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Corporate Attention to Severe Physical Climate Risk and Audit Pricing: Empirical Evidence from the Text of Listed Companies' Annual Reports

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Abstract: This study examines whether climate risk information in annual reports is reflected in audit pricing. Using Chinese A-share listed firms from 2007 to 2024, we construct measures of overall and type-specific corporate attention to climate risk. Corporate attention to severe physical climate risk is significantly and positively associated with audit fees, whereas attention to overall climate risk, transition risk, and chronic physical risk shows no significant association. The main result remains unchanged after reducing the set of control variables, changing the winsorization treatment, and applying propensity score matching. In the channel tests, attention to severe physical climate risk is positively associated with audit response complexity, which is also positively associated with audit fees. However, the formal indirect effect is not statistically significant, so the evidence provides only preliminary support for the audit-effort channel. These findings provide empirical evidence that the relationship between climate risk information and audit pricing depends on the type of risk involved.

Keywords: Climate risk attention; Severe physical risk; Audit fees; Audit response.

1. Introduction

Global climate change and the increasing frequency of extreme weather events are altering firms' operating environments and placing pressure on financial stability. Climate risk is generally divided into physical risk and transition risk, but the two differ in both their modes of impact and economic consequences. Yang et al. (2024) [1] find that both types of risk affect financial stability, while Du et al. (2023) [2] showed that different types of climate risk have different effects on firms' cost of equity. Combining risks of a different nature into a single measure may therefore obscure these differences.

These effects have also entered the domain of independent auditing. Changes in asset values or supply-chain disruptions caused by extreme weather, together with operating adjustments associated with the low-carbon transition, involve judgment in financial reporting. Yao and Xu (2024) [3] showed that auditors exercised greater caution in key audit matter decisions and increase audit effort when a firm faces greater climate change risk. Because audit fees incorporate both audit effort and risk compensation, climate risk may also be reflected in audit pricing.

Using an aggregate measure, Liu (2025) [4] found that corporate attention to climate risk reduces audit fees and identifies easing financing constraints and strengthening corporate resilience as important channels. An aggregate measure, however, may conceal differences across risk types. Severe physical risks such as rainstorms, floods, typhoons, and droughts often occur suddenly, causing asset losses, production interruptions, or supply-chain disruptions. The resulting impairment assessments, inventory observations, and going-concern judgments increase audit complexity. It is therefore necessary to identify which types of climate risk information actually enter auditors' risk-pricing decisions.

Accordingly, this study uses Chinese A-share listed firms from 2007 to 2024 and constructs measures of climate risk attention from annual-report text. We distinguish severe physical risk, chronic physical risk, and transition risk, and examine how attention to each type is associated with audit fees. The results show a significant positive association between attention to severe physical climate risk and audit fees. No significant effect is found for overall climate risk, transition risk, or chronic physical risk attention. Further tests indicate that the main result is reasonably robust and provide preliminary support for the audit-response channel.

This study contributes in two respects. First, it distinguishes among types of corporate climate risk attention and documents that severe physical risk differs from other climate risks in audit pricing. Second, it examines the relationship between attention to severe physical risk and audit fees from the perspective of audit responses, providing additional evidence on how climate risk information enters auditors' risk assessments and fee decisions.

2. Literature Review

2.1. Climate Risk Classification and Microeconomic Consequences

Climate risk can be classified by source into physical risk and transition risk. Physical risk includes acute or severe events such as rainstorms, floods, and typhoons, as well as chronic changes in temperature, precipitation, and water levels. Transition risk arises mainly from carbon constraints and changes in regulation, technology, and market preferences. Yang et al. (2024) [1] showed that both types of risk affect financial stability, although their time horizons and transmission mechanisms differ. Using the text of listed firms' annual reports, Du et al. (2023) [2] found that the capital-market consequences also vary across climate risk types. Li et al. (2024) [5] developed a framework for measuring corporate climate risk and examine firms' responses. Together, these studies indicate that firm-level climate risk should be identified by type.

