

ESG Performance and Earnings Management: Evidence from Chinese Listed Firms

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Abstract

This study examines whether prior environmental, social, and governance (ESG) performance is associated with subsequent accrual-based and real earnings management among Chinese A-share listed non-financial firms over 2015–2024. The temporally ordered design measures ESG performance at $t-1$, earnings management at t , and background covariates at $t-2$, yielding earnings-management outcomes from 2017 onward. Accrual-based earnings management (AEM) is measured by the absolute value of Modified Jones discretionary accruals, while real earnings management (REM) is captured by a signed composite of abnormal production costs, operating cash flows, and discretionary expenses. ESG performance is measured using a composite constructed from eight rating providers. Pooled ordinary least squares (OLS) models include Hybrid Industry and Year fixed effects with firm-clustered standard errors. The results show that stronger prior ESG performance is associated with a lower subsequent magnitude of AEM and lower subsequent upward-directed REM. The COVID-19 phase analysis shows that neither the During–Pre nor the Post–Pre contrast is statistically significant for the ESG–AEM association, whereas the negative ESG–REM association is significantly more pronounced in the Post period than in the Pre period. The principal full-sample associations remain consistent across the robustness specifications. All findings are interpreted as conditional associations rather than causal effects.

Keywords: Esg Performance, Accrual-Based Earnings Management, Real Earnings Management, Stakeholder Theory, China

Introduction

Earnings management remains an important concern in accounting and capital-market research because managerial discretion can affect the reliability of reported financial performance and the quality of information available to market participants. Managers may influence earnings through accrual-based accounting choices or through real operating decisions, representing two distinct channels of earnings management (Healy & Wahlen, 1999; Roychowdhury, 2006; Zang, 2012). Accrual-based earnings management operates primarily through accounting estimates and reporting discretion, whereas real earnings

management involves actual decisions concerning sales, production, cash flows, and discretionary expenditure. Examining both forms is therefore important because evidence based on one channel may not capture managerial discretion exercised through the other.

Environmental, social, and governance (ESG) performance may be relevant to both forms of earnings management. From a Stakeholder Theory perspective, firms are expected to consider the interests of multiple stakeholder groups rather than focusing exclusively on short-term shareholder outcomes (Donaldson & Preston, 1995; Freeman, 1984). Stronger ESG performance may reflect greater accountability, transparency, stakeholder orientation, reputational discipline, and long-term value orientation. These characteristics may increase the organisational and reputational costs associated with managerial actions that improve short-term reported performance at the expense of reporting integrity or longer-term stakeholder interests.

Prior evidence generally supports a negative relationship between ESG- or corporate social responsibility (CSR)-related performance and accrual-based earnings management, although the findings are not completely uniform. Studies across different institutional settings report that stronger ESG or CSR performance, engagement, or disclosure is associated with lower accrual-based earnings management (Ajina et al., 2019; Almahrog et al., 2018; Gras-Gil et al., 2016; Kim et al., 2012; Kim et al., 2019; Sun et al., 2024). Differences in ESG and CSR constructs, discretionary-accrual measures, institutional settings, rating methodologies, and empirical specifications nevertheless limit direct comparability across studies.

The evidence for real earnings management is less settled. Real activities manipulation is embedded in ordinary operating decisions and may therefore be more difficult for investors, auditors, regulators, and other stakeholders to distinguish from legitimate business activity (Roychowdhury, 2006; Zang, 2012). Some studies document negative relationships between ESG- or CSR-related performance and real earnings management, whereas others report statistically insignificant or positive relationships (Kim et al., 2019; Khuong et al., 2023; Sun et al., 2024; Velte, 2019). Velte's (2024) structured review similarly indicates that negative relationships are more consistently documented for accrual-based earnings management, while REM-specific evidence remains comparatively limited and less conclusive. This asymmetry suggests that evidence concerning accrual-based earnings management should not automatically be generalised to real operating behaviour.

A second empirical issue concerns the measurement of ESG performance. ESG rating agencies differ substantially in their information sources, metric selection, weighting systems, and evaluation procedures, meaning that the same firm can receive materially different assessments across providers (Berg et al., 2022; Billio et al., 2021; Christensen et al., 2022; Zhu et al., 2023). Reliance on a single provider may therefore make empirical conclusions sensitive to provider-specific measurement choices. This issue is especially relevant when examining the ESG–earnings management relationship because Mao et al. (2024) show that the relationship may vary with ESG rating divergence. A research design that reduces dependence on any single ESG provider can therefore provide additional evidence on the robustness of the association.

An additional issue concerns whether the ESG–earnings management association is temporally stable. COVID-19-period research indicates that the relationship between corporate responsibility and earnings management may differ under crisis conditions (El-Feel et al., 2024), but comparable evidence on ESG performance and both accrual-based and real earnings management across the pre-COVID-19, during-COVID-19, and post-COVID-19 periods remains limited. It is therefore unclear whether temporal heterogeneity, if present, is common to both earnings-management channels or concentrated in one of them. This study addresses this issue through formal cross-phase comparisons and treats the three periods as temporal contexts rather than as evidence that COVID-19 itself caused the relationships to change.

