



Does ESG rating disagreement undermine ESG performance under mandatory disclosure? Evidence from China

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ARTICLE INFO

JEL:

G30

G32

G38,M14

Keywords:

ESG disagreement

ESG performance

ESG disclosure regulation

Financial constraints

ABSTRACT

This study examines whether ESG disagreement undermines firms' ESG performance amid China's shift toward mandatory ESG disclosure. Using a panel of Chinese A-share listed firms from 2018 to 2023, following the implementation of the revised Code of Corporate Governance, we measure ESG disagreement as the rating dispersion across major ESG rating agencies and ESG performance using WIND ESG scores. Employing firm and year fixed effects and 2SLS, we document a robust negative association between ESG disagreement and subsequent ESG performance. Economically, a one-standard-deviation increase in the logarithm of ESG disagreement is associated with a 0.176% decline in firms' ESG scores. Further analysis suggests that financial constraints serve as an important channel through which ESG disagreement affects ESG performance, indicating that rating divergence exacerbates resource frictions under mandatory disclosure. The effect is most pronounced in the governance dimension, among non-SOEs, in high-pollution industries, and in middle provinces.

1. Introduction

Environmental, social, and governance (ESG) ratings have become a key channel for investors, regulators, and other stakeholders to assess corporate sustainability and risk. In China, ESG disclosure has expanded rapidly following a series of regulatory reforms, most notably the 2018 revision of the Code of Corporate Governance for Listed Companies, which formally shifted institutional expectations from voluntary to quasi-mandatory disclosure (Zhao et al., 2025). This reform substantially increased the volume of ESG-related information in the market. However, in the absence of a unified reporting framework, the resulting "information explosion" has paradoxically amplified, rather than reduced, divergence among rating agencies (Christensen et al., 2021; Liu, 2022). ESG rating disagreement in China has thus become a persistent source of information friction with real economic consequences, raising financing costs and depressing substantive ESG investment even as more corporate disclosure is mandated (Guo et al., 2024; Zhao et al., 2025). Under this quasi-mandatory regime, firms facing high rating disagreement may incur higher reporting and compliance costs without receiving consistent market recognition. This "double squeeze" of elevated compliance and capital costs can further tighten financing constraints and limit the resources available for ESG investments. Against this backdrop, we ask whether the evaluative noise generated by rating disagreement feeds back into firms' own ESG behavior, potentially undermining the very performance that disclosure reforms seek to improve.

Our study is positioned at the intersection of three burgeoning streams of literature. In the first strand, research on ESG ratings has

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extensively documented measurement divergence among providers (Berg et al., 2022), or focuses on the capital market and financing consequences of ESG rating disagreement (Bao et al., 2024; Geng et al., 2024; Guo et al., 2024; Li et al., 2024; Qin and Wang, 2025; Zhong et al., 2025). The second strand treats ESG disagreement as a form of informational friction. Higher disagreement increases analysts' forecast error and dispersion and is explicitly shown to exacerbate information asymmetry (Liu et al., 2024). At the institutional level, disagreement also weakens the ability of ESG scores to lower the cost of equity, especially when analyst uncertainty is high (Mio et al., 2025). Related work also shows that strong ESG performance, especially when assured, can mitigate information asymmetry (Kim et al., 2023). The third literature links ESG information to capital structure and real corporate behavior (Wen et al., 2024; Zhang et al., 2024). Although prior studies suggest that ESG disagreement generally erodes a firm's capacity to relax financing constraints (Tao et al., 2025) and that alleviating such capital constraints can foster green investment (Ren et al., 2023; Yang and Han, 2023), the real effects of evaluative noise on internal ESG investment remain under-theorized.

Specifically, the feedback loop remains underdeveloped, that how external evaluative noise reshapes managers' willingness and ability to sustain substantive ESG investment. In China's newly-mandatory disclosure environment, this gap is particularly critical because rating divergence may weaken the financing channel through which disclosure is expected to drive corporate green transformation (Chen and Zhou, 2025; Wu et al., 2025; Zhao et al., 2025).