Firms adjust investment and supply-chain arrangements in response to extreme climate risk, and their operating stability and risk-taking are also affected. Ran et al. (2024) [6] found that firms tend to invest in other regions with lower climate risk. Wang and Hui (2024) [7] explained the adverse effect of climate risk on firm value through lower returns on assets and higher credit risk, while Li et al. (2025) [8] reported greater investment-financing maturity mismatch and bankruptcy risk. Focusing on severe physical risk, Tang et al. (2025) [9] found that heavy precipitation weakens supply-chain trust, cooperation, and efficiency. Bi and Wang (2026) [10] showed that climate risk increases cost stickiness, thereby raising operating risk and reducing the sales margin. Global evidence from Pankratz and Schiller (2024) [11] likewise showed that firms adjust supply-chain relationships and adaptation strategies around climate shocks. These consequences may enter auditors' assessments of client risk.

2.2. Climate Risk Attention, Perception, and Disclosure

Annual-report text measures do not capture objective meteorological disasters directly. The frequency of climate-related terms may reflect the risk events that a firm faces, management's risk perception, its disclosure strategy, and its response. Chen et al. (2025) [12] constructed a measure of perceived climate risk from annual reports and find that it changes corporate risk-taking through financial flexibility, financing costs, and environmental investment. Sautner et al. (2023) [13] showed that firm-level climate exposure can be identified from textual information, while emphasizing the need to distinguish discussion intensity from realized risk consequences. Nagar and Schoenfeld (2024) [14] used annual reports to measure firms' weather exposure, providing a methodological basis for identifying physical climate risk at the firm level.

Climate disclosure may also generate governance or signaling effects. Liu et al. (2025) [15] found that climate risk disclosure encourages managerial self-review and strengthens communication with stakeholders, thereby reducing operating, financial, and capital-market risks. Su et al. (2025) [16] showed that climate risk constrained real earnings management, with a stronger governance effect for transition risk. Climate risk attention in annual reports may therefore contain both risk-pressure and information-governance components. By comparison, attention to severe physical risk relates directly to the effects of sudden disasters on asset conditions and business continuity, so the risk-pressure component may be more pronounced. International evidence from Ding et al. (2021) [17] linked climate risk to earnings management, indicating that climate risk may also enter auditors' risk assessments through financial-reporting behavior.

2.3. Environmental Factors and Audit Pricing

In Simunic's (1980) [18] audit-pricing framework, client size, business complexity, audit effort, and risk compensation jointly determine audit fees. As client risk rises, the risks of material misstatement, litigation, and reputational loss also increase. Auditors generally respond by expanding audit procedures and committing more personnel and time, while fees may incorporate a higher risk premium. Han et al. (2025) [19] argued that the effect of the external technological environment on audit fees depends on the relative influence of higher operating risk and lower information risk. Hong et al. (2025) [20] found that changes in receivables and bad-debt risk are reflected in audit fees through audit effort and risk premiums. Hartlieb and Eierle (2024) [21] and Yang et al. (2023) [22] likewise showed that auditors respond to clients' external climate-related risks through their fees.

Studies of climate, environmental factors, and audit fees also report effects in different directions. Climate or environmental risk can increase business complexity, audit effort, and risk compensation. Conversely, low-carbon policies, environmental governance, and more extensive disclosure can reduce information asymmetry, regulatory risk, and the probability of financial restatement. Song et al. (2023) [23], Guo and Ma (2024) [24], and Tao et al. (2025) [25] all document lower audit fees following improvements in environmental governance. An analysis of climate risk and audit pricing must therefore identify the relative strength of risk pressure and governance benefits within each type of risk. Liu et al. (2023) [26] also found that auditors' sustainability focus is associated with clients' sustainability reporting, suggesting that auditors respond actively to climate and sustainability information.

