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The impact of environmental uncertainty and managerial myopia on corporate ESG performance

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Abstract. Using panel data on Chinese A-share listed firms from 2009 to 2022, this study examines the effects of environmental uncertainty and managerial myopia on corporate ESG performance and further investigates the moderating role of bank credit support. The findings show that both environmental uncertainty and managerial myopia have significant negative effects on corporate ESG performance. Moreover, bank credit support mitigates the adverse effects of environmental uncertainty and managerial myopia on corporate ESG performance. Heterogeneity analyses indicate that these negative effects are more pronounced among non-state-owned enterprises and firms in high-technology industries. By integrating environmental uncertainty and managerial short-term orientation, this study provides a unified framework for understanding how external operating conditions and managerial decision horizons jointly shape corporate ESG performance. It also highlights bank credit as a potential buffer against both external and internal short-term pressures. The findings have practical implications for promoting corporate sustainability and strengthening corporate governance.

Keywords: environmental uncertainty, managerial myopia, corporate ESG performance, bank credit support

1. Introduction

Firms are increasingly expected to create long-term value while remaining responsive to changes in an uncertain business environment. In this context, Environmental, Social, and Governance (ESG) performance has become a crucial dimension of corporate sustainability, reflecting firms' ability to address environmental responsibilities, stakeholder interests, and governance quality while pursuing long-term development. Strong ESG performance can contribute to long-term value creation [1], affect investors' assessments of corporate risk and future prospects, and influence the allocation of capital. As ESG principles have gained wider recognition through initiatives such as the *United Nations Global Compact*, ESG criteria have become more deeply embedded in investment analysis, corporate evaluation, and regulatory practices [2, 3]. However, improvements in ESG performance typically require sustained resource commitments and often generate benefits over a relatively long horizon. This makes ESG decisions particularly sensitive to changes in the external environment and to managers' willingness to maintain long-term investments under short-term pressure. Heightened environmental uncertainty may induce firms to preserve liquidity and scale back long-horizon expenditures, while managers with a stronger short-term orientation may be more inclined to

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prioritize immediately observable financial outcomes. Corporate ESG performance may therefore depend not only on external environmental conditions but also on managers' decision horizons.

A central question, then, is why some firms are able to sustain their ESG commitments under pressure while others scale them back. One important source of such pressure is environmental uncertainty, which alters the conditions under which firms make long-term investment decisions. By reducing the predictability of future cash flows and returns, environmental uncertainty increases the value of financial flexibility and makes expenditures with delayed payoffs more vulnerable to cutbacks. ESG-related activities are particularly exposed to this pressure because they often require current resource commitments while generating benefits only over time. However, external conditions do not fully determine how firms respond. Firms' responses also depend on how managers weigh immediate performance against longer-term value creation. Upper echelons theory helps explain this variation by emphasizing that managers' cognitive orientations and behavioral characteristics shape strategic choices and resource allocation decisions [4, 5]. Managers with a stronger short-term orientation are therefore more likely to favor immediately observable outcomes over activities whose benefits are delayed or uncertain [6, 7]. Environmental uncertainty and managerial myopia thus represent two distinct sources of short-term pressure on corporate decision-making: the former arises from external conditions, whereas the latter stems from managers' decision horizons. Considering these two forces together helps explain why firms differ in their willingness to sustain long-term ESG commitments and why these differences ultimately matter for ESG performance.

Although prior research has identified a broad range of determinants of corporate ESG performance, two critical issues remain insufficiently explored. First, existing studies have predominantly focused on external institutional conditions, regulatory pressure, financing constraints, and corporate governance [8, 9], while paying less attention to external environmental uncertainty and managerial time orientation within the same analytical framework. These two factors represent conceptually distinct sources of short-term pressure on corporate decision-making. Environmental uncertainty arises from changes in the external operating environment, whereas managerial myopia reflects an internal tendency to prioritize immediate and observable outcomes. Both may undermine firms' ability or willingness to sustain ESG-related commitments; however, relatively little research has examined these external and internal pressures together in explaining corporate ESG performance. Second, the moderating role of bank credit remains inadequately understood. As an important source of external financing for Chinese firms, bank credit can alleviate financial pressure while also exerting external discipline through screening, contractual arrangements, and post-lending monitoring. These financing and governance functions suggest that bank credit may not only support firms' ESG-related commitments under heightened uncertainty but also constrain excessively short-term managerial behavior. Nevertheless, existing research has primarily examined the relationship between bank credit and corporate ESG from the perspectives of green credit, financing constraints, or credit allocation. Much less is known about whether bank credit can mitigate the adverse effects of environmental uncertainty and managerial myopia on corporate ESG performance.