Taken together, the literature reviewed above leaves a more specific gap in the China-focused evidence. Existing studies have not jointly examined accrual-based and real earnings management using a multi-provider ESG measure while formally testing whether the ESG–earnings management associations differ across the pre-COVID-19, during-COVID-19, and post-COVID-19 periods. The present study addresses this combined gap by reducing reliance on provider-specific ESG assessments and by using pooled interaction models to test cross-phase differences directly for both earnings-management channels.

This study addresses these issues using Chinese A-share listed non-financial firms and data covering 2015–2024. ESG performance is measured using ESG_ave, a composite constructed from annual assessments supplied by eight providers: Sino-Securities/Huazheng, CNRDS, Wind, Bloomberg, FTSE Russell, SynTao, MSCI, and Menglang. Each provider's assessment is transformed into a within-provider, within-year percentile before the available values are equally weighted, with at least three provider observations required for a firm-year. This procedure reduces dependence on an individual ESG rating source while placing provider-year assessments on a common relative percentile scale.

Accordingly, this study addresses two research questions. RQ1: To what extent is prior ESG performance associated with subsequent accrual-based and real earnings management among Chinese listed firms? RQ2: Do the associations between prior ESG performance and subsequent accrual-based and real earnings management vary across the pre-COVID-19, during-COVID-19, and post-COVID-19 periods?

The empirical design also introduces temporal ordering between ESG performance and earnings management. ESG performance is measured at $t-1$, earnings management at t , and Confucian cultural exposure and firm-level controls at $t-2$. The effective earnings-management outcome period consequently begins in 2017. This structure ensures that ESG performance is observed before the subsequent earnings-management outcome and avoids estimating the focal relationship entirely contemporaneously. It does not, however, by itself establish exogeneity or causal identification. For the phase analysis, phase membership is determined by the earnings-management outcome year t , resulting in effective Pre-period outcome years of 2017–2019, a During period of 2020–2022, and a Post period of 2023–2024.

The principal models are estimated using pooled OLS with Hybrid Industry and Year fixed effects and firm-clustered standard errors. Potential endogeneity of ESG_L1 is assessed using firm-clustered robust Durbin–Wu–Hausman diagnostics with ESG_L2 and ESG_L3 as deeper-

lag diagnostic instruments. The null hypothesis of exogeneity is not rejected for either earnings-management model. Consistent with the observational research design, however, the estimates remain conditional associations rather than causal effects.

The principal results show that stronger prior ESG performance is negatively associated with both subsequent earnings-management outcomes. For accrual-based earnings management, ESG_L1 is negatively associated with MJ_AEMABS ($b = -0.0001651$, $p < .001$) in a sample of 21,688 firm-year observations from 4,381 firms. Because MJ_AEMABS captures the absolute magnitude of discretionary accruals, this finding indicates a lower subsequent magnitude of accrual-based earnings management. For real earnings management, ESG_L1 is negatively associated with REM ($b = -0.0005749$, $p < .001$) in a sample of 19,734 observations from 4,166 firms. Because REM is a signed composite, the finding indicates lower subsequent upward-directed real earnings management rather than a reduction in the absolute magnitude of all abnormal operating activities. The phase analysis further shows that the negative ESG–MJ_AEMABS association remains statistically significant across all three periods, but neither the During–Pre nor the Post–Pre contrast is statistically significant. For REM, the negative association also remains statistically significant across all three periods; the During–Pre contrast is not statistically significant, whereas the Post–Pre contrast is negative and statistically significant ($b = -0.0004077$, $p = .043$), indicating a more pronounced negative association in the Post period than in the Pre period.

This study makes four contributions. First, it examines accrual-based and real earnings management within the same empirical setting and shows that the negative association with prior ESG performance is observable across both financial-reporting discretion and upward-directed real activities manipulation. This distinction is important because prior evidence concerning real earnings management remains less extensive and less consistent than the evidence for accrual-based earnings management. Second, the study reduces dependence on any individual ESG rating provider by constructing a multi-provider ESG measure, while retaining Sino-Securities/Huazheng as a related single-provider robustness measure. Third, the study employs a temporally ordered specification in which ESG performance precedes the earnings-management outcomes and supplements this structure with formal endogeneity diagnostics. These diagnostics are treated as complementary evidence rather than as causal identification, and the resulting estimates remain interpreted as conditional associations. Fourth, the study adds a temporal dimension by formally examining whether the ESG–earnings management associations vary across the pre-COVID-19, during-COVID-19, and post-COVID-19 periods. This comparison extends the full-sample analysis by assessing each later period relative to the Pre period.

Literature Review and Hypothesis Development

Stakeholder Theory and ESG Performance

Stakeholder Theory provides the theoretical foundation for examining the relationship between ESG performance and earnings management. The theory views firms as accountable to multiple stakeholder groups rather than exclusively to shareholders and emphasizes responsible governance, transparency, and sustainable stakeholder relationships (Donaldson & Preston, 1995; Freeman, 1984). From this perspective, ESG performance may reflect the extent to which stakeholder considerations are incorporated into corporate practices and decision-making.

