

# **ESG rating divergence and audit fees: Evidence from China**

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## **ESG rating divergence and audit fees: Evidence from China**

*Abstract:*

We investigate the impact of Environmental, Social, and Governance (ESG) rating discrepancies on audit fees. Using data from A-share companies listed in Shanghai and Shenzhen from 2015 and 2022, we find that divergence in ESG ratings is significantly associated with an increase in audit fees, attributed to increased information asymmetry, heightened operational risks, elevated debt costs, and intensified analyst attention. External factors, such as a firm's internationalization and participation in low-carbon city initiatives, are found to moderate the positive relationship between ESG rating divergence and audit fees. Our results, which remain robust to alternative measures and an instrumental variable for dealing with endogeneity problems, offer critical insights for firms seeking to manage audit expenses through better ESG performance and for policymakers aiming to standardize ESG evaluations.

*Keywords:* ESG rating divergence; audit fee; information asymmetry; business risks; cost of debt capital

*JEL Codes:* G34; M14; M42; Q56.

## 1. Introduction

Introduced in 2004 by the United Nations Environment Programme, Environmental, Social, and Governance (ESG) standards have evolved from moral guidelines to key factors in investment decision-making, particularly within China's dual carbon strategy. The Chinese securities authorities actively promote ESG development, enforcing stringent disclosure requirements for listed companies, highlighting ESG's growing importance in financial markets.

ESG ratings, as a new framework for evaluating non-financial information (Goldstein and Huang, 2020; Dhaliwal et al., 2012), show significant progress: as of June 2023, 280 CSI 300 index companies and 32.9% of A-share companies have disclosed their ESG reports for 2022<sup>□</sup>. However, despite the advancements, ESG ratings suffer from considerable variability due to the lack of uniform standards, leading to discrepancies among agencies (Christensen et al., 2022). These inconsistencies exacerbate market uncertainty and risk, challenging the reliability of these ratings.

Recent studies, such as Edmans (2023), acknowledge the validity of diverse perspectives on ESG's impact due to its importance for long-term firm prospects. Common views suggest that discrepancies in ratings stem from flaws in agency processes, prompting calls for standardization or methods to reduce variability (e.g., Avramov et al., 2022; Berg et al., 2022). Conversely, such divergences may also result from agencies using different data sets and interpretations (Berg et al., 2022), a phenomenon known as ESG rating divergence that heightens investor and company risks (Kimbrough et al., 2022).

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<sup>□</sup> The Statistical Research Report on ESG Information Disclosure of A-share Listed Companies in 2022 released by Nandao Consulting Company , [https://www.sohu.com/a/719450886\\_121615303](https://www.sohu.com/a/719450886_121615303).

We explore the impact of ESG rating divergence on auditor behaviour and audit fees. ESG discrepancies enhance information asymmetry (Chatterji et al., 2016; Serafeim and Yoon, 2023) and increase operational uncertainty, complicating investor evaluations and adding to the complexity and risks of audits, thus elevating audit fees. Divergent ratings, indicating unresolved ESG issues, intensify operational and financial risks, heighten market risk perceptions (Jørgensen and Ellingsen, 2021), and require additional auditor resources, further increasing audit fees. Moreover, these discrepancies lead creditors to demand higher interest rates or reduce funding, raising financial risks and financing costs (Liu, 2022), and making external financing costlier and less appealing. Additionally, greater discrepancies draw increased analyst scrutiny, according to reputation theory, potentially raising the likelihood of audit failures and necessitating higher provisions for future reputation risks, thereby increasing audit fees.

We posit that the impact of ESG rating disagreement on audit fees is positive. Using data from Chinese A-share listed companies and ESG ratings from six renowned agencies, our findings confirm with the above postulations. We find that ESG rating divergence significantly raises audit fees through mechanisms such as increased information asymmetry, higher business risks, elevated debt costs, and more analyst attention. However, the effect varies with a company's degree of internationalization and participation in low-carbon city initiatives.