This study develops an analytical framework that links environmental uncertainty and managerial myopia to corporate ESG performance, while also considering the moderating role of bank credit support. Using panel data from Chinese A-share listed firms from 2009 to 2022, the analysis examines the effects of environmental uncertainty and managerial myopia on ESG performance, explores heterogeneity across ownership and industry characteristics, and evaluates whether bank credit support mitigates these adverse effects. The study makes two primary contributions. First, it integrates external environmental uncertainty and internal managerial time orientation within a unified analytical framework, providing a more comprehensive explanation of corporate ESG performance and advancing research on the determinants of corporate

sustainability. Second, it underscores the role of bank credit in shaping firms' responses to both external uncertainty and managerial short-termism, thereby broadening the ESG literature beyond the conventional focus on green credit and financing constraints and highlighting the financing and governance functions of bank credit in supporting corporate sustainability.

The remainder of this paper is organized as follows. Section 2 reviews the relevant literature and develops the research hypotheses. Section 3 describes the sample, variable construction, and model specification. Section 4 reports the baseline results, robustness tests, the moderating effects of bank credit support, and heterogeneity analyses. Section 5 presents the conclusions and policy implications.

2. Literature review and hypothesis development

2.1. Environmental uncertainty and corporate ESG performance

Firms operate in constantly evolving business environments and therefore face both opportunities arising from environmental changes and challenges associated with environmental uncertainty. Environmental uncertainty generally refers to the unpredictability and instability of external conditions facing the firm [10]. It is inherently dynamic, multidimensional, and complex [11] and can arise from a range of factors, including policy changes, shifts in market structure, technological change, and unexpected events [12]. Environmental uncertainty affects firms' expectations about future conditions and their resource allocation decisions. Under heightened uncertainty, firms may adopt more conservative strategies to reduce risk exposure, thereby crowding out long-term investments. Heightened uncertainty increases the value of preserving financial flexibility because firms face greater difficulty in forecasting future cash flows and investment returns. As a result, managers may postpone or scale back expenditures that require substantial upfront commitments and generate benefits only over a relatively long horizon, thereby increasing the likelihood that resources are diverted away from ESG-related investments. Environmental uncertainty may therefore weaken firms' commitment to ESG activities and adversely affect corporate ESG performance [13]. Recent evidence from Chinese listed firms similarly shows that environmental uncertainty reduces corporate ESG performance and leads firms to postpone or scale back sustainability-related investment [14].

The potential effects of environmental uncertainty on corporate ESG performance can be considered across the environmental, social, and governance dimensions. First, in the environmental dimension, environmental uncertainty may increase environmental compliance and environmental management costs and weaken firms' willingness to invest in environmental initiatives. Firms may consequently adopt more conservative environmental strategies and reduce environmental expenditures in an effort to limit their exposure to uncertainty. Second, in the social dimension, environmental uncertainty exposes firms to greater operational challenges and unexpected risks. Responding to these disruptions may divert resources and managerial attention away from social responsibility activities, thereby constraining firms' ability to fulfill their social responsibilities. In addition, environmental uncertainty may reduce firms' investment in maintaining relationships with key stakeholders. Third, in the governance dimension, environmental uncertainty may increase the challenges faced by corporate governance and decision-making. Greater uncertainty raises the complexity of firms' operations and can make monitoring and strategic decision-making more difficult, thereby placing greater demands on governance mechanisms. For example, Ongsakul et al. [15] show that firms adjust their governance structures in response to heightened policy uncertainty, suggesting that uncertain environments increase the need for adaptive governance arrangements. Hu and Zheng [10] find that in an uncertain environment, firms may prioritize short-term interests and crisis response while neglecting long-term development strategies and sustainability, potentially diverting governance priorities away from long-term

value creation. Taken together, environmental uncertainty can weaken firms' capacity and willingness to commit resources to long-term ESG activities by increasing risk exposure, encouraging precautionary resource allocation, and diverting managerial attention toward short-term operational concerns. Based on the above discussion, this study proposes the following hypothesis:

H1: Environmental uncertainty negatively affects corporate ESG performance.