Stronger ESG performance may be associated with lower earnings management through several related mechanisms. Firms exhibiting stronger ESG performance may face greater stakeholder scrutiny, stronger expectations of transparency, and higher reputational costs when managerial behavior is inconsistent with their stakeholder commitments. A longer-term orientation may also reduce incentives to improve short-term reported performance at the expense of reporting quality or future firm value. Stakeholder Theory therefore provides a basis for expecting stronger ESG performance to be associated with greater restraint in managerial discretion.

The theoretical mechanism need not operate identically across accrual-based and real earnings management. Accrual-based earnings management is implemented through accounting estimates, recognition decisions, and discretionary accruals, whereas real earnings management is embedded in operating decisions concerning sales, production, cash flows, and discretionary expenditure. The two outcomes are therefore treated as distinct forms of managerial discretion.

ESG Performance and Accrual-Based Earnings Management

Accrual-based earnings management involves the use of accounting discretion to influence reported earnings without directly altering the firm's underlying operating activities. Because such discretion occurs within the financial-reporting process, it is closely related to the accountability and transparency mechanisms emphasized by Stakeholder Theory.

Firms with stronger ESG performance may face greater expectations of reporting integrity from investors, creditors, regulators, employees, and other stakeholders. Opportunistic accounting choices may also create reputational costs when they conflict with a firm's broader stakeholder-oriented practices. Stronger ESG performance may therefore be associated with greater restraint in the use of discretionary accruals.

Prior evidence generally supports this expectation. Studies across different settings report negative relationships between ESG- or CSR-related performance and accrual-based earnings management (Ajina et al., 2019; Almahrog et al., 2018; Gras-Gil et al., 2016; Kim et al., 2012; Kim et al., 2019; Sun et al., 2024). Nevertheless, variation in ESG and CSR constructs, accrual measures, institutional environments, and empirical specifications means that the relationship should not be regarded as mechanically uniform.

In this study, accrual-based earnings management is represented by MJ_AEMABS, the absolute value of discretionary accruals estimated using the Modified Jones model. The measure captures the magnitude of accrual-based discretion regardless of whether the underlying discretionary accruals increase or decrease reported earnings. Accordingly, the first hypothesis is:

H1: ESG Performance is negatively associated with accrual-based earnings management.

ESG Performance and Real Earnings Management

Real earnings management is implemented through actual operating decisions rather than accounting estimates or recognition choices. Managers may influence reported earnings by altering sales-related activities, production, operating cash flows, or discretionary expenditure (Roychowdhury, 2006; Zang, 2012). Such actions may affect not only current

earnings but also future cash flows, operational efficiency, investment, and stakeholder interests.

Stakeholder Theory provides a basis for expecting stronger ESG performance to be associated with lower real earnings management. Where ESG performance reflects substantive stakeholder orientation and long-term value creation, managers may be less inclined to undertake short-term operating actions that impose future costs on employees, suppliers, customers, investment, or firm performance.

The relationship is nevertheless less straightforward than for accrual-based earnings management. Real activities manipulation is embedded in ordinary business decisions and may therefore be more difficult for stakeholders, auditors, and regulators to distinguish from legitimate operating behaviour. Managers may also substitute real activities manipulation for accrual-based manipulation when accounting choices are subject to greater scrutiny (Zang, 2012).

Empirical evidence is correspondingly less consistent. Several studies report negative relationships between ESG- or CSR-related performance and REM (Chouaibi & Zouari, 2022; El-Feel et al., 2024; Gaio et al., 2022; Kim et al., 2019; Liu et al., 2025; Sun et al., 2024). In contrast, Velte (2019) finds no statistically significant ESG–REM relationship, while Khuong et al. (2023) report a positive CSR–REM association.

The REM measure used in this study is a signed composite in which higher values represent greater upward-directed real earnings management. The second hypothesis is therefore:
H2: ESG Performance is negatively associated with real earnings management.

Temporal Variation in the ESG–Earnings Management Relationship

The association between ESG performance and earnings management may not necessarily remain constant across changing external conditions. Periods of substantial economic and operational disruption can alter stakeholder pressures, reporting incentives, resource constraints, and managerial decision-making. Evidence from the COVID-19 period suggests that responsible corporate behaviour may be associated differently with accrual-based and real earnings management under unusually disruptive conditions. For example, El-Feel et al. (2024) examine the ability of corporate social responsibility to constrain both accrual-based and real earnings management during the COVID-19 pandemic, indicating that the relationship between responsible corporate behaviour and earnings-management choices can be sensitive to the surrounding economic context.

This possibility is particularly relevant when accrual-based and real earnings management are examined separately. Accrual-based earnings management operates primarily through accounting estimates and reporting discretion, whereas real earnings management is implemented through operating decisions involving production, cash flows, and discretionary expenditure. Because these two forms of managerial discretion differ in their mechanisms and economic consequences, their associations with ESG performance need not exhibit the same temporal pattern. Accordingly, in addition to testing the full-sample associations specified in H1 and H2, this study formally examines whether the relationships between prior ESG performance and subsequent accrual-based and real earnings management vary across

the pre-COVID-19, during-COVID-19, and post-COVID-19 periods. These periods are treated as temporal contexts rather than as a basis for attributing any observed differences causally to COVID-19.