This paper contributes to the literature in three key areas: Firstly, we expand the scope of research on ESG rating divergence and its economic consequences, offering a novel perspective in a nascent field by exploring its impact on audit fees. Secondly, we extend the framework of factors affecting audit fees by examining the economic outcomes of ESG rating divergence from an audit fee perspective. Lastly, we investigate the mechanisms and heterogeneity of ESG rating divergence's effects on

audit fees, examining the moderating roles of corporate internationalization and low-carbon city initiatives.

Our paper contributes to the literature exploring the relationship between ESG standards, audit fees, and company risk assessments by external stakeholders. Song et al. (2023) find that superior ESG performance correlates with lower audit fees in China. In contrast, ESG rating divergence compromises ESG credibility, creating uncertainty among capital providers and labour markets about true ESG performance, potentially leading to skewed decisions influenced by these ratings (Christensen et al., 2022). This divergence likely impacts audit fees differently. Moreover, our research intersects with studies contrasting the effects of ESG performance and rating divergence. For instance, Wang et al. (2022) observe a positive link between ESG performance and corporate innovation, whereas Li et al. (2024) note that ESG rating divergence notably diminishes corporate innovation in China.

## 2. Data and empirical design

### 2.1 Sample section and data sources

Our sample consists of Chinese A-share companies. Considering the variations in the coverage by different ESG rating agencies between 2015 and 2022. The ESG rating data are sourced from six institutions: Wind, Huazheng, Menglang, Shangdao Ronglv, Bloomberg, and FTSE Russell. Company financial data are obtained from the CSMAR database.

To better quantify the impact of ESG rating divergence, samples from companies rated by only one agency are excluded. Following convention, we exclude companies in the financial sector, and those with less than one year of listing. Samples under special conditions (ST and \*ST), as well as samples with missing data are also excluded.

We winsorize all continuous variables at the 1% level on both ends. The final dataset comprising 20,964 firm-year observations across 4,024 listed companies.

## 2.2 Model specification

To investigate the impact of ESG rating divergence on audit fees, our main model is specified in the following form.

$$\begin{aligned} AuditFee_{it} = & \alpha_0 + \alpha_1 ESGSD_{it} + \alpha_2 Size_{it} + \alpha_3 Lev_{it} + \alpha_4 Roa_{it} + \alpha_5 Sharel_{it} + \alpha_6 Q_{it} + \\ & \alpha_7 Board_{it} + \alpha_8 Indep_{it} + \alpha_9 Big4_{it} + \alpha_{10} Auditoppi_{it} + \alpha_{11} Dig_{it} + \sum Year + \sum Ind + \varepsilon_{it} \end{aligned} \quad (1)$$

where subscripts  $i$ ,  $t$  denote firms and years, respectively.  $AuditFee$  is the main dependent variable that quantifies audit fees, which is natural logarithm of total audit fees.

The key explanatory variable is  $ESGSD$ . Following (Avramov et al. ,2022), we standardise the rating results from various agencies for comparability. Specifically, ratings from Wind, Huazheng, and Menglang are mapped to a scale of one to nine, while Shangdao Ronglv's are on a zero to nine scale. Bloomberg's ratings are adjusted by multiplying by 10% and rounding off, whereas FTSE Russell's are multiplied by 200% before rounding. These standardisations align the scales of different agencies, ensuring uniform weighting of their rating outcomes.  $ESGSD$  is then derived by calculating the standard deviation across these six ESG ratings. To assess robustness, we also compute the range across the six ratings ( $ESGrange6$ ) and the standard deviation of ESG ratings from the four Chinese agencies ( $ESGSD4$ ), using these as alternative measures in robustness analyses.

Control variables are detailed in Table 1.

[Table 1 about here.]

### 3. Results

#### 3.1 Summary statistics

Table 2 shows that the average audit fee is 14.0838. With respect to ESG rating divergence, the range spans from a minimum of 0.5774 to a maximum of 2.8284. This variability underscores considerable disparities in ESG ratings among companies.

[Table 2 about here.]

#### 3.2 Baseline regression results

Table 3 reports the baseline regression results of the impact of ESG rating divergence on audit fees. The results in Columns 1 and 3 show that the regression coefficients of ESG rating divergence are positive and significant at the 1% level. This suggests that the greater the ESG rating divergence, the higher their audit fees will be.