2.2. Managerial myopia and corporate ESG performance

Managerial myopia is closely related to research on managerial time orientation and short-termism, which examines how managers weigh immediate outcomes against longer-term consequences [16, 17]. A core feature of managerial myopia is an excessive emphasis on immediate and observable outcomes at the expense of longer-term consequences. Such managers tend to favor projects with shorter investment horizons and faster payoffs, potentially at the expense of long-term value creation [18]. This short-term orientation reflects managers' temporal preferences and can shape their strategic choices and decision-making [7]. According to upper echelons theory, managers' cognitive orientations and behavioral characteristics shape firms' strategic choices and long-term development [4, 5]. Managerial myopia narrows managers' decision horizons. Faced with performance pressure and concerns about cost control and risk management, myopic managers are more likely to favor decisions that prioritize short-term financial performance at the expense of the firm's long-term interests [6]. This tension is particularly relevant to ESG because the benefits of ESG-related activities are often delayed, difficult to observe immediately, and distributed across multiple stakeholders rather than fully reflected in current financial performance. Myopic managers may therefore reduce ESG-related expenditures in response to performance pressure and cost constraints and may also weaken efforts to improve corporate governance and the quality of information disclosure [19, 20]. Such short-term-oriented behavior may therefore undermine corporate ESG performance. In addition, sustained improvements in ESG performance require managers to maintain a long-term orientation and commit resources to initiatives whose benefits may materialize only gradually. Myopic managers may instead allocate managerial attention and corporate resources to activities that yield more immediate and observable returns, thereby reducing long-term commitments to environmental, social, and governance initiatives. Based on the above discussion, this study proposes the following hypothesis:

H2: Managerial myopia negatively affects corporate ESG performance.

2.3. The moderating role of bank credit support

Environmental uncertainty and managerial myopia can both undermine firms' ability to sustain ESG-related activities, but through different channels. Environmental uncertainty makes it more difficult for firms to commit resources under unpredictable future conditions, whereas managerial myopia shifts managerial attention toward more immediate financial outcomes. Whether these pressures ultimately translate into poorer ESG performance may depend in part on the conditions under which firms obtain financial resources and make investment decisions. In China, bank credit is an important source of external financing and can influence corporate decisions beyond the provision of financial resources [21, 22]. Through lending relationships, banks can alleviate financial pressure while also imposing external discipline on corporate decision-making. Prior evidence shows that banks actively monitor borrowers through information collection, contractual arrangements, and ongoing oversight, underscoring the governance role embedded in bank lending relationships [23].

When environmental uncertainty increases, the financing role of bank credit becomes particularly important. Greater uncertainty makes future cash flows and investment returns more difficult to predict,

increasing the risks associated with long-term investment decisions [24]. Consistent with this argument, prior evidence shows that heightened uncertainty can reduce the supply of business credit and restrict firms' access to external liquidity [25]. Firms may consequently place greater emphasis on preserving liquidity and become more cautious about expenditures with delayed or uncertain returns. ESG-related activities are particularly vulnerable to this pressure because they often require sustained resource commitments before their benefits are realized. Although uncertainty may itself constrain credit supply, firms with greater access to bank financing are better positioned to sustain long-term ESG commitments when uncertainty increases. Bank credit can alleviate such financial pressure by improving firms' access to external funding and preserving their capacity to allocate resources to longer-term activities. Evidence from China's green credit reforms further suggests that credit allocation can improve firms' ESG performance by reshaping financial resource allocation and supporting longer-term corporate investment [26]. This support can help firms maintain resource commitments to environmental management, employee protection, and governance improvement during periods of uncertainty [27]. Greater bank credit support should therefore reduce the extent to which environmental uncertainty translates into weaker corporate ESG performance.

The governance role of bank credit becomes particularly important when the source of pressure is managerial myopia. Myopic managers tend to place greater emphasis on short-term and observable outcomes, which may reduce their willingness to allocate resources to ESG-related activities whose benefits emerge only gradually. Bank lending, however, also creates an external monitoring relationship. Pre-loan screening, contractual restrictions, and post-lending monitoring can strengthen oversight of managerial decisions and constrain excessively short-term behavior [22, 23]. By increasing managerial accountability and limiting decisions that sacrifice long-term value for immediate performance, bank credit can help sustain firms' commitment to ESG-related activities. It may therefore mitigate the adverse effect of managerial myopia on corporate ESG performance. Accordingly, this study proposes the following hypotheses:

H3: Bank credit support mitigates the negative effect of environmental uncertainty on corporate ESG performance.

H4: Bank credit support mitigates the negative effect of managerial myopia on corporate ESG performance.