2.4. Literature Assessment

Existing studies mainly examine aggregate corporate attention to climate risk or low-carbon governance policies, and give comparatively limited attention to differences among the risk types embedded in composite measures. Annual-report text conveys risk information while also reflecting firms' disclosure behavior. Without distinguishing severe physical risk, chronic physical risk, and transition risk, risk-pressure effects may be offset by governance and information effects. This study therefore focuses on corporate attention to severe physical climate risk and includes other risk types for comparison, with the aim of identifying how audit pricing responds to information about sudden physical risks.

3. Theoretical Analysis and Hypothesis Development

3.1. Corporate Attention to Severe Physical Climate Risk and Audit Fees

The relationship between corporate attention to severe physical climate risk and audit fees can be understood through client risk and audit effort. Rainstorms, floods, typhoons, and droughts may damage inventories or impair fixed assets. They may also interrupt production and supply chains, increasing uncertainty in future cash flows and going-concern assessments. Auditors must address inventory observation, impairment testing, insurance compensation, and provisions, and obtain the corresponding external evidence; some matters also require scenario analysis and professional judgment. If the financial statements do not adequately reflect these effects, the risk of material misstatement and the auditor's reputational and litigation exposure rise, and the audit fee may include additional risk compensation.

A higher frequency of severe physical climate risk terms in annual reports does not necessarily indicate greater objective disaster intensity. After controlling for firm fixed characteristics, common annual shocks, and other observable factors, however, the measure can reflect management's attention to relevant risk events and the information they convey. Severe physical risk is direct and sudden, and its short-term risk pressure may not be fully offset by governance

benefits. We therefore propose Hypothesis H1.

H1: All else equal, greater corporate attention to severe physical climate risk is associated with higher audit fees.

3.2. Differences in Audit Pricing across Climate Risk Types

Different types of climate risk may affect audit pricing through different channels. Transition risk can increase compliance costs, stranded-asset risk, and pressure to adjust business models, but it may also encourage firms to improve environmental governance, strengthen disclosure, and reduce opportunistic behavior. Chronic physical risk generally evolves more slowly, giving firms and auditors more time to adapt and adjust. Transition-risk terms account for a relatively large share of the aggregate climate risk measure, which may therefore contain risk, governance, and signaling information simultaneously. Severe physical risk is more likely to change asset conditions, production arrangements, and the availability of audit evidence over a short period, making its audit-pricing effect more apparent. We therefore propose Hypothesis H2.

H2: Compared with attention to overall climate risk, transition risk, and chronic physical risk, corporate attention to severe physical climate risk has a more pronounced positive association with audit fees.

4. Research Design

4.1. Sample Selection and Data Sources

The initial sample consists of Chinese A-share listed firms from 2007 to 2024. Measures of climate risk attention are derived from listed firms' annual reports. Audit fees, financial variables, and audit characteristics are obtained mainly from the CSMAR database, and key audit matter text is taken from publicly available audit reports. We exclude financial firms and firms designated ST, *ST, or PT, remove firm-year observations with missing values for key variables, and winsorize continuous variables at the 1% and 99% levels. The final sample contains 48,765 firm-year observations covering 5,405 firms.

4.2. Variable Definitions

The dependent variable is the natural logarithm of audit fees, LnFeew, defined as the natural logarithm of a firm's total annual audit fees plus 1 and winsorized at the 1% and 99% levels. The main explanatory variable, Climatese, measures corporate attention to severe physical climate risk using the frequency of terms such as rainstorm, flood, typhoon, drought, hail, debris flow, and snow disaster in annual reports. The comparison across risk types also uses overall climate risk attention (Climate), transition risk attention (Climatetr), and chronic physical risk attention (Climatech).

Control variables include firm size, leverage, profitability, growth, operating cash flow, inventory intensity, receivables intensity, loss status, Big Four auditor, auditor switch, prior-year audit opinion, and current-year audit opinion. The channel analysis uses LnResponseLength, the natural logarithm of the total word count of audit responses in key audit matters plus 1, as a proxy for audit response complexity. This measure captures the complexity of audit-response text rather than actual audit hours.