This study addresses the gap by examining whether ESG rating disagreement undermines firms' subsequent ESG performance in China's post-mandatory disclosure regime. Using a comprehensive panel of Chinese A-share listed firms from 2018 to 2023, we measure ESG disagreement based on rating dispersion across 7 ESG rating agencies (excluding WIND ESG) and assess ESG performance using WIND ESG scores. Using two-way fixed effects and instrumental variable approaches, we document a robust negative association between ESG rating disagreement and subsequent ESG performance. Further analysis indicates that financing constraints serve as an important channel through which ESG disagreement affects firms' ESG outcomes, with the negative effect concentrated in the governance dimension, non-SOEs, high-pollution industries, and middle provinces.

Our findings contribute to the literature in three ways. First, we provide direct evidence that ESG rating disagreement undermines firms' real ESG performance, extending prior research that primarily emphasizes capital market effects. Second, by focusing on the post-mandatory disclosure period in China, we highlight an important limitation of disclosure-based regulation: enhanced disclosure alone may be insufficient to improve ESG performance when rating divergence persists. Third, our findings offer policy-relevant insights for regulators and standard setters by underscoring the importance of improving ESG rating comparability and information consistency to strengthen the effectiveness of ESG governance in emerging markets.

2. Hypothesis development

Drawing on Signal Interference Theory (SIT) and the Resource-Based View (RBV), we propose a dual-channel mechanism through which ESG rating divergence undermines ESG performance. First, from the perspective of SIT, the divergence introduces signal noise, heightening information asymmetry and perceived risk, triggering an uncertainty premium and tighter financing constraints. Second, through the lens of the RBV, because substantive ESG capabilities are capital-intensive strategic assets that rely on sustained slack, this erosion of financial capacity creates a resource barrier that crowds out long-horizon ESG investments in favor of short-term operational survival. In China's post-2018 quasi-mandatory disclosure environment, this financing constraint channel is amplified by the "double squeeze" described in the introduction: high rating disagreement simultaneously inflates compliance and capital costs, severely restricting the resources available for ESG improvement. Critically, unlike environmental (E) and social (S), which are often tied to rigid regulatory mandates or policy bottom lines, this resource-barrier effect is likely most pronounced in the governance dimension. Consequently, greater ESG disagreement might inadvertently weaken corporate sustainability investment when heightened noise increases financial constraints.

H1: ESG disagreement is negatively associated with firms' subsequent ESG performance.

3. Research design

3.1. Sample selection and data sources

This study uses data from China's A-share listed firms in Shanghai and Shenzhen between 2018 and 2023, sourced from CSMAR and WIND databases. Our data processing includes the following steps: We exclude: (1) firms with special treatment (ST/PT); (2) financial firms; (3) firms with missing control variables. Continuous variables are winsorized at 1% and 99% percentiles. The final sample includes 14,602 firm-level observations from 3113 companies.

3.2. Variable description

3.2.1. ESG performance (ESG)

The WIND ESG data is sourced from the WIND database, covering 2018 to 2023, right after the China Securities Regulatory

Commission issued the mandatory ESG disclosure framework,³ which substantially improved the consistency and comparability of ESG information.

3.2.2. ESG disagreement (ESGdis)

Following Avramov et al. (2022), ESG disagreement is measured as the average pairwise dispersion across standardized ESG ratings from the other 7 agencies: Sino-Securities ESG, Bloomberg ESG, SynTao Green Finance ESG, Rankins ESG Ratings, FTSE Russell ESG Ratings, Susall Wave ESG Ratings, and CNRDS ESG Ratings. Before calculation, each rating or score is standardized to a 0–10 scale for consistency. Firm-year observations with ratings available from fewer than two agencies are excluded to ensure reliable dispersion estimates. Detailed construction steps are provided in Appendix 2.

3.2.3. Control variables

To isolate the effect of ESG disagreement on ESG performance, we select the following control variables: firm size (SIZE), profitability (ROA), leverage (LEV), state ownership (SOE), institutional ownership (INST), the natural logarithm of the number of analysts following the firm (LnANA), and firm age (AGE). All variables are defined in Appendix 1.

3.2.4. Mechanism variable

(1) Financial constraint index: SA index following Hadlock and Pierce (2010), multiplied by -1 so that higher values indicate tighter financing constraints.

3.3. Descriptive statistics

Table 1 presents the descriptive statistics for the variables. The focal variable, LnESG, ranges from 1.470 to 2.141, with an average of 1.797. The independent variable, LnESGdis, ranges from -5.649 to -0.414 , with a mean of -1.733 . Other variables are within expected ranges.