3. Research design

3.1. Sample selection and data sources

This study uses a sample of A-share listed firms on the Shanghai and Shenzhen stock exchanges from 2009 to 2022. Corporate ESG ratings are obtained from the WIND database. The annual reports used to construct the managerial myopia measure are collected from the CNINFO website, while tokenization and word-frequency analysis are conducted using the WinGo financial text analysis platform. Data for the remaining variables are obtained from the CSMAR database. Following prior studies, the following screening criteria are applied: (1) financial firms, including banks, securities companies, and insurance companies, are excluded; (2) PT, ST, and *ST firms are excluded; (3) observations with missing values for key variables are excluded; and (4) firms with fewer than two consecutive annual observations are excluded. The final sample consists of 26,003 firm-year observations.

3.2. Variable definitions

3.2.1. Dependent variable

Corporate ESG performance (esg): This study measures corporate ESG performance using the Sino-Securities (Huazheng) ESG ratings. The rating system is based on widely adopted international ESG evaluation frameworks while incorporating features of China's institutional and market context. It provides broad coverage of Chinese listed firms and a relatively long time series. Following prior studies, the nine rating categories, ranging from C to AAA, are assigned numerical values from 1 to 9, with higher values indicating better ESG performance. As a robustness check, this study uses the annual average of the four quarterly ESG ratings as an alternative measure of corporate ESG performance.

3.2.2. Independent variables

Managerial myopia ($myopia$): Following Hu et al. [7], this study constructs a text-based measure of managerial myopia using the Management Discussion and Analysis (MD&A) sections of listed firms' annual reports. The lexicon used to capture managers' short-term orientation comprises a seed set and an expanded set. The seed set contains 10 terms indicative of a short-term time horizon, such as "within days", "within several months", "within the year", "as soon as possible", "immediately", and "right away". Word2Vec is subsequently used to identify semantically related expressions, resulting in an additional expanded set of 33 terms. After tokenizing the MD&A text, this study counts the occurrences of all terms in the seed and expanded sets for each firm-year observation. The total frequency of these terms is then divided by the total number of words in the corresponding MD&A section and multiplied by 100 to construct the managerial myopia measure. Higher values indicate a stronger short-term orientation among managers.

Environmental uncertainty (eu): Prior studies suggest that environmental uncertainty can be reflected in abnormal fluctuations in firms' operating performance, and operating-performance volatility is therefore commonly used as a firm-level proxy for uncertainty [28]. Following Zhuang and Duan [29] and Xu et al. [30], this study measures firm-level environmental uncertainty based on abnormal fluctuations in operating revenue. The measure is constructed as follows. First, Equation (1) is estimated using OLS over a rolling five-year window to remove the firm's underlying revenue growth trend, with the residual (ε) capturing abnormal operating revenue. Second, the standard deviation of abnormal operating revenue over the five-year period is divided by the mean operating revenue over the same period to obtain the firm-level, industry-unadjusted measure of environmental uncertainty. Third, the median of the industry-unadjusted measure among sample firms in the same industry-year is calculated as the industry benchmark. Fourth, the firm-level industry-unadjusted measure is divided by the corresponding industry benchmark to obtain the industry-adjusted measure of environmental uncertainty. Higher values indicate greater environmental uncertainty faced by the firm.

$$income = J_0 + J_1 year + \varepsilon \tag{1}$$

In Equation (1), $income$ denotes operating revenue, $year$ is a time-trend variable. Within each rolling five-year window, $year$ takes values from 1 to 5 in chronological order, with 5 corresponding to the current year and 1 to the fourth year preceding it. The residual (ε) captures the deviation of actual operating revenue from its fitted trend and is used to construct the environmental uncertainty measure described above.

3.2.3. Control variables

To mitigate potential omitted-variable bias, this study includes a set of firm-level control variables. Firm size ($size$) is measured as the natural logarithm of total assets. Leverage (lev) is measured as the total liabilities divided by total assets. Return on assets (roa) is measured as the sum of total profit and financial expenses divided by total assets. The proportion of independent directors ($inboard$) is measured as the number of

independent directors divided by the total number of directors. Ownership concentration ($top1$) is measured as the percentage of shares held by the largest shareholder. Firm age (age) is measured as the natural logarithm of the difference between the sample year and the firm's founding year.

Table 1 reports the descriptive statistics for the main variables. Corporate ESG performance (esg) has a mean of 4.090, corresponding to a rating between B and BB. Its standard deviation is 1.096, indicating considerable variation in ESG performance across firms. Environmental uncertainty (eu) has a mean of 1.336 and a standard deviation of 1.308, with values ranging from 0.0126 to 29.0574, suggesting substantial variation in the level of environmental uncertainty faced by sample firms. Managerial myopia ($myopia$) has a mean of 0.089 and ranges from 0 to 0.856, indicating meaningful variation in managers' short-term orientation across firms.

