.63)	(-3.26)	(-2.88)	(-3.34)	(-0.54)	(-2.62)
Risk2		0.102***	0.086***	0.069***	0.073***	0.272***	0.002**	0.006***
		(12.08)	(11.79)	(12.26)	(12.95)	(7.38)	(2.25)	(13.86)
CVs	control	control	control	control	control	control	control	control
N	20717	20717	20717	20717	20717	20717	20717	20717
adj. R^2	0.009	0.079	0.082	0.060	0.066	0.041	0.022	0.077
Table7-3	Mechanism analysis:agency cost							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Agcost	Kamnum	Dlength	Mlength	Tlength	Kamacc	Readability	Similarity
ESG	-0.001***	-0.031***	-0.008**	-0.011***	-0.010***	-0.068***	-0.000	-0.001***
	(0.000)	(-7.34)	(-2.32)	(-3.82)	(-3.54)	(-3.66)	(-0.58)	(-3.29)
Agcost		1.078***	0.479***	0.665***	0.588***	3.127***	0.044***	0.050***
		(5.13)	(2.97)	(5.63)	(4.69)	(3.70)	(2.75)	(4.99)
CVs	control	control	control	control	control	control	control	control
N	20702	20702	20702	20702	20702	20702	20702	20702
adj. R^2	0.120	0.075	0.076	0.055	0.059	0.040	0.022	0.070

Note: This table presents the results of mechanism analysis. The Risk1 is measured by the profit volatility of the enterprise. The Risk2 is equals to 1 if there are the excess audit fees , otherwise, it is 0. The Agcost is measured by the appropriation of funds held by large shareholders. * p < 0.1; ** p < 0.05; *** p < 0.01; robust standard errors are employed; t-statistics in parentheses.

Table 8

Moderating effect.

Table8-1	Negative media coverage						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Kamnum	Dlength	Mlength	Tlength	Kamacc	Readability	Similarity
ESG	-0.033***	-0.010***	-0.012***	-0.011***	-0.072***	-0.000	-0.001***
	(-7.47)	(-2.58)	(-4.07)	(-3.78)	(-3.77)	(-0.57)	(-3.64)
Negm	-0.056	-0.060	-0.088	-0.072	-0.243	0.002	-0.005
	(-0.55)	(-0.82)	(-1.36)	(-1.18)	(-0.56)	(0.26)	(-1.05)
cross1	0.045	0.018	0.038**	0.029*	0.136	0.002	0.002
	(1.58)	(0.92)	(2.10)	(1.72)	(1.14)	(1.04)	(1.55)
N	19853	19853	19853	19853	19853	19853	19853
adj. R^2	0.073	0.076	0.052	0.057	0.038	0.023	0.069
Table8-2	Executives being arrested						
ESG	-0.031***	-0.010**	-0.010***	-0.010***	-0.068***	-0.000	-0.001***
	(-6.34)	(-2.47)	(-3.03)	(-3.03)	(-3.31)	(-0.18)	(-2.91)
Excu	-0.001	-0.037	0.002	-0.008	-0.089	0.003	-0.000
	(-0.03)	(-1.02)	(0.06)	(-0.28)	(-0.45)	(0.89)	(-0.21)
cross2	0.023*	0.018*	0.014*	0.014*	0.087	-0.001	0.001*
	(1.88)	(1.86)	(1.84)	(1.84)	(1.64)	(-0.49)	(1.72)
N	19853	19853	19853	19853	19853	19853	19853
adj. R^2	0.074	0.076	0.053	0.058	0.039	0.022	0.070
Table8-3	Inquiry letter from the supervisor						
ESG	-0.037***	-0.007	-0.013***	-0.010**	-0.013	-0.001*	-0.001**
	(-5.11)	(-1.13)	(-2.85)	(-2.25)	(-0.41)	(-1.83)	(-1.96)
Cmletter	-0.061*	-0.015	-0.043*	-0.029	0.136	-0.006*	-0.002
	(-1.68)	(-0.49)	(-1.82)	(-1.25)	(0.87)	(-1.71)	(-0.95)
cross3	0.007	-0.002	0.004	0.001	-0.079**	0.001*	-0.000
	(0.85)	(-0.36)	(0.66)	(0.13)	(-2.15)	(1.73)	(-0.09)
N	20717	20717	20717	20717	20717	20717	20717
adj. R^2	0.073	0.076	0.054	0.059	0.040	0.022	0.069
Table8-4	Auditor's industry expertise						
ESG	-0.034***	-0.020***	-0.018***	-0.018***	-0.098***	-0.001	-0.002***
	(-5.78)	(-4.27)	(-4.68)	(-4.85)	(-3.79)	(-1.54)	(-5.25)
Auexp	0.022	-0.026	-0.019	-0.020	-0.023	-0.005	-0.002
	(0.59)	(-0.85)	(-0.79)	(-0.83)	(-0.15)	(-1.63)	(-1.09)
cross4	0.002	0.022***	0.012**	0.015***	0.051	0.001	0.001***
	(0.22)	(3.34)	(2.33)	(2.88)	(1.48)	(1.56)	(3.55)
N	20717	20717	20717	20717	20717	20717	20717

adj. R^2	0.073	0.078	0.054	0.059	0.039	0.022	0.071

Note: This table presents the results of moderating effect regression. All the control variables are controlled. All "cross" refer to interaction terms. * p < 0.1; ** p < 0.05; *** p < 0.01; robust standard errors are employed; t-statistics in parentheses.

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