Table 1. Variable Definitions

Variable	Name	Definition
LnFeew	Audit fees	Natural logarithm of total audit fees plus 1, winsorized at the 1% and 99% levels
Climatese	Severe physical risk attention	Frequency of severe physical risk terms divided by total annual-report word count
Climate	Overall climate risk attention	Composite measure of attention to all types of climate risk
Climatetr	Transition risk attention	Attention to risks related to the low-carbon transition, policy, and technology
Climatech	Chronic physical risk attention	Attention to long-term climate trends such as temperature and precipitation
Size	Firm size	Natural logarithm of total assets at year-end
Lev	Leverage	Total liabilities divided by total assets
ROA	Profitability	Net income divided by total assets
Growth	Growth	Growth rate of operating revenue
CFO	Operating cash flow	Net cash flow from operating activities divided by total assets
Inv	Inventory intensity	Inventory divided by total assets
Rec	Receivables intensity	Accounts receivable divided by total assets
Loss	Loss	1 if the firm reports a loss in the current year; 0 otherwise
Big4	Big Four auditor	1 if audited by a Big Four accounting firm; 0 otherwise
Switch	Auditor switch	1 if the accounting firm changes in the current year; 0 otherwise
LOpinion	Prior-year audit opinion	1 if the prior-year opinion is modified; 0 otherwise
NonStandard	Current-year audit opinion	1 if the current-year opinion is modified; 0 otherwise
LnResponseLength	Audit response complexity	Natural logarithm of the total word count of audit responses in key audit matters plus 1

Note: Climatese, Climatetr, and Climatech denote corporate attention to severe physical, transition, and chronic physical climate risk, respectively.

4.3. Model Specification

To test H1, we estimate a two-way fixed-effects model for firms and years. LnFeew is the dependent variable and Climatese is the main explanatory variable. The model includes firm characteristics and audit characteristics, as well as firm and year fixed effects. Standard errors are clustered at the firm level to account for correlation across observations of the same firm over time. The model is specified as follows:

$$\mathrm{LnFee}_{i,t} = \beta_0 + \beta_1 \mathrm{Climate}_{se,i,t} + \gamma \mathrm{Controls}_{i,t} + \mathrm{Firm}_i + \mathrm{Year}_t + \varepsilon_{i,t}$$

In this equation, β_1 captures the conditional association between corporate attention to severe physical climate risk and audit fees. To test H2, we replace the main explanatory variable with Climate, Climatetr, Climatese, and Climatech in separate regressions and compare the estimates across risk types.

5. Empirical Results and Analysis

5.1. Descriptive Statistics and Correlation Analysis

To provide an initial overview of the sample and the distribution of the main variables, Table 2 reports the descriptive statistics.

Table 2. Descriptive Statistics

Variable	N	Mean	Std. Dev.	Minimum	Median	Maximum
LnFeew	48,765	13.8386	0.7006	12.2061	13.7642	16.1667
Climate	48,765	0.1835	0.1987	0.0000	0.1204	1.2635
Climatetr	48,765	0.1801	0.1972	0.0000	0.1175	1.2566
Climatese	48,765	0.0012	0.0028	0.0000	0.0000	0.0472
Climatech	48,765	0.0020	0.0038	0.0000	0.0000	0.0311
Size	48,765	22.2183	1.2994	19.5380	22.0238	26.1018
Lev	48,765	0.4286	0.2051	0.0530	0.4225	0.9072
ROA	48,765	0.0317	0.0648	-0.2640	0.0338	0.1966
Growth	48,765	0.1397	0.3668	-0.5975	0.0890	2.1132
CFO	48,765	0.0468	0.0697	-0.1759	0.0459	0.2517
Inv	48,765	0.1409	0.1293	0.0002	0.1102	0.6842
Rec	48,765	0.1204	0.1022	0.0003	0.0980	0.4705
Loss	48,765	0.1436	0.3507	0	0	1
Big4	48,765	0.0615	0.2402	0	0	1
Switch	48,765	0.1240	0.3296	0	0	1

Note: Continuous variables are winsorized at the 1% and 99% levels.