Table 1. Descriptive statistics

Variable	*N*	Mean	SD	Min	Max
esg	26,003	4.090	1.096	1.000	8.000
eu	26,003	1.336	1.308	0.013	29.057
myopia	26,003	0.089	0.082	0.000	0.856
size	26,003	22.487	1.313	17.532	28.636
lev	26,003	0.460	0.216	0.007	11.995
roa	26,003	0.044	0.090	-2.820	0.910
inboard	26,003	37.527	5.658	14.290	80.000
*top*1	26,003	33.289	14.858	1.840	89.990
age	26,003	2.908	0.319	1.386	4.007

3.3. Model specification

To examine the effects of environmental uncertainty and managerial myopia on corporate ESG performance, this study specifies the baseline models in Equations (2) and (3) as follows:

$$esg_{it} = \alpha_0 + \alpha_1 eu_{it} + \varphi_j controls_{it} + \sum industry + \sum year + \varepsilon_{it} \quad (2)$$

$$esg_{it} = \beta_0 + \beta_1 myopia_{it} + \varphi_j controls_{it} + \sum industry + \sum year + \varepsilon_{it} \quad (3)$$

where i denotes the firm and t denotes the year. The dependent variable is corporate ESG performance (esg_{it}). The key independent variables are environmental uncertainty (eu_{it}) and managerial myopia ($myopia_{it}$). $controls_{it}$ denotes a vector of firm-level control variables. The models include industry and year fixed effects, and standard errors are clustered at the firm level to account for within-firm correlation.

4. Empirical results

4.1. Baseline regression

Table 2 reports the baseline regression results. Columns (1) and (2) show that the coefficient on environmental uncertainty (eu) is significantly negative at the 1% level, both before and after the inclusion of firm-level control variables. This finding indicates that environmental uncertainty has a significant negative effect on

corporate ESG performance, supporting H1. Columns (3) and (4) show that the coefficient on managerial myopia (*myopia*) is also significantly negative, indicating that managerial myopia has a significant negative effect on corporate ESG performance and supporting H2. Column (5) includes environmental uncertainty and managerial myopia simultaneously. The coefficients on both variables remain significantly negative, confirming the robustness of the baseline results.

Table 2. Baseline regression results

Variable	(1)	(2)	(3)	(4)	(5)
eu	-0.121***	-0.090***			-0.090***
	(-13.782)	(-12.022)			(-12.077)
myopia			-0.543***	-0.211*	-0.237**
			(-4.073)	(-1.943)	(-2.191)
Control variables	No	Yes	No	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.081	0.206	0.062	0.195	0.206
N	26003	26003	26003	26003	26003

Note: Standard errors are clustered at the firm level, and *t*-statistics are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

4.2. Robustness tests

4.2.1. Instrumental variable estimation

To address potential endogeneity concerns, following Hu et al. [7], this study uses the one-period lags of environmental uncertainty and managerial myopia as their respective instrumental variables. The results are reported in Table 3. The Kleibergen–Paap rk LM statistics reject the null hypothesis of underidentification, while the Cragg–Donald Wald F and Kleibergen–Paap rk Wald F statistics provide no evidence of serious weak-instrument concerns. Columns (1) and (2) show that the coefficients on environmental uncertainty (*eu*) and managerial myopia (*myopia*), respectively, remain significantly negative, confirming the robustness of the baseline results.

Table 3. Instrumental variable estimation

Variable	(1)	(2)
eu	-0.131***	
	(-10.164)	
myopia		-0.545**
		(-2.038)
Control variables	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Kleibergen-Paap rk LM statistic	318.843	331.838
	[0.000]	[0.000]
Cragg-Donald Wald F statistic	1.2e+04	5,614.710
	{16.38}	{16.38}

Table 3. Continued

Kleibergen-Paap rk Wald F statistic	1,276.929	1,282.378
R^2	0.157	0.147
N	22,697	22,697

Note: The underidentification test reports the Kleibergen–Paap rk LM statistic, with square brackets indicating the *p*-values for $\chi^2(1)$. The weak-instrument test reports the Cragg–Donald Wald F statistic and the Kleibergen–Paap rk Wald F statistic, with curly brackets indicating the Stock–Yogo critical value for a 10% maximal IV size. Standard errors are clustered at the firm level, and *t*-statistics are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

4.2.2. More stringent fixed effects

To further mitigate concerns about omitted-variable bias, this study includes industry-by-year and province-by-year fixed effects to control for time-varying shocks at the industry and regional levels. The results reported in Table 4 show that the coefficients on environmental uncertainty (eu) and managerial myopia ($myopia$) remain significantly negative after controlling for these more stringent fixed effects, further confirming the robustness of the baseline results.