[Table 3 about here.]

#### 3.3 Alternative divergence measures

To ensure the results are not driven by one particular measure of ESG rating divergence, we consider five alternative measures in Table 4.

*ESG rating divergence based on four Chinese agencies.* Considering the methodological congruence among the ESG rating systems employed by Wind, China Securities, Shangdao Ronglu, and Menglang, which are all ESG rating agencies based in China, we calculate the standard deviation of these four entities' ESG ratings (*ESGSD4*) as an alternative measure for assessing divergence. This approach avoids the potential errors that might arise from manually converting the ratings of two other ESG evaluations. The findings are shown in Column 1 of Table 4.

[Table 4 about here.]

*Range of ESG ratings.* *ESGCH* means the range between the highest and lowest ratings given to a particular company by six ESG rating agencies within the same year. A larger range value indicates greater ESG rating divergence. The results are presented in Column 2 of Table 4.

*Standardised ESG rating divergence.* By taking the ratio of the baseline ESG rating divergence (*ESGSD*) and the average ESG rating, we obtain a standardised rating divergence indicator (*ESGST*). The results are presented in Column 3 of Table 4.

All the above results are aligned with the baseline regression results.

### 3.4 Endogeneity issues

#### 3.4.1 Firm fixed effects

To control for the potential impact of individual factors that do not vary over time on the regression outcomes, we incorporate firm-specific fixed effects (*Firm*) to address potential endogeneity concerns. The result, presented in Column 1 of Table 5, indicates the correlation between ESGSD and audit fees is significantly positive at the 5% level.

[Table 5 about here.]

#### 3.4.2 Instrumental variable

We employ the average ESG rating divergence within identical geographical regions (*ESGcity*) and the average ESG rating divergence within the same industry sectors (*ESGind*) for the corresponding year as instrumental variables. To address potential endogeneity, the Two-Stage Least Squares (2SLS) technique is utilised. The effectiveness of our instrumental variables is affirmed by the Kleibergen-Paap rk Wald F statistic, which stands at 306.047, exceeding the Stock-Yogo benchmark critical value,

thereby negating the concern of weak instrument variables. Furthermore, the Kleibergen-Paap rk LM statistic is 506.209, with a p-value firmly at 0.000, rejecting the null hypothesis of instrument unidentifiability, affirming the appropriateness of our selected instruments.

The 2SLS regression results, shown in Columns 2 and 3 of Table 5, demonstrate a significant correlation between both *ESGcity* and *ESGind* with *ESGSD*. Following the application of the instrumental variable approach in the second stage, we observe a statistically significant association between *ESGSD* and audit fees, corroborated at the 1% significance level.

### 3.4.3 Propensity scores matching method

Following Billi et al. (2021), we divide our sample into two groups based on the median of *ESGSD*, with those above the median designated as the treatment group and those below as the control group. Using all control variables from the baseline regression model as covariates and employing the 1:1 nearest neighbour matching method, the study sample is redefined. Subsequent regression analysis on this matched sample, as per Model (1), is documented in Column 4 of Table 5. The findings confirm a significant positive association at the 1% significance level.

## 4. Further Analysis

### 4.1 Moderating effect tests

*Level of internationalisation of listed companies.* ESG rating divergence arises primarily from variations in information transparency and a company's ability to engage in ESG initiatives. A-shares' inclusion in the MSCI Index from 2018 signalled a move towards international capital markets. It is reasonable to assume that listed companies face heightened scrutiny, leading to more regulated operations, disclosures, and ESG

investments. Thus, we examine MSCI inclusion as an indicator of a company's internationalisation level, assessing its moderating effect on the ESG divergence-audit fee relationship. Our results, presented in Column 1 of Table 6, reveal that MSCI inclusion indeed moderates this relationship, significantly diminishing its positive impact on audit fees.

[Table 6 about here.]

*Low-carbon City Pilot.* Since 2010, China has launched low-carbon city initiatives, broadening their reach in 2012 and 2017. These pilots prompt firms to bolster environmental governance, elevate transparency, and curtail financial risks. This alignment with risk-oriented audit theory suggests a potential for reduced audit fees. We investigate whether the low-carbon city designation (*Lowcarbon*) moderates the effect of ESG rating divergence on audit fees. Our findings, as reported in Column 2 of Table 6, reveal that low-carbon city status markedly mitigates the upward impact of ESG rating divergence on audit fees.