Table 2 shows that the mean and standard deviation of log audit fees are 13.8386 and 0.7006, respectively. The mean of corporate attention to severe physical climate risk is 0.0012, the median is 0, and approximately 69.34% of firm-year observations have a value of 0. Direct discussion of severe physical climate risk is therefore uncommon in annual reports, although meaningful cross-firm variation remains. The mean of transition risk attention is substantially higher than the means of the two physical-risk measures. The aggregate climate risk measure thus captures more transition-risk information, which may dilute the pricing response to severe physical risk.

To examine the preliminary relationships among the main variables and assess potential multicollinearity concerns, Table 3 presents the Pearson correlation matrix.

Table 3. Correlations among Main Variables

Variable	1	2	3	4	5	6	7	8	9	10
1 LnFee	1.000									
2 Severe	0.039	1.000								
3 Size	0.753	0.062	1.000							
4 Lev	0.329	0.040	0.458	1.000						
5 ROA	-0.072	-0.003	0.039	-0.351	1.000					
6 Growth	-0.018	0.000	0.039	0.034	0.262	1.000				
7 CFO	0.057	0.028	0.070	-0.158	0.415	0.047	1.000			
8 Inv	-0.007	-0.050	0.084	0.283	-0.039	0.046	-0.200	1.000		
9 Rec	-0.074	-0.032	-0.185	0.031	-0.053	0.022	-0.193	-0.085	1.000	
10 Loss	0.052	0.011	-0.074	0.188	-0.697	-0.214	-0.234	-0.025	0.019	1.000

Note: The table reports Pearson correlation coefficients. Severe corresponds to Climatese.

Table 3 shows a simple correlation of 0.039 between corporate attention to severe physical climate risk and audit fees, consistent in direction with H1. Firm size is highly correlated with audit fees, reflecting the broader business scope and greater audit workload of large firms. Correlations describe only the co-movement of variables. The subsequent firm and year fixed-effects models further control for unobservable time-invariant firm characteristics and common annual shocks.

5.2. Baseline Regression

To test whether corporate attention to severe physical climate risk is associated with higher audit fees, Table 4 reports the baseline fixed-effects regression results.

Table 4. Corporate Attention to Severe Physical Climate Risk and Audit Fees

Variable	(1) Fixed effects only	(2) Financial controls	(3) Full controls
Climatese	4.4846*** (1.0116)	1.5802** (0.7893)	1.6418** (0.7543)
Size		0.3301*** (0.0085)	0.3263*** (0.0081)
Lev		0.0895*** (0.0279)	0.0756*** (0.0272)
ROA		-0.3979*** (0.0483)	-0.3450*** (0.0478)
Growth		-0.0041 (0.0044)	-0.0004 (0.0043)
CFO		0.2152*** (0.0254)	0.1978*** (0.0250)
Inv		-0.0744* (0.0402)	-0.0642* (0.0384)
Rec		0.1625*** (0.0534)	0.1525*** (0.0524)
Loss		0.0366*** (0.0063)	0.0330*** (0.0062)
Audit controls	No	No	Yes
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Observations	48,765	48,765	48,765
Firms	5,405	5,405	5,405
Within R^2	0.5695	0.6966	0.7069

Note: Firm-clustered robust standard errors are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 4 reports the baseline regression results. Column (1) controls only for firm and year fixed effects; the coefficient on Climatese is 4.4846 and is significant at the 1% level. After financial controls are added in Column (2), the coefficient falls to 1.5802 and remains significant at the 5% level. Column (3) further includes audit characteristics; the coefficient on Climatese is 1.6418, with a p-value of 0.0296. The coefficient is positive in all three specifications, indicating a stable association between corporate attention to severe physical climate risk and higher audit fees. H1 is supported.