4. Econometric model design and regression results

4.1. Baseline regression

To isolate the impact of ESG disagreement on firms' ESG performance, a two-way fixed effect regression model with Eq. (1) is used for empirical analysis:

$$LnESG_{it} = \alpha + \beta \cdot LnESGdis_{it-1} + \gamma'_1 Control_{it-1} + \theta_i + \delta_t + \epsilon_{it} \quad (1)$$

To address reverse causality, the independent and control variables are lagged for one period. To mitigate potential biases arising from skewed distribution, we use the log-log specification. In this model, $LnESGdis_{it}$ represents the natural logarithm of ESG disagreement for firm i in year t ; $LnESG_{it-1}$ denotes the natural logarithm of ESG performance for firm i in year $t-1$; and $Control_{it-1}$ represents the control variables for firm i in year t . To account for unobserved heterogeneity and common shocks, we also include firm (θ_i) and yearly (δ_t) fixed effects. The residual error ϵ_{it} satisfies the standard assumptions of OLS.

Table 2 reports the results of the benchmark regression analysis conducted using Eq. (1). In Column (1), the regression coefficient of $ESGdis_{it-1}$ is -0.003 and is significant at the 1% level. This indicates a strong negative relationship between an individual firm's ESG disagreement and its next year's ESG performance. In column (2), we include all the control variables. It remains negative (-0.002) and significant at the 5% level. The result is also economically significant. It implies that a one-standard-deviation increase in the logarithm of ESG disagreement (0.880) is associated with a 0.176% (-0.002×0.880) decrease in a firm's ESG performance next year. This reduction is equivalent to approximately 1.4% of the sample standard deviation of the log of ESG scores. This indicates that ESG rating disagreement has a clear and real negative impact on a firm's future ESG performance. This supports Hypothesis 1.

4.2. Mechanisms analysis

We employ a three-step framework to uncover the complex mechanisms. The three-path model is specified as:

$$Med_{it-1} = \alpha + \beta \cdot ESGdis_{it-1} + \gamma'_1 Control_{it-1} + \theta_i + \delta_t + \epsilon_{it} \quad (2)$$

$$ESG_{it} = \alpha + \beta_1 \cdot ESGdis_{it-1} + \beta_2 \cdot Med_{it-1} + \gamma'_1 Control_{it-1} + \theta_i + \delta_t + \epsilon_{it} \quad (3)$$

As shown in Panel A of Table 3, ESG disagreement is positively (0.001) associated with the financial constraint index (SA) and is significant at 5% level. After adding the financial constraint index to the baseline regression, the coefficient of LnESGdis remains

¹ Regions are defined as: Eastern (BJ, TJ, HE, LN, SH, JS, ZJ, FJ, SD, GD, HI); Central (SX, JL, HL, HA, HB, HN, AH, JX); and Western (NM, CQ, SC, GX, GZ, YN, SN, GS, QH, NX, XJ).

² High pollution industries are defined following the CSRC (2012) Guidelines as B06–09, C17, C19, C22, C25–26, C28–32, and D44.

³ <https://www.csrc.gov.cn/csrc/c100028/c1001175/content.shtml>

Table 1

Descriptive statistical results. This table presents summary statistics for the logarithm of ESG disagreement (LnESGdis) and ESG performance (LnESG), and mechanism testing variable, as well as the control variables, over the sample period from 2018 to 2023. Mean: the sample mean value, SD: the sample standard deviation. The definitions of all variables can be found in [Appendix 1](#).

Variable	Obs	Mean	SD	Min	Median	Max
<i>LnESG</i>	14,602	1.797	0.126	1.470	1.792	2.141
<i>LnESGdis</i>	14,602	−1.733	0.880	−5.649	−1.527	−0.414
<i>SIZE</i>	14,602	8.655	1.283	6.226	8.451	12.657
<i>ROA</i>	14,602	0.060	0.120	−0.688	0.069	0.329
<i>LEV</i>	14,602	0.412	0.184	0.052	0.410	0.829
<i>SOE</i>	14,602	0.309	0.462	0.000	0.000	1.000
<i>INST</i>	14,602	0.410	0.253	0.000	0.422	0.921
<i>LnANA</i>	14,602	1.186	1.278	0.000	0.693	3.951
<i>AGE</i>	14,602	2.087	0.773	0.693	2.197	3.466
<i>LnHESG</i>	14,602	1.536	0.202	0.105	1.492	2.185
<i>LnE</i>	10,501	0.583	0.966	−3.912	0.718	2.178
<i>LnS</i>	14,602	1.275	0.540	−0.777	1.376	2.192
<i>LnG</i>	14,602	1.864	0.140	0.850	1.875	2.207
<i>SA</i>	14,602	3.907	0.238	3.148	3.906	4.578