#### 4.2 Mechanism analysis

We conduct a mechanism analysis using Model (2), based on the baseline regression framework. "*M*" denotes various mediating variables under examination.

$$M_{it} = \alpha_0 + \alpha_1 ESGSD_{it} + \alpha_2 Size_{it} + \alpha_3 Lev_{it} + \alpha_4 Roa_{it} + \alpha_5 Sharel_{it} + \alpha_6 Q_{it} + \alpha_7 Board_{it} + \alpha_8 Indep_{it} + \alpha_9 Big4_{it} + \alpha_{10} Auditoppi_{it} + \alpha_{11} Dig_{it} + \sum Year + \sum Ind + \varepsilon_{it} \quad (2)$$

##### 4.2.1 Increased information asymmetry

Differences in information sources and processing significantly contribute to ESG rating divergence, which intensifies information asymmetry between investors and

companies. This increased asymmetry elevates investor uncertainty, leading to a higher demand for a "lemon premium" that can reduce stock liquidity. Additionally, auditors addressing these discrepancies incur higher operational costs, thereby raising audit fees. We anticipate a direct correlation between greater ESG rating divergence, increased information asymmetry, and reduced stock liquidity. Following Kim and Verrecchia (2006), we measure information asymmetry using the KV index, as detailed in Models (3) and (4), where a higher KV value indicates greater asymmetry.

$$Ln \left| \frac{Price_t - Price_{t-1}}{Price_{t-1}} \right| = \gamma_0 + \gamma (Volume_t - Volume_0) + \mu \quad (3)$$

$$KV = \gamma \times 1000000 \quad (4)$$

where  $Price$  represents the closing price on trading day  $t$ ,  $Volume_t$  is the trading volume on the same day, and  $Volume_0$  is the annual average daily trading volume.

The findings are presented in Column 1 of Table 7. This result suggests that ESG rating divergence contributes to increased information asymmetry.

[Table 7 about here.]

#### 4.2.2 Increased business risk

Previous theoretical analysis suggests that ESG rating divergence can increase business risks, subsequently raising audit fees. The variability in a company's earnings is used to measure its business risk ( $Orisk$ ), as illustrated in Model (5).

$$Orisk_{it} = \sqrt{\frac{1}{T-1} \sum_{t=1}^T \left( \frac{EBIT_{it}}{Assets_{it-1}} - \frac{1}{T} \sum_{t=1}^T \frac{EBIT_{it}}{Assets_{it-1}} \right)^2} \quad |T = 3 \quad (5)$$

where  $Orisk$  denotes the business risk,  $EBIT$  stands for earnings before interest, taxes, depreciation, and amortization, and  $Assets$  refers to total assets.

The results are shown in Column 2 of Table 7. This finding suggests that greater ESG rating divergence increases business risk, which in turn drives up audit fees.

#### 4.2.3 Increased cost of debt financing

When significant ESG rating divergence occurs, creditors often perceive this as a deviation from actual ESG performance and may demand additional risk compensation, consequently raising the company's cost of debt capital. This increase in debt capital costs suggests heightened financial risk for the company, which typically results in increased audit costs and fees.

We measure the corporate debt financing cost ( $Cost_{t+1}$ ) as the ratio of the next fiscal year's interest expenses to the average of the initial and final balances of both long-term and short-term debts. Results in Column 3 of Table 7 demonstrates that ESG rating divergence leads to higher debt costs in the subsequent year, thereby also escalating the company's audit-related expenditures.

#### 4.2.4 Increased analyst attention

When more analysts track a company, the heightened frequency of information disclosure and increased data demands elevate the auditors' risk of reputation loss, leading them to raise audit fees. ESG rating divergence draws additional analyst attention primarily because analysts want to understand its causes and economic implications, which can inform future responses to similar scenarios.