In economic terms, the standard deviation of Climatese is approximately 0.002819. Based on Column (3), a one-standard-deviation increase in the measure corresponds to an approximately 0.46% increase in audit fees. Although the magnitude is small, the low overall frequency of severe physical risk terms means that the result identifies a discernible audit-pricing difference associated with sudden climate-risk information in annual reports. The control-variable estimates are generally consistent with the audit-pricing literature: firm size, leverage, operating cash flow, receivables intensity, loss status, and a modified audit opinion are significantly and positively associated with audit fees.

5.3. Comparison across Climate Risk Types

To assess whether the audit-pricing association varies across climate risk categories, Table 5 compares the estimates for overall, transition, severe physical, and chronic physical risk attention.

Table 5. Regression Results by Type of Climate Risk Attention

Risk type	Variable	Coefficient	Clustered standard error	p-value
Overall climate risk attention	Climate	-0.0195	0.0341	0.568
Transition risk attention	Climatetr	-0.0206	0.0344	0.550
Severe physical risk attention	Climatese	1.6418**	0.7543	0.030
Chronic physical risk attention	Climatech	-0.5936	0.6613	0.369

Note: Each row reports a separate regression. All models include the full set of control variables and firm and year fixed effects. Standard errors are clustered by firm.

Table 5 shows that the coefficients on overall climate risk attention, transition risk attention, and chronic physical risk attention are not statistically significant. Only the coefficient on corporate attention to severe physical climate risk is significantly positive, consistent with H2. The stable positive association in the sample is concentrated in severe physical risk attention. Transition risk may raise compliance costs and stranded-asset risk, but it may also promote better governance, reduce earnings manipulation, and send a favorable disclosure signal. Chronic physical risk changes more slowly, giving firms and auditors a longer adjustment period, while the aggregate measure combines information whose effects may operate in different directions.

Severe physical risks are often triggered by sudden events such as rainstorms, floods, and typhoons. Over a short period, they can alter asset conditions and production arrangements and affect supply-chain performance and expected cash flows. Prior studies document these operating consequences from different perspectives: Tang et al. (2025) [9]examine the effect of heavy precipitation on supply-chain resilience; Bi and Wang (2026) [10]study the cost stickiness and operating risk induced by climate risk; and Li et al. (2025) [8]focus on investment-financing maturity mismatch and bankruptcy risk. An aggregate measure combines these direct shocks with transition- or chronic-risk information whose effects may run in different directions, potentially weakening the audit-pricing association attributable to severe physical risk.

5.4. Robustness Tests and Propensity Score Matching

To examine whether the baseline finding is sensitive to alternative model settings and outlier treatments, Table 6 reports the robustness-test results.

Table 6. Robustness Tests

Test	Dependent variable	Climatese coefficient	Standard error	p-value	Observations
Baseline model	LnFeew	1.6418**	0.7543	0.030	48,765
Reduced controls	LnFeew	1.5999**	0.7558	0.034	48,765
Audit fees not winsorized	LnFee	1.7913**	0.7880	0.023	48,765
Controls not winsorized	LnFeew	1.9952**	0.7904	0.012	48,765

Note: Firm-clustered robust standard errors are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 6 evaluates robustness by varying the set of control variables and the winsorization treatment. With a reduced set of controls, the coefficient on Climatese is 1.5999. Using audit fees without winsorization yields a coefficient of 1.7913, while leaving the control variables unwinsorized yields a coefficient of 1.9952. All three coefficients are positive and significant at the 5% level, indicating that the main result is not sensitive to the set of controls or the treatment of extreme values.

To reduce observable differences between firms with and without severe physical climate risk attention, Table 7 reports the propensity score matching results.

Table 7. Propensity Score Matching Results

Item	Treatment group	Successfully matched	ATET or metric	Standard error or metric	z-statistic or metric	p-value or conclusion
1:1 nearest-neighbor matching	14,949	14,949	0.0526***	0.0089	5.90	<0.001
Post-matching balance	Maximum absolute SMD	3.81%	Mean absolute SMD	1.28%	Threshold	Both below 10%

Note: The treatment group consists of firm-year observations with attention to severe physical climate risk in the current year.