Table 4. Robustness to more stringent fixed effects

Variable	(1)	(2)	(3)
eu	-0.090***		-0.090***
	(-11.869)		(-11.932)
myopia		-0.188*	-0.218**
		(-1.691)	(-1.978)
Control variables	Yes	Yes	Yes
Industry×Year FE	Yes	Yes	Yes
Province×Year FE	Yes	Yes	Yes
Adjusted R^2	0.228	0.217	0.228
N	25,929	25,929	25,929

Note: Standard errors are clustered at the firm level, and *t*-statistics are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

4.2.3. Alternative measure of ESG performance

This study re-estimates the baseline models using the annual average of the four quarterly Huazheng ESG ratings as an alternative measure of corporate ESG performance. The results reported in columns (1)–(3) of Table 5 show that the coefficients on environmental uncertainty (eu) and managerial myopia ($myopia$) remain significantly negative, confirming the robustness of the baseline findings to the alternative measure of ESG performance.

4.2.4. Excluding real estate firms

Given the distinctive financing structure and business model of the real estate industry, changes in the market environment may affect real estate firms disproportionately. To ensure that the baseline results are not driven by these industry-specific characteristics, this study re-estimates the baseline models after excluding real estate firms from the sample. The results reported in columns (4)–(6) of Table 5 show that the coefficients on

environmental uncertainty (eu) and managerial myopia ($myopia$) remain significantly negative, confirming that the baseline findings are robust to the exclusion of real estate firms.

Table 5. Alternative ESG measure and exclusion of real estate firms

	Alternative ESG Measure			Excluding Real Estate Firms		
Variable	(1)	(2)	(3)	(4)	(5)	(6)
eu	-0.095***		-0.095***	-0.088***		-0.089***
	(-13.010)		(-13.057)	(-11.670)		(-11.739)
myopia		-0.174*	-0.201*		-0.254**	-0.284**
		(-1.652)	(-1.921)		(-2.184)	(-2.458)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.245	0.231	0.245	0.187	0.176	0.187
N	26,003	26,003	26,003	24,660	24,660	24,660

Note: Standard errors are clustered at the firm level, and *t*-statistics are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

4.2.5. Lagged control variables

To further assess the robustness of the baseline results, this study re-estimates the baseline models after lagging all control variables by one period. The results reported in Table 6 show that the coefficients on environmental uncertainty (eu) and managerial myopia ($myopia$) remain significantly negative, further confirming the robustness of the baseline findings.

Table 6. Robustness to lagged control variables

Variable	(1)	(2)	(3)
eu	-0.075***		-0.075***
	(-9.427)		(-9.481)
myopia		-0.282**	-0.300**
		(-2.338)	(-2.507)
Control variables	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adjusted R^2	0.221	0.214	0.221
N	22,697	22,697	22,697

Note: Standard errors are clustered at the firm level, and *t*-statistics are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

4.3. Moderating role of bank credit support

To further examine whether bank credit support moderates these relationships, interaction terms are incorporated into the baseline models, yielding Equations (4) and (5), respectively:

$$esg_{it} = d_0 + d_1 eu_{it} + d_2 loan_{it} + d_3 eu_{it} \times loan_{it} \quad (4)$$

$$+\varphi_j controls_{it} + \sum industry + \sum year + \varepsilon_{it}$$
$$esg_{it} = \delta_0 + \delta_1 myopia_{it} + \delta_2 loan_{it} + \delta_3 loan_{it} \times myopia_{it} \quad (5)$$
$$+\varphi_j controls_{it} + \sum industry + \sum year + \varepsilon_{it}$$

where $loan_{it}$ denotes bank credit support, measured in this study as the ratio of the firm's total bank borrowings to total assets. The interaction terms $loan_{it} \times eu_{it}$ and $loan_{it} \times myopia_{it}$ characterize the moderating effect of bank credit support. All other model specifications are consistent with the baseline models.