Research Methodology

Sample and Data

The study uses an unbalanced panel of Chinese A-share listed non-financial firms over 2015–2024. The initial sample comprises 43,292 firm-year observations from 5,617 firms. The sample is restricted to eligible ordinary A-share firms listed on the Shanghai and Shenzhen Stock Exchanges. Financial firms, ST/*ST and other listing-status-ineligible observations, pre-listing security-code aliases, and observations relating to a non-ordinary A-share security are excluded. The resulting master sample contains 37,859 firm-year observations from 5,210 firms.

Firm-level accounting, financial, ownership, governance, industry, and listing information is obtained primarily from the China Stock Market and Accounting Research (CSMAR) database. Real earnings-management data are obtained from the China Stock Market and Accounting Research (CSMAR) database. The abnormal operating-activity components R_CFO , R_PROD , and R_DISEXP are constructed from financial-statement data following the Roychowdhury (2006) framework and are aligned with the final research sample. ESG assessments are obtained from Sino-Securities/Huazheng, CNRDS, Wind, Bloomberg, FTSE Russell, SynTao, MSCI, and Menglang.

Missing observations are not imputed. Each model is estimated using complete observations for the variables required by that specification. Calendar-year lags are constructed within firms, and observations lacking the required prior-year information are excluded. Because the empirical specification requires variables observed at $t-2$, the effective earnings-management outcome period begins in 2017.

The accrual-based earnings-management model contains 21,688 firm-year observations from 4,381 firms, while the real earnings-management model contains 19,734 observations from 4,166 firms.

Variable Measurement

Accrual-Based Earnings Management

Accrual-based earnings management is measured using MJ_AEMABS , the absolute value of discretionary accruals estimated from the Modified Jones model (Dechow et al., 1995). Total accruals are calculated as net income minus cash flow from operations, and the estimation variables are scaled by lagged total assets. The model is estimated separately by Hybrid Industry and year, subject to a minimum of 10 estimation-ready observations within each industry-year cell. Following the Modified Jones procedure, the estimated revenue coefficient is applied to the change in revenue adjusted for the change in accounts receivable when calculating non-discretionary accruals.

After scaling by lagged total assets, the continuous estimation inputs are winsorised at the pooled 1st and 99th percentiles before estimation. Discretionary accruals are calculated as the difference between scaled total accruals and estimated non-discretionary accruals, and

their absolute values form MJ_AEMABS. The final MJ_AEMABS measure is not additionally winsorised. Higher values therefore indicate a greater magnitude of accrual-based earnings management irrespective of direction.

Real Earnings Management

Real earnings management is measured using abnormal cash flow from operations, abnormal production costs, and abnormal discretionary expenses following Roychowdhury (2006). The composite measure is:

$$REM_{i,t} = R_PROD_{i,t} - R_CFO_{i,t} - R_DISEXP_{i,t}$$

R_CFO, R_PROD, and R_DISEXP are the abnormal cash-flow, production-cost, and discretionary-expense components obtained from CSMAR following Roychowdhury (2006). In the construction of that dataset, the normal-activity models are estimated separately by industry and year, with at least 10 observations required within each industry-year group. Manufacturing industries are grouped using the first three characters of the source industry code, whereas other sectors are grouped using the first character. The transformed estimation inputs are winsorised at the 1st and 99th percentiles within year before estimation; the resulting residual components and the final REM measure are not additionally winsorised.

Higher REM values indicate greater upward-directed real earnings management. Because REM is a signed measure, a lower value represents lower upward-directed REM rather than necessarily lower absolute abnormal operating activity.

ESG Performance

ESG performance is measured using ESG_ave, a multi-provider composite based on annual assessments from eight ESG rating providers. For each provider-year, firms with a valid assessment are ranked from lower to higher ESG performance, with tied observations assigned their average rank. The resulting ranks are converted into within-provider, within-year percentiles ranging from 0 to 100. ESG_ave is then calculated as the equally weighted mean of the available provider-specific percentiles when at least three provider assessments are available for a firm-year; complete coverage by all eight providers is not required. Higher ESG_ave values indicate stronger relative ESG performance within the relevant provider-year context. The percentile transformation therefore provides a common relative ranking scale rather than an absolute ESG level that is directly comparable across years.

HZ_pct, the corresponding within-year percentile derived from the Sino-Securities/Huazheng rating, is used as an alternative ESG measure in the robustness analysis. Because Sino-Securities/Huazheng also contributes to ESG_ave, HZ_pct is interpreted as a related single-provider robustness measure rather than an independent external validation measure.

Control Variables

The principal models include CC4, SIZE, LEV_w, SOE, TOP1, ROA, and FIRMAGE. CC4 captures background exposure to the local Confucian cultural environment and is measured as the natural logarithm of one plus the number of Confucius temples located within 100 kilometres of the firm's registered location. Temple information is obtained from the China Confucius Temple Network, geographic coordinates from Gaode Maps, and firm registered-location

information from CSMAR. CC4 is retained as a contextual control rather than a focal explanatory variable in this paper.