Analyst attention is quantified using the natural logarithm of the number of analysts following (*Attention*). The results in Column 4 of Table 7 demonstrate that ESG rating divergence significantly boosts analyst attention, thereby confirming that increased analyst scrutiny is a key conduit through which ESG rating divergence impacts audit fees.

## 5. Conclusions

This paper demonstrates that ESG rating divergence negatively affects audit fee expenses for listed companies through several mechanisms. Firstly, greater ESG rating divergence correlates with higher audit fees. Secondly, our heterogeneity analysis shows that a favourable external governance environment—marked by higher company internationalisation and participation in low-carbon city pilots—can reduce the impact of ESG rating divergence on audit fees. Thirdly, ESG rating divergence increases audit fees by intensifying information asymmetry, elevating business risk, boosting debt capital costs, and drawing more analyst attention.

We recommend several actions. Listed companies should strengthen corporate governance, enhance information disclosure, and increase transparency to align ESG ratings and minimize discrepancies. Regulatory authorities should standardise ESG rating practices to alleviate the confusion from inconsistent rating criteria among different agencies, aiding investors, and companies alike. Lastly, ESG rating agencies need to enhance the credibility of their ratings by refining assessment criteria, improving transparency, and minimizing subjective biases to better serve stakeholder needs.

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Table 1 Definition of variables.

Variable	Definition
<i>Auditfee</i>	Natural logarithm of total audit fees
<i>ESGSD</i>	Standard deviation of scaled ESG ratings from six agencies.
<i>ESGrange6</i>	The range across the scaled ESG ratings from six agencies.
<i>ESGSD4</i>	Standard deviation of scaled ESG ratings from the four Chinese agencies.
<i>Size</i>	Natural logarithm of total asset.
<i>Lev</i>	Total liabilities / Total assets
<i>Roa</i>	Net Profit / Total assets
<i>Share1</i>	Number of shares held by the largest shareholder / Total share capital
<i>Q</i>	Market capitalization / Total assets
<i>Board</i>	Natural logarithm of Board number
<i>Indep</i>	Number of independent directors / Total number of board members
<i>Big4</i>	Dummy variable: Returns 1 if the auditor is a Big Four accounting firm, or 0 otherwise
<i>Auditoppi</i>	Dummy variable: Returns 1 if a standard unqualified audit opinion is assigned, or 0 otherwise
<i>Dig</i>	Natural logarithm of the total word frequency of digital transformation characteristic words in the annual report plus one."
<i>Year</i>	Year dummy variable
<i>Ind</i>	Industry dummy variable

Table 2 Descriptive statistics

Variable	N	Mean	SD	Median	Min	Max
<i>Auditfee</i>	20964	14.0838	0.7113	13.9810	12.8739	16.6891
<i>ESGSD</i>	20964	1.2902	0.5175	1.3292	0.5774	2.8284
<i>Size</i>	20964	22.6083	1.5236	22.3532	19.9899	27.8134
<i>Lev</i>	20964	0.4463	0.2155	0.4343	0.0611	0.9513
<i>Roa</i>	20964	0.0334	0.0802	0.0355	-0.3198	0.2411
<i>ShareI</i>	20964	0.3310	0.1492	0.3059	0.0812	0.7430
<i>Q</i>	20964	2.3548	1.8089	1.7674	0.8089	11.0542
<i>Board</i>	20964	2.1182	0.2112	2.1972	1.0986	2.9444
<i>Indep</i>	20964	0.3791	0.0561	0.3636	0.1000	0.8000
<i>Big4</i>	20964	0.0884	0.2839	0.0000	0.0000	1.0000
<i>Auditoppi</i>	20964	0.9512	0.2155	1.0000	0.0000	1.0000
<i>Dig</i>	20964	1.7589	1.4110	1.6094	0.0000	5.2204