Table 2

The impact of ESG disagreement on firms' ESG performance. This table presents the regression results of LnESGdis on LnESG, including univariate and multivariate regressions. Standard errors are clustered at the firm level. T-statistics based on firm-level clustered standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

<i>Variables</i>	(1) <i>LnESG</i>	(2) <i>LnESG</i>
<i>LnESGdis</i> _{t-1}	−0.003*** (−3.02)	−0.002** (−2.33)
<i>SIZE</i> _{t-1}		0.034*** (7.16)
<i>ROA</i> _{t-1}		0.018** (2.20)
<i>LEV</i> _{t-1}		−0.041*** (−3.08)
<i>SOE</i> _{t-1}		0.004 (0.49)
<i>INST</i> _{t-1}		−0.009 (−0.62)
<i>LnANA</i> _{t-1}		0.002* (1.72)
<i>AGE</i> _{t-1}		−0.060*** (−9.77)
<i>Cons</i>	1.765*** (715.87)	1.601*** (43.60)
<i>Firm FE</i>	Yes	Yes
<i>Year FE</i>	Yes	Yes
<i>N</i>	14,602	14,602
Adj. R-sq	0.042	0.065

significant, suggesting that financial constraint partially mediates the relationship between ESG disagreement and ESG performance after the mandatory ESG disclosure.

In Panel B, we performed a bootstrap mediation test with 1000 replications. The indirect effect of ESG rating disagreement on ESG performance via financing constraints is −0.0003, with a 95% confidence interval of [−0.0005, −0.00006]. Since this interval excludes zero, the mediating role of financing constraints is statistically confirmed. Furthermore, the total effect is −0.0021, indicating that financing constraints partially mediate the overall negative impact, accounting for approximately 14.2% of the effect. This result supports our theoretical framework.

4.3. Heterogeneity analysis

To investigate the heterogeneity of this effect, we use the different ESG data pillars from the WIND database. The results in [Table 4](#) show that ESG disagreement affects firms' Governance performance in the next year, while the impacts on the environmental and social dimensions are not obvious. These differences could be attributed to the different institutional natures of these pillars in China. Environmental and social commitments often act as regulatory mandates with high non-compliance costs, making them relatively less

Table 3

Mechanism analysis. This table presents results on the mechanism by which ESG disagreement affects ESG performance. Standard errors are clustered at the firm level. T-statistics based on firm-level clustered standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Mediation analysis		
Variables	(1) SA _{t-1}	(2) LnESG
LnESGdis _{t-1}	0.001** (2.53)	−0.002** (−2.02)
SA _{t-1}		−0.364*** (−9.49)
Controls	YES	YES
Firm FE	YES	YES
Year FE	YES	YES
N	14,602	14,602
Adj. R-sq	0.854	0.082
Panel B: The mediation results are based on 1000 bootstrap replications		
	Coefficients	95% CI
Total Effect	−0.0021	[−0.0039, −0.0003]
Direct Effect	−0.0018	[−0.0036, −0.0000]
Indirect Effect	−0.0003	[−0.0005, −0.00006]

sensitive to financial shocks. Conversely, sophisticated governance enhancements rely heavily on discretionary financial slack.

Further, we split our sample based on regional differences, pollution levels, and property rights. The results in Table 5 show that the impact is more pronounced for firms from the middle province, high-pollution industry, and non-SOEs. These findings reinforce the financing constraint channel. Specifically, non-SOEs, which lack government backing and therefore receive credit discrimination, are more sensitive to the uncertainty premium. High-pollution firms face stricter credit rationing when sustainability signals are confusing. Furthermore, regional differences suggest that firms are more dependent on external ratings for financing in areas with underdeveloped financial infrastructure (such as the middle provinces), making them more vulnerable to informational frictions.