SIZE is the natural logarithm of total assets. LEV_w is total liabilities divided by total assets and is winsorised at the pooled 1st and 99th percentiles of the eligible 2015–2024 sample. SOE is a dummy variable equal to 1 for state-owned enterprises and 0 otherwise, while TOP1 is the proportion of shares held by the largest shareholder. ROA is calculated as net income divided by average total assets, and FIRMAGE is measured as the natural logarithm of firm age, calculated as $\ln(\text{current year} - \text{year of establishment} + 1)$.

These background covariates are measured at $t-2$. Regional economic development, measured by $\ln\text{GDPPC}$, is not included in the principal ESG–earnings management specification but is introduced in a prespecified robustness analysis. $\ln\text{GDPPC}$ is defined as the natural logarithm of provincial GDP per capita, measured in yuan per person, with data obtained from the China Statistical Yearbook.

Empirical Specification

The relationship between prior ESG performance and subsequent earnings management is estimated separately for MJ_AEMABS and REM using the following specification:

$$EM_{i,t} = \alpha + \beta_1 ESG_{i,t-1} + \beta_2 CC4_{i,t-2} + \beta_3 SIZE_{i,t-2} + \beta_4 LEV_w_{i,t-2} + \beta_5 SOE_{i,t-2} + \beta_6 TOP1_{i,t-2} + \beta_7 ROA_{i,t-2} + \beta_8 FIRMAGE_{i,t-2} + Industry\ FE + Year\ FE + \varepsilon_{i,t}$$

The coefficient of interest is β_1 . A negative coefficient is consistent with H1 when the dependent variable is MJ_AEMABS and with H2 when the dependent variable is REM.

The specification is temporally ordered: background covariates are measured at $t-2$, ESG performance at $t-1$, and earnings management at t . The one-year ESG lag is a temporal-ordering choice rather than an assumption about the exact time required for ESG performance to affect managerial behaviour. The use of lagged variables does not by itself establish causal identification.

Both models are estimated using pooled OLS with Hybrid Industry and Year fixed effects. Hybrid Industry is constructed from annual industry-classification data. For 2015–2022, the classification follows the CSRC Industry Classification 2012 (P0207), while for 2023–2024 it follows the China Association for Public Companies classification (P0221). Manufacturing firms are classified at the second-level industry and firms in other sectors at the first-level industry. Hybrid Industry fixed effects account for systematic industry-level heterogeneity, while Year fixed effects capture common macroeconomic, regulatory, and market-wide influences. Standard errors are clustered at the firm level to allow for heteroskedasticity and within-firm dependence across repeated observations.

Endogeneity Assessment

Although ESG performance is measured before earnings management, temporal ordering alone does not establish exogeneity. Reverse causality, omitted variables, measurement error, or other unobserved influences may remain. Potential endogeneity is therefore assessed using the Durbin–Wu–Hausman (DWH) framework.

For the ESG–earnings management models, ESG_L2 and ESG_L3 are used as excluded instruments for ESG_L1 in the diagnostic specifications. These deeper lags are used specifically for endogeneity diagnosis rather than causal identification because lagged values do not automatically satisfy the exclusion restriction. The tests use firm-clustered robust inference. The interpretation of these diagnostics is conditional on the relevance of ESG_L2 and ESG_L3 for ESG_L1 and on the maintained exclusion assumption that, after conditioning on the included covariates and fixed effects, the deeper ESG lags do not independently affect earnings management at t other than through ESG_L1.

The robust DWH p-values are 0.3993 for the accrual-based model and 0.8598 for the real earnings-management model. The null hypothesis of ESG_L1 exogeneity cannot be rejected at the 5% significance level in either case. Failure to reject exogeneity, however, does not prove that endogeneity is absent, and the estimates remain interpreted as conditional associations rather than causal effects.

Phase Analysis

To address RQ2, temporal variation in the ESG–earnings management associations is examined using pooled interaction models rather than separate regressions for each sub-period. The study period is divided into the pre-COVID-19 period (2015–2019), the during-COVID-19 period (2020–2022), and the post-COVID-19 period (2023–2024), with the Pre period serving as the reference category. For the ESG–earnings management models, phase membership is determined by the earnings-management outcome year t . Because ESG performance is measured at $t-1$ and the remaining explanatory variables at $t-2$, the effective Pre-period outcome years are 2017–2019.

The phase models augment the corresponding principal pooled OLS specifications by interacting ESG_L1 with indicators for the During and Post periods. The same control variables, Hybrid Industry fixed effects, Year fixed effects, estimation samples, and firm-clustered standard errors used in the principal models are retained. Because the During and Post indicators are collinear with the included Year fixed effects, their separate main effects are not included; the analysis focuses on their interactions with ESG_L1. The coefficient on ESG_L1 therefore represents the estimated Pre-period association, while the During- and Post-period associations are obtained as linear combinations of the Pre-period coefficient and the corresponding interaction terms.