Table 3 Baseline regression results

Variables	(1) <i>Auditfee</i>	(2) <i>Auditfee</i>	(3) <i>Auditfee</i>
<i>ESGSD</i>	0.0559*** (6.73)		0.0377*** (6.90)
<i>Size</i>		0.3492*** (101.49)	0.3487*** (101.42)
<i>Lev</i>		0.1347*** (7.02)	0.1344*** (7.01)
<i>Roa</i>		-0.7669*** (-16.51)	-0.7543*** (-16.25)
<i>ShareI</i>		-0.0696*** (-3.17)	-0.0671*** (-3.06)
<i>Q</i>		0.0159*** (8.41)	0.0154*** (8.12)
<i>Board</i>		-0.0309 (-1.57)	-0.0287 (-1.46)
<i>Indep</i>		0.1019 (1.51)	0.0999 (1.48)
<i>Big4</i>		0.5784*** (41.89)	0.5788*** (41.94)
<i>Auditoppi</i>		-0.2044*** (-12.86)	-0.1993*** (-12.56)
<i>Dig</i>		0.0280*** (11.59)	0.0272*** (11.31)
<i>Year</i>	Yes	Yes	Yes
<i>Ind</i>	Yes	Yes	Yes
cons	13.9871*** (316.66)	6.2822*** (67.88)	6.2376*** (67.38)
N	20964	20964	20964
Adj-R <sup>2</sup>	0.1156	0.6531	0.6538
F	76.5013	874.6122	855.5734

Note: \*\*\*, \*\*, and \* denote significant at the 1 %, 5 %, and 10 % statistical levels, respectively. Numbers in parentheses are adjusted t-values clustered by firm.

Table 4 Alternative measures of ESG rating divergence

Variables	(1) <i>Auditfee</i>	(2) <i>Auditfee</i>	(3) <i>Auditfee</i>
<i>ESGSD4</i>	0.0589*** (12.10)		
<i>ESGCH</i>		0.0239*** (7.93)	
<i>ESGST</i>			0.1802*** (9.52)
<i>Size</i>	0.3480*** (101.68)	0.3411 *** (94.58)	0.3496*** (101.83)
<i>Lev</i>	0.1347*** (7.03)	0.1439*** (7.49)	0.1258*** (6.58)
<i>Roa</i>	-0.7357*** (-15.86)	-0.7501*** (-16.18)	-0.7360*** (-15.86)
<i>ShareI</i>	-0.0621*** (-2.84)	-0.0692*** (-3.16)	-0.0625*** (-2.86)
<i>Q</i>	0.0153*** (8.13)	0.0136*** (7.11)	0.0150*** (7.90)
<i>Board</i>	-0.0264 (-1.34)	-0.0295 (-1.49)	-0.0255 (-1.29)
<i>Indep</i>	0.0989 (1.47)	0.0976 (1.45)	0.1073 (1.59)
<i>Big4</i>	0.5751*** (41.86)	0.5805*** (42.05)	0.5825*** (42.16)
<i>Auditoppi</i>	-0.1924*** (-12.15)	-0.1979*** (-12.50)	-0.1850*** (-11.69)
<i>Dig</i>	0.0268*** (11.15)	0.0269*** (11.18)	0.0276*** (11.48)
<i>Year</i>	Yes	Yes	Yes
<i>Ind</i>	Yes	Yes	Yes
cons	6.2648*** (68.07)	6.4162*** (68.06)	6.1744*** (66.70)
N	20964	20964	20964
Adj-R <sup>2</sup>	0.6556	0.6542	0.6546
F	862.2984	860.7001	860.7916

Note: \*\*\*, \*\*, and \* denote significant at the 1 %, 5 %, and 10 % statistical levels, respectively. Numbers in parentheses are adjusted t-values clustered by firm.

Table 5 Endogeneity checks

Variables	(1) <i>Auditfee</i>	(2) <i>ESGSD</i>	(3) <i>IV: Auditfee</i>	(4) <i>PSM: Auditfee</i>
<i>ESGSD</i>	0.0087** (2.45)		0.2180*** (5.99)	0.0340*** (4.03)
<i>ESGSD<sub>t-1</sub></i>				
<i>ESGcity</i>		0.5657*** (19.93)		
<i>ESGind</i>		0.5845*** (13.70)		
<i>Controls</i>	Yes	Yes	Yes	Yes
<i>Year</i>	Yes	Yes	Yes	Yes
<i>Ind</i>	No	Yes	Yes	Yes
<i>Firm</i>	Yes	No	No	No
cons	8.5446*** (29.33)	0.4382*** (4.34)	5.8457*** (50.45)	6.7220*** (38.13)
N	20964	20964	20964	5258
Adj-R <sup>2</sup>	0.3661	0.0564	0.6378	0.6121
F	75.9750	34.58	28983.03	198.7286

Note: \*\*\*, \*\*, and \* denote significant at the 1 %, 5 %, and 10 % statistical levels, respectively. Numbers in parentheses are adjusted t-values clustered by firm. In Column 4, the Kleibergen-Paap rk Wald F is 306.047. The Kleibergen-Paap rk LM is 506.209 and significant at 1% level.