Table 4

The impact of ESG disagreement on different pillars of firms' ESG performance. This table presents the regression results for LnESGdis across the different ESG performance pillars. Standard errors are clustered at the firm level. T-statistics based on firm-level clustered standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Variables	(1) LnE	(2) LnS	(3) LnG
LnESGdis _{t-1}	−0.012 (−1.42)	−0.001 (−0.38)	−0.005*** (−3.78)
SIZE _{t-1}	0.309*** (6.75)	0.097*** (4.18)	0.012** (2.09)
ROA _{t-1}	−0.147 (−1.62)	0.002 (0.05)	0.037*** (2.67)
LEV _{t-1}	−0.477*** (−3.24)	−0.133** (−2.21)	−0.003 (−0.14)
SOE _{t-1}	0.006 (0.07)	0.003 (0.11)	−0.008 (−0.84)
INST _{t-1}	−0.110 (−0.75)	−0.016 (−0.27)	−0.008 (−0.38)
LnANA _{t-1}	−0.002 (−0.17)	0.008 (1.44)	0.003 (1.60)
AGE _{t-1}	−0.132** (−2.07)	−0.229*** (−9.04)	−0.017** (−2.17)
Cons	−1.823*** (−5.08)	0.862*** (4.58)	1.739*** (38.82)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	10,501	14,602	14,602
Adj. R-sq	0.047	0.050	0.132

Table 5

The impact of ESG disagreement for different firm characteristics. This table presents the regression results of ESG disagreement for different firm characteristics. Standard errors are clustered at the firm level. T-statistics based on firm-level clustered standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively^{1,2}.

	LnESG		
Panel A: regional differences			
Variables	EAST	MIDDLE	WEST
LnESGdis _{t-1}	−0.001 (−1.10)	−0.006** (−2.25)	−0.004 (−1.38)
Controls	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	10,876	2131	1533
Adj. R-sq	0.057	0.103	0.078
Panel B: differences in industry pollution			
	High-Pollution	Non-High-Pollution	
LnESGdis _{t-1}	−0.005** (−2.15)	−0.001 (−1.52)	
Controls	Yes	Yes	
Firm FE	Yes	Yes	
Year FE	Yes	Yes	
N	3055	11,547	
Adj. R-sq	0.081	0.067	
Panel C: differences in property rights			
	SOE	Non-SOEs	
LnESGdis _{t-1}	−0.002 (−1.13)	−0.002* (−1.95)	
Controls	Yes	Yes	
Firm FE	Yes	Yes	
Year FE	Yes	Yes	
N	4634	9560	
Adj. R-sq	0.111	0.057	

4.4. Robustness testing

4.4.1. Replace independent variables

To further verify the robustness of our results, the independent variable ESG is replaced with ESG data from the Sino-Securities ESG database. The original of Sino-Securities ESG ranges from C to AAA, totaling 9 classes. Following common practice, we convert the ratings to 1–9. After this, we standardize the scores into a 0–10 scale and take the natural logarithm of the ESG scores. For LnESGdis, we also exclude the Sino-Securities ESG ratings, calculate disagreement among the other 7 ESG rating agencies, and take the natural logarithm to reduce skewness. Columns 1–2 of Table 6 report the results of the two-way fixed effects regression. This result suggests that higher ESG disagreement reduces the performance of ESG ratings in the next year.

4.4.2. Instrumental variables

To further alleviate endogeneity concerns. We use two instrument variables, the ESG disagreement of other firms in the same province and the same industry ESGdisPro_{t-1}, and ESGdisInd_{t-1}. The relevance and exogeneity are further checked in columns (3) and (4) in Table 6. The coefficients of $\widehat{ESGdis}_{t-1}$ remain negative (−0.0210) and is statistically significant at the 10% level. The diagnostic tests confirm the appropriateness of our IV specification. The F statistic (24.64) is well above the critical values of 10, indicating now weak instrument problem. Additionally, the Hansen J-test (p-value = 0.146) fails to reject the null hypothesis of overidentifying restrictions. The results further support Hypothesis 1.