The phase-specific slopes and the formal cross-phase contrasts are interpreted separately. The ESG_L1 $\times$ During and ESG_L1 $\times$ Post interaction coefficients provide the formal tests of whether the During- and Post-period associations differ from the Pre-period association, respectively. Accordingly, differences in the statistical significance of phase-specific slopes are not treated as evidence of statistically significant cross-phase variation unless the corresponding interaction contrast is significant. No formal Post–During comparison is conducted. The phase analysis is interpreted as evidence of temporal variation across the three periods and not as identifying a causal effect of the COVID-19 pandemic.

Robustness Analysis

Three prespecified robustness analyses are conducted. First, ESG_ave is replaced by HZ_pct to assess sensitivity to ESG measurement. Second, lnGDPPC at $t-2$ is added to the principal

specification to account additionally for regional economic development. Third, the models are re-estimated using each firm's first-observed Hybrid Industry classification rather than its corresponding annual classification. Each firm is assigned the first non-missing Hybrid Industry classification observed in its panel, and this classification is then held constant across all of its observations. This robustness check changes the industry fixed-effect assignment only; the previously constructed MJ_AEMABS and REM measures are not recomputed.

These analyses retain the principal temporal structure, pooled OLS estimator, Year fixed effects, and firm-clustered inference. They are used to assess whether the conclusions depend materially on ESG measurement, the regional-control specification, or industry-classification treatment.

Empirical Results

Descriptive Statistics and Preliminary Diagnostics

Table 1 reports descriptive statistics for the principal variables. Because data availability differs across variables, the statistics are based on all available non-missing observations rather than on a single common estimation sample. MJ_AEMABS has a mean of 0.0521 and a standard deviation of 0.0521, while REM has a mean of 0.0002 and a standard deviation of 0.1790. ESG_ave has a mean of 50.3089 and a standard deviation of 18.6393, indicating substantial variation in relative ESG performance across firm-year observations.

Table 1

Descriptive Statistics

Variable	N	Mean	Std. Dev.	Minimum	Maximum
MJ_AEMABS	35,224	0.0521	0.0521	0.0000004	0.4246
REM	30,001	0.0002	0.1790	-2.1492	1.4986
ESG_ave	31,218	50.3089	18.6393	2.0909	98.8661
CC4	37,838	1.8324	0.6994	0.0000	3.2189
SIZE	37,859	22.3046	1.3282	17.6413	28.7908
LEV_w	37,859	0.4107	0.2047	0.0555	0.9117
SOE	37,578	0.2982	0.4575	0.0000	1.0000
TOP1	37,858	0.3298	0.1480	0.0029	0.8999
ROA	35,668	0.0310	0.0849	-1.8719	1.2848
FIRMAGE	37,858	3.0265	0.3093	1.3863	4.2627
lnGDPPC	37,830	11.4474	0.4262	10.1722	12.3378

Note. Statistics are based on all available non-missing observations for each variable.

Pearson pairwise correlations are calculated using all available paired observations for each variable pair. ESG_ave is negatively correlated with MJ_AEMABS ($r = -0.1162$, $p < .001$, $N = 30,160$) and REM ($r = -0.0849$, $p < .001$, $N = 25,674$). These contemporaneous correlations are interpreted descriptively because they do not reproduce the temporal ordering or covariate adjustment used in the principal regression models.

Multicollinearity does not appear to be a material concern. Variance inflation factors are calculated for the substantive regressors in each principal model using the corresponding estimation sample; Hybrid Industry and Year fixed-effect indicators are excluded from the VIF calculations. The mean VIF is 1.27 in both principal models, with maximum values of 1.70 for the accrual-based model and 1.73 for the real earnings-management model.

Endogeneity Diagnostics

Table 2 reports the firm-clustered robust DWH diagnostics. The null hypothesis of ESG_L1 exogeneity is not rejected for either the accrual-based model, $F(1, 4088) = 0.7105$, $p = .3993$, or the real earnings-management model, $F(1, 3826) = 0.0312$, $p = .8598$. The excluded deeper ESG lags are strongly jointly related to ESG_L1 in the corresponding first-stage regressions. These diagnostics do not establish that endogeneity is absent or that the exclusion restriction holds.

Table 2

Endogeneity Diagnostic Results

Model	Tested Regressor	Robust DWH Statistic	p-value	N / Firms	Decision
Accrual-based EM	ESG_L1	$F(1, 4088) = 0.7105$	.3993	15,994 / 4,089	Fail to reject exogeneity
Real EM	ESG_L1	$F(1, 3826) = 0.0312$	.8598	14,544 / 3,827	Fail to reject exogeneity

Note. ESG_L2 and ESG_L3 are used as excluded diagnostic instruments for ESG_L1. The diagnostic outcome period is 2018–2024. Firm-clustered robust inference is used. Joint first-stage relevance tests for ESG_L2 and ESG_L3 are statistically significant for both the accrual-based model, $F(2, 4088) = 12117.09$, $p < .001$, and the real earnings-management model, $F(2, 3826) = 10715.19$, $p < .001$. The null hypothesis of the DWH test is that ESG_L1 is exogenous. Interpretation remains conditional on instrument relevance and the maintained exclusion assumption.