We further define SevereAny according to whether the firm reports attention to severe physical climate risk in the current year and implement 1:1 nearest-neighbor propensity score matching. All 14,949 treated observations are successfully

matched. The average treatment effect on the treated (ATET) is 0.0526 and is significant at the 1% level. After matching, the maximum absolute standardized mean difference is 3.81% and the mean absolute standardized mean difference is 1.28%, both below the conventional 10% threshold. Audit fees remain higher for the treatment group in a sample with more comparable observable characteristics. Because matching cannot control for unobservable factors, the result is interpreted as an association.

5.5. Audit Response and Effort Channel

To examine whether audit response complexity provides preliminary evidence on the audit-effort channel, Table 8 reports the corresponding channel tests.

Table 8. Tests of the Audit Response and Effort Channel

Test	Dependent variable	Key variable	Coefficient (standard error)	p-value
Path a	LnResponseLength	Climatese	2.6159* (1.5518)	0.092
Path b	LnFeew	LnResponseLength	0.0078* (0.0045)	0.082
Direct effect	LnFeew	Climatese	0.3970 (0.8511)	0.641
Sobel indirect effect	LnFeew	a×b	0.0204 (0.0168)	0.226

Note: Firm-clustered robust standard errors are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 8 reports channel tests for 29,744 firm-year observations that can be matched with key audit matter text. In path a, the coefficient of Climatese on LnResponseLength is 2.6159 and is significant at the 10% level. In path b, both Climatese and LnResponseLength are included in the audit-fee model; the coefficient on LnResponseLength is 0.0078 and is also significant at the 10% level. The directions of the two estimates are consistent with the interpretation that corporate attention to severe physical risk increases audit response complexity and, in turn, audit costs.

When LnResponseLength is included, the direct effect of Climatese is not significant. The p-value of the Sobel indirect effect is 0.226 and also fails to reach conventional significance levels. Because LnResponseLength captures the complexity of audit-response text rather than audit hours directly, the results in Table 8 provide only preliminary evidence for the proposed channel and do not support a formal mediation effect.

6. Conclusions and Suggestions

6.1. Conclusions

Using Chinese A-share listed firms from 2007 to 2024, this study examines the relationship between climate risk attention in annual reports and audit fees from the perspective of differences across risk types. Corporate attention to severe physical climate risk is significantly and positively associated with audit fees, whereas overall climate risk, transition risk, and chronic physical risk attention show no significant association. The results remain supported after alternative model specifications and propensity score matching.

Further analysis shows positive associations between corporate attention to severe physical climate risk and audit response complexity and between audit response complexity and audit fees, providing preliminary evidence for the audit-effort channel. Overall, auditors' responses to climate risk information do not depend simply on whether a firm discusses climate issues; they also depend on the type of risk and its potential financial-reporting consequences. Compared with long-term change and transition pressure, sudden severe physical risk has a more pronounced association with audit pricing.

6.2. Suggestions

Firms should make their climate risk disclosures more specific and verifiable. Climate risk disclosure in annual reports should not remain at the level of general principles; it should explain the principal risks facing the firm and their effects in light of the firm's actual operations. For severe physical risk, firms should also connect risk information more clearly to the relevant financial-reporting matters, enabling external users to assess its effects on operations and financial condition more accurately.

When assessing client risk and planning an audit, accounting firms should treat severe physical climate risk as a specific information signal. The assessment should also consider the firm's disaster exposure, internal controls, and risk-response capacity, and should be translated into the affected financial-reporting matters, appropriate audit procedures, and staffing decisions. The frequency of climate-related terms in an annual report cannot substitute for identifying the firm's actual risk and should not be used directly as a pricing basis.

Regulators may further improve climate-related disclosure standards, enhance the comparability and verifiability of corporate climate risk information, and establish a clearer link between climate information and financial reporting. As climate risk becomes increasingly relevant to business operations and audit decisions, better disclosure can help auditors identify risk and reduce the uncertainty that market participants face when interpreting climate information.

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