Table 6 Moderating effect tests

Variables	(1) <i>Auditfee</i>	(2) <i>Auditfee</i>
<i>ESGSD</i>	0.0424*** (7.70)	0.0518*** (5.06)
<i>ESGSD</i> × <i>MSCI</i>	-0.1269*** (-3.44)	
<i>MSCI</i>	0.1818*** (3.36)	
<i>ESGSD</i> × <i>Lowcarbon</i>		-0.0211* (-1.75)
<i>Lowcarbon</i>		0.0727*** (4.31)
<i>Controls</i>	Yes	Yes
<i>Year</i>	Yes	Yes
<i>Ind</i>	Yes	Yes
cons	6.2299*** (61.99)	6.2053*** (66.35)
N	20964	20964
Adj-R <sup>2</sup>	0.6541	0.6546
F	811.6347	810.8121

Note: \*\*\*, \*\*, and \* denote significant at the 1 %, 5 %, and 10 % statistical levels, respectively. Numbers in parentheses are adjusted t-values clustered by firm.

Table 7 Mechanism analysis

Variables	(1) <i>KV</i>	(2) <i>Orisk</i>	(3) <i>Cost<sub>t+1</sub></i>	(4) <i>Attention</i>
<i>ESGSD</i>	0.0058** (2.26)	0.0055*** (8.04)	0.0032*** (3.54)	0.8449*** (8.72)
<i>Size</i>	0.0550*** (33.18)	-0.0020*** (-6.00)	-0.0010* (-1.94)	4.6082*** (64.74)
<i>Lev</i>	-0.0465*** (-5.17)	-0.0007 (-0.28)	0.0183*** (5.01)	-2.6581*** (-8.62)
<i>Roa</i>	0.3526*** (16.13)	-0.2516*** (-26.98)	-0.0350*** (-4.08)	24.5244*** (29.25)
<i>ShareI</i>	-0.0401*** (-3.96)	-0.0227*** (-10.66)	-0.0104*** (-2.82)	-3.9600*** (-9.84)
<i>Q</i>	0.0341*** (25.96)	0.0047*** (17.10)	-0.0004 (-1.10)	2.2857*** (43.50)
<i>Board</i>	-0.0032 (-0.35)	-0.0106*** (-5.19)	0.0042 (1.36)	-1.2921*** (-3.34)
<i>Indep</i>	-0.0175 (-0.58)	-0.0005 (-0.08)	0.0062 (0.62)	-0.1333 (-0.10)
<i>Big4</i>	-0.0057 (-0.84)	0.0007 (0.66)	0.0080*** (3.83)	1.2870*** (4.63)
<i>Auditoppi</i>	-0.0073 (-0.90)	-0.0422*** (-14.51)	-0.0233*** (-8.07)	-0.1205 (-0.54)
<i>Dig</i>	0.0016 (1.41)	-0.0006** (-2.25)	0.0005 (1.34)	0.5282*** (11.55)
<i>Year</i>	Yes	Yes	Yes	Yes
<i>Ind</i>	Yes	Yes	Yes	Yes
cons	-0.7629*** (-16.84)	0.1460*** (15.22)	0.0858*** (6.45)	-1.0e+02*** (-53.94)
N	15975	19649	20172	20964
Adj-R <sup>2</sup>	0.4964	0.2737	0.0280	0.4459
F	452.9359	95.2605	15.4455	271.5547

Note: \*\*\*, \*\*, and \* denote significant at the 1 %, 5 %, and 10 % statistical levels, respectively. Numbers in parentheses are adjusted t-values clustered by firm.