5. Conclusion

This study investigates whether ESG disagreement undermines firms' ESG performance in the context of mandatory disclosure in China. Using a large panel of Chinese A-share listed firms from 2018 to 2023, we provide robust evidence that greater ESG disagreement is associated with lower ESG performance in the subsequent year. Economically, a one-standard-deviation increase in the logarithm of ESG disagreement leads to a 0.176% decline in ESG scores.

Mechanism analysis reveals that financial constraints serve as an important channel, suggesting that ESG disagreement operates as an information friction that tightens firms' resource constraints and weakens their ability to improve ESG outcomes under mandatory disclosure. However, financial constraints only partially explain this relationship, suggesting that other channels may also be at work. Further analysis shows that the negative effect is concentrated in the governance dimension of ESG and non-SOEs.

Table 6

Robustness tests. This table reports the results of different robustness tests. In Models 1 and 2, the dependent variable is replaced with the Sino-Securities ESG rating (instead of WIND ESG ratings from Tables 2–5). In Models 3A and 3B, we report the 2SLS results. Standard errors are clustered at the firm level. T-statistics based on firm-level clustered standard errors are reported in parentheses. ***, and ** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	LnHESG Model 1	LnHESG Model 2	2SLS	
			First LnESGdis _{t-1} Model 3A	Second LnESG Model 3B
LnESGdis _{t-1}	−0.003** (−2.19)	−0.003* (−1.71)		
LnESGdisInd _{t-1}			0.5191*** (6.982)	
LnESGdisPro _{t-1}			−0.1566 (−1.045)	
$\widehat{LnESGdis}_{t-1}$				−0.0210* (−1.865)
Controls	No	YES	YES	YES
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	13,227	13,227	14,193	14,193
Adj. R-sq	0.050	0.078		
F			24.6449	
Hansen_J			0.1460	

Our findings carry important implications for regulators and market participants. While mandatory ESG disclosure is a critical step toward improving corporate sustainability, disclosure alone is insufficient if ESG information remains fragmented and inconsistent. Policymakers should complement disclosure requirements with efforts to enhance ESG rating comparability and standardization, thereby reducing information frictions and strengthening the real impact of ESG regulation.

Declaration of generative AI and AI-assisted technologies in the manuscript preparation process

During the preparation of this work, the author(s) used ChatGPT and DeepSeek to brainstorm and correct typos. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the published article.

Declaration of competing interest

none

Acknowledgments

Li JinLong acknowledges the support of the China Scholarship Council program.

Appendix 1: Variable definition

Variables	Definition	Frequency
<i>LnESG</i>	The natural logarithm of ESG scores from WIND	Annual
<i>LnESGdis</i>	The natural logarithm of Pairwise ESG disagreement	Annual
<i>SIZE</i>	The natural logarithm of the firm's total assets in millions Yuan	Annual
<i>ROA</i>	The net income divided by total assets	Annual
<i>LEV</i>	The total debt divided by total assets	Annual
<i>SOE</i>	Dummy variable, equals to 1 when it is owned by stated	Annual
<i>INST</i>	The proportion of institutional shareholders	Annual
<i>LnANA</i>	The natural logarithm of number of analysts following the firm	Annual
<i>AGE</i>	The natural logarithm of number of years since IPO of the stock	Annual
<i>LnHESG</i>	The natural logarithm of standardied Sino-Securities ESG ratings	Annual
<i>LnE</i>	The natural logarithm of E scores from WIND	Annual
<i>LnS</i>	The natural logarithm of S scores from WIND	Annual
<i>LnG</i>	The natural logarithm of G scores from WIND	Annual
<i>SA</i>	Financial constraint index following Hadlock and Pierce (2010) .	Annual

Appendix 2: ESGdis calculation

Before computing disagreement, each agency's raw rating is first standardized to a common 0–10 scale. The pairwise absolute difference between any two agencies, A and B, for firm j in year t is then calculated using Eq. (4).

$$ESGdis = \frac{|ESG_{j,t,A} - ESG_{j,t,B}|}{\sqrt{2}} \quad (4)$$

Where j and t denote the firm and year, respectively; $ESG_{j,t,A}$ and $ESG_{j,t,B}$ are the standardized 0–10 scores assigned by ESG rating agencies A and B. For each firm-year, the overall ESG disagreement measure (ESGdis) is then obtained by averaging all available pairwise differences across the seven agencies, requiring a minimum of two agencies per observation.

Data availability

Data will be made available on request.

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