Main Regression Results

Table 3 reports the principal pooled OLS estimates. Both models include Hybrid Industry and Year fixed effects, and standard errors are clustered at the firm level.

Table 3

ESG Performance and Earnings Management

Variable	(1) MJ_AEMABS	(2) REM
ESG_L1	-0.0001651*** (0.0000238)	-0.0005749*** (0.0001147)
CC4_L2	-0.0001453 (0.0006188)	-0.0064936** (0.0031994)
SIZE_L2	-0.0045320*** (0.0004477)	-0.0028325 (0.0020433)
LEV_L2	0.0163312*** (0.0029508)	0.1171161*** (0.0134903)
SOE_L2	-0.0028953*** (0.0010532)	0.0451949*** (0.0053739)
TOP1_L2	-0.0114349*** (0.0028860)	-0.0317122* (0.0164993)
ROA_L2	-0.0183663*** (0.0064803)	-0.3440453*** (0.0345997)
FIRMAGE_L2	-0.0023895 (0.0015079)	0.0200449** (0.0083909)

Variable	(1) MJ_AEMABS	(2) REM
Observations	21,688	19,734
Firms	4,381	4,166
R ²	0.0588	0.0810
Hybrid Industry FE	Yes	Yes
Year FE	Yes	Yes
Firm-clustered SE	Yes	Yes

Note. Firm-clustered standard errors are reported in parentheses. *** $p < .01$, ** $p < .05$, * $p < .10$. LEV_L2 corresponds to the lagged winsorised leverage measure. FE = fixed effects; SE = standard error.

For MJ_AEMABS, ESG_L1 is negative and statistically significant ($b = -0.0001651$, $SE = 0.0000238$, $p < .001$). Because MJ_AEMABS measures the absolute magnitude of discretionary accruals, stronger prior ESG performance is associated with a lower subsequent magnitude of accrual-based earnings management. H1 is therefore supported.

For REM, ESG_L1 is also negative and statistically significant ($b = -0.0005749$, $SE = 0.0001147$, $p < .001$). Under the signed construction of REM, stronger prior ESG performance is associated with lower subsequent upward-directed real earnings management. H2 is therefore supported.

Phase Analysis of ESG Performance and Earnings Management

To address RQ2, the ESG–earnings management associations are examined across the Pre, During, and Post periods using the pooled interaction models described above. Phase membership is determined by the earnings-management outcome year t . Accordingly, the effective Pre-period outcome years are 2017–2019, followed by the During period from 2020 to 2022 and the Post period from 2023 to 2024. Table 4 reports both the phase-specific ESG slopes and the formal During–Pre and Post–Pre contrasts for accrual-based and real earnings management.

Table 4

Phase Analysis of ESG Performance and Earnings Management

Phase / Contrast	Estimate	Clustered SE	p-value	95% CI
Panel A. Accrual-Based Earnings Management (MJ_AEMABS)				
Pre (2017–2019)	–0.0001816***	0.0000451	< .001	[–0.0002699, –0.0000932]
During (2020–2022)	–0.0001935***	0.0000353	< .001	[–0.0002627, –0.0001244]
Post (2023–2024)	–0.0001238***	0.0000298	< .001	[–0.0001821, –0.0000654]
During – Pre	–0.0000120	0.0000528	.821	[–0.0001154, 0.0000915]
Post – Pre	0.0000578	0.0000516	.263	[–0.0000434, 0.0001590]
Observations / Firms	21,688 / 4,381			

Phase / Contrast	Estimate	Clustered SE	p-value	95% CI
Panel B. Real Earnings Management (REM)				
Pre (2017–2019)	–0.0004062**	0.0001847	.028	[–0.0007684, –0.0000440]
During (2020–2022)	–0.0004425***	0.0001514	.003	[–0.0007393, –0.0001457]
Post (2023–2024)	–0.0008139***	0.0001274	< .001	[–0.0010638, –0.0005641]
During – Pre	–0.0000362	0.0001914	.850	[–0.0004115, 0.0003390]
Post – Pre	–0.0004077**	0.0002012	.043	[–0.0008022, –0.0000133]
Observations / Firms	19,734 / 4,166			

Note. Phase membership is determined by the earnings-management outcome year t . The Pre period is the reference category. During–Pre and Post–Pre are formal cross-phase contrasts from the pooled interaction models. All models retain the corresponding principal control variables, Hybrid Industry fixed effects, Year fixed effects, and firm-clustered standard errors. REM is a signed composite measure; more negative ESG coefficients indicate a more negative association with upward-directed real earnings management and should not be interpreted as reductions in the absolute magnitude of abnormal operating activity. *** $p < .01$, ** $p < .05$, * $p < .10$. SE = standard error; CI = confidence interval.