Table 7 presents the results regarding the moderating role of bank credit support. Column (1) shows that the coefficient on the interaction term between bank credit support and environmental uncertainty ($loan \times eu$) is positive and statistically significant. Given the negative coefficient on environmental uncertainty, this finding indicates that greater bank credit support mitigates the adverse effect of environmental uncertainty on corporate ESG performance, supporting H3. One possible explanation is that bank credit alleviates firms' financing constraints and cash-flow pressures under heightened uncertainty, enabling them to maintain resource commitments to long-term ESG activities rather than substantially reducing such commitments. Column (2) further shows that the coefficient on the interaction term between bank credit support and managerial myopia ($loan \times myopia$) is also positive and statistically significant. This finding suggests that bank credit support mitigates the negative effect of managerial myopia on corporate ESG performance, supporting H4. Beyond providing financial resources, bank credit may exert an external governance effect through pre-loan screening, contractual restrictions, and post-loan monitoring. Such monitoring may constrain excessively short-term managerial behavior and encourage greater attention to long-term value creation and ESG-related commitments. Overall, these findings align with the financing and governance roles of bank credit discussed above and provide further support for hypotheses H3 and H4.

Table 7. Moderating effects of bank credit support

Variable	(1)	(2)
eu	-0.108*** (-8.584)	
myopia		-0.504*** (-2.741)
loan	-0.544*** (-4.114)	-0.576*** (-4.457)
loan×*eu*	0.093* (1.779)	
loan×*myopia*		1.333** (2.108)
Control variables	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Adjusted R^2	0.213	0.202
N	22,513	22,513

Note: Standard errors are clustered at the firm level, and *t*-statistics are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

4.4. Heterogeneity analysis

4.4.1. Ownership type

Ownership structure may shape firms' sensitivity to environmental uncertainty and managerial myopia. To examine whether the effects of environmental uncertainty and managerial myopia vary across firms with different ownership types, this study divides the sample into non-state-owned enterprises (SOE = 0) and state-owned enterprises (SOE = 1) and conducts subsample regressions. Columns (1) and (2) of Table 8 show that the coefficient on environmental uncertainty (eu) is significantly negative in both subsamples. The coefficient is larger in absolute magnitude for non-state-owned enterprises, suggesting that the adverse effect of environmental uncertainty on ESG performance may be more pronounced among these firms. This pattern may reflect the relatively limited resource endowments, weaker access to policy support, and tighter financing constraints faced by non-state-owned enterprises. Consequently, when confronted with heightened environmental uncertainty, they may have less capacity to maintain long-term resource commitments to ESG activities. Columns (3) and (4) further show that the coefficient on managerial myopia ($myopia$) is significantly negative in both subsamples. Again, the coefficient is larger in absolute magnitude for non-state-owned enterprises, suggesting that the adverse effect of managerial myopia on ESG performance may be stronger in this group. Non-state-owned enterprises may face greater short-term performance and external financing pressures, which can increase managers' incentives to prioritize immediate financial outcomes. Under such circumstances, managerial myopia may lead to greater reductions in resource commitments to environmental, social, and governance activities, thereby making the adverse effect of managerial myopia on corporate ESG performance more pronounced.

Table 8. Heterogeneity by ownership type

Variable	(1)	(2)	(3)	(4)
	SOE = 0	SOE = 1	SOE = 0	SOE = 1
eu	-0.089***	-0.070***		
	(-8.517)	(-6.687)		
myopia			-0.310*	-0.292**
			(-1.844)	(-2.139)
Control variables	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.172	0.261	0.160	0.255
N	13,996	11,464	13,996	11,464

Note: Standard errors are clustered at the firm level, and *t*-statistics are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

4.4.2. Industry type

To examine whether the effects of environmental uncertainty and managerial myopia vary across industries, this study divides the sample into non-high-technology industries (Tech = 0) and high-technology industries (Tech = 1) and conducts subsample regressions. Columns (1) and (2) of Table 9 show that the coefficient on environmental uncertainty (eu) is significantly negative in both subsamples. The coefficient is larger in absolute magnitude for firms in high-technology industries, suggesting that the adverse effect of environmental uncertainty on ESG performance may be more pronounced among these firms. This may reflect

the fact that high-technology firms typically operate in environments characterized by rapid technological change, high R&D intensity, and strong competitive pressure. These characteristics may increase their exposure to external uncertainty and make it more difficult to sustain long-term resource commitments to ESG activities when uncertainty intensifies. Columns (3) and (4) show that the coefficient on managerial myopia (*myopia*) is statistically insignificant in the non-high-technology subsample but significantly negative in the high-technology subsample. This pattern suggests that the adverse effect of managerial myopia on ESG performance is more evident among firms in high-technology industries. High-technology firms generally require sustained investment in innovation and other long-horizon activities while facing substantial technological and financing uncertainty. When managers adopt a short-term orientation and prioritize projects with more immediate and observable returns, resources may be diverted away from ESG-related activities whose benefits materialize over a longer horizon, thereby weakening corporate ESG performance.

Table 9. Heterogeneity by industry type

Variable	(1)	(2)	(3)	(4)
	Tech = 0	Tech = 1	Tech = 0	Tech = 1
eu	-0.069***	-0.115***		
	(-7.537)	(-10.347)		
myopia			-0.041	-0.378**
			(-0.277)	(-2.358)
Control variables	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.262	0.159	0.255	0.144
N	11,690	14,313	11,690	14,313

Note: Standard errors are clustered at the firm level, and *t*-statistics are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

5. Conclusion and policy implications

Corporate ESG performance has become an increasingly important dimension of corporate sustainability and long-term competitiveness, particularly as firms face growing uncertainty in the external environment and increasing pressure to balance short-term performance with long-term value creation. Drawing on upper echelons theory and the framework of decision-making under uncertainty, this study develops an analytical framework that integrates environmental uncertainty, managerial myopia, and corporate ESG performance, while further considering the moderating role of bank credit support. Using panel data on Chinese A-share listed firms from 2009 to 2022, this study examines how external environmental conditions and managers' time orientation both affect corporate ESG performance. The empirical results yield several main findings. First, both environmental uncertainty and managerial myopia have significant negative effects on corporate ESG performance, and these findings remain robust across a series of robustness tests. These results highlight the importance of considering both external environmental conditions and managers' short-term decision horizons in understanding firms' ESG performance. Second, bank credit support mitigates the negative effects of both environmental uncertainty and managerial myopia on corporate ESG performance. This finding highlights the role of bank credit in supporting firms' long-term ESG commitments and is consistent with its

financing and external governance functions. Third, the heterogeneity analyses suggest that the adverse effects of environmental uncertainty and managerial myopia appear to be more pronounced among non-state-owned enterprises and firms in high-technology industries, indicating that firm ownership and industry characteristics may shape firms' vulnerability to external uncertainty and short-term managerial orientation. Taken together, these findings suggest that firms' ability to sustain ESG commitments depends on both their capacity to absorb external uncertainty and managers' willingness to maintain a long-term decision horizon. Bank credit is particularly relevant because its financing and governance functions can help alleviate these two constraints through different channels.

This study offers several policy implications. First, firms should enhance their capacity to sustain ESG activities amid environmental uncertainty. The findings indicate that environmental uncertainty can undermine corporate ESG performance, suggesting that ESG considerations should be more closely integrated into risk management and strategic planning. During periods of heightened uncertainty, firms should avoid treating ESG-related expenditures as discretionary costs that can be easily reduced. Instead, they should maintain sufficient financial flexibility and improve their ability to respond to changes in the external environment.

Second, firms should strengthen governance arrangements to mitigate managerial short-termism. The negative effect of managerial myopia on ESG performance indicates that an excessive focus on short-term outcomes may undermine firms' sustainability efforts. Executive evaluation and compensation systems should therefore place greater emphasis on long-term performance and incorporate relevant ESG objectives. Long-term incentives and deferred compensation can help align managerial interests with the firm's broader development goals. Stronger board oversight and greater disclosure transparency can further constrain opportunistic behavior and encourage managers to prioritize sustainable value creation.

Third, banks can play an important role in supporting firms' long-term ESG commitments. The moderating results indicate that bank credit support mitigates the adverse effects of both environmental uncertainty and managerial myopia on ESG performance. Stable access to bank financing can alleviate financial pressure and help firms maintain investment during periods of heightened uncertainty. Banks can also place greater emphasis on firms' development prospects and ESG-related risks in credit assessment and lending decisions. Effective post-lending monitoring may further constrain excessively short-term managerial behavior and reinforce firms' commitment to sustainable development.

Fourth, ESG policies and support measures should be tailored to firms' ownership and industry characteristics. The heterogeneity analysis suggests that the adverse effects of environmental uncertainty and managerial myopia appear to be more pronounced among non-state-owned enterprises and high-technology firms. For non-state-owned enterprises, policy support should focus on improving financing stability and strengthening internal governance to enhance their capacity to sustain ESG activities under external pressure. For high-technology firms, ESG considerations should be more closely integrated into innovation and investment decisions to prevent short-term performance pressure from crowding out sustainability-oriented activities. Policymakers and financial institutions should therefore design more targeted support measures that account for differences in ownership structure, resource constraints, and development needs.

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