For accrual-based earnings management, prior ESG performance is negatively and statistically significantly associated with subsequent MJ_AEMABS in all three periods. The estimated coefficient is –0.0001816 in the Pre period ($p < .001$), –0.0001935 in the During period ($p < .001$), and –0.0001238 in the Post period ($p < .001$). However, the formal interaction contrasts provide no statistically significant evidence of cross-phase variation. The During–Pre contrast is –0.0000120 ($p = .821$), while the Post–Pre contrast is 0.0000578 ($p = .263$). Accordingly, although the negative ESG–MJ_AEMABS association is evident within each period, the pooled interaction analysis does not indicate that the association differs statistically from the Pre-period relationship during either the During or Post period.

For real earnings management, prior ESG performance is also negatively and statistically significantly associated with subsequent REM across all three periods. The estimated coefficient is –0.0004062 in the Pre period ($p = .028$), –0.0004425 in the During period ($p = .003$), and –0.0008139 in the Post period ($p < .001$). The During–Pre contrast is statistically insignificant ($b = -0.0000362$, $p = .850$), indicating no evidence that the During-period association differs from the Pre-period association. By contrast, the Post–Pre contrast is negative and statistically significant ($b = -0.0004077$, $p = .043$). This indicates that the negative association between prior ESG performance and subsequent upward-directed REM is statistically more pronounced in the Post period than in the Pre period. No formal Post–During comparison is conducted.

Taken together, the phase analysis provides a differentiated answer to RQ2. For the ESG–AEM association, neither the During–Pre nor the Post–Pre contrast is statistically significant. For the ESG–REM association, the During–Pre contrast is not statistically significant, whereas the

Post–Pre contrast is negative and statistically significant. The evidence therefore indicates selective rather than uniform temporal variation relative to the Pre period.

Robustness Tests

Table 5 summarises the robustness analyses. First, replacing ESG_ave with HZ_pct produces negative and statistically significant associations with both MJ_AEMABS ($b = -0.0001213$, $p < .001$) and REM ($b = -0.0004788$, $p < .001$).

Second, adding lnGDPPC at $t-2$ leaves the ESG coefficients negative and statistically significant for MJ_AEMABS ($b = -0.0001668$, $p < .001$) and REM ($b = -0.0005778$, $p < .001$).

Third, using each firm's first-observed Hybrid Industry classification produces coefficients of -0.0001762 for MJ_AEMABS and -0.0005268 for REM, both significant at $p < .001$.

The minor differences in sample size across the robustness specifications reflect the availability of the alternative ESG measure and the additional regional control. Across all three checks, the focal ESG coefficients remain negative and statistically significant, and the principal conclusions are retained.

Table 5

Robustness Tests for ESG–Earnings Management Associations

Robustness Specification	Outcome	Focal ESG Measure	Estimate (Clustered SE)	p-value	N / Firms
Alternative ESG measure	MJ_AEMABS	HZ_pct($t-1$)	-0.0001213 (0.0000146)	$< .001$	21,664 / 4,378
Alternative ESG measure	REM	HZ_pct($t-1$)	-0.0004788 (0.0000699)	$< .001$	19,719 / 4,163
+ lnGDPPC at $t-2$	MJ_AEMABS	ESG_ave($t-1$)	-0.0001668 (0.0000238)	$< .001$	21,687 / 4,380
+ lnGDPPC at $t-2$	REM	ESG_ave($t-1$)	-0.0005778 (0.0001148)	$< .001$	19,733 / 4,165
First-observed Hybrid Industry	MJ_AEMABS	ESG_ave($t-1$)	-0.0001762 (0.0000241)	$< .001$	21,688 / 4,381
First-observed Hybrid Industry	REM	ESG_ave($t-1$)	-0.0005268 (0.0001159)	$< .001$	19,734 / 4,166

Note. Estimates report the coefficient on the lagged ESG measure, with firm-clustered standard errors in parentheses. HZ_pct replaces ESG_ave; the observation and firm counts for each outcome-specific estimation sample are reported in the table. The regional-control specification adds lnGDPPC at $t-2$. The alternative-industry specification replaces the annual Hybrid Industry fixed-effect assignment with each firm's first-observed Hybrid Industry classification while leaving MJ_AEMABS and REM unchanged. All models retain the corresponding principal controls, Year fixed effects, and firm-clustered inference. SE = standard error.

Discussion

ESG Performance and Accrual-Based Earnings Management

The negative association between prior ESG performance and subsequent accrual-based earnings management is consistent with Stakeholder Theory. Firms with stronger ESG performance may face greater expectations of accountability and reporting integrity, while opportunistic accounting choices may impose larger reputational costs when they conflict with firms' stakeholder-oriented practices. Stronger ESG performance may therefore be associated with greater restraint in the use of discretionary accruals.

The result is consistent with the comparatively established negative ESG–AEM literature. Velte (2019), Mao et al. (2024), and Sun et al. (2024) report negative relationships between ESG performance and accrual-based earnings management, while Velte's (2024) review similarly identifies the negative relationship most consistently for accrual-based measures.

The interpretation should nevertheless remain specific to MJ_AEMABS. Because the measure captures the absolute magnitude of discretionary accruals, the result indicates less extensive accrual-based reporting discretion rather than specifically less income-increasing manipulation.

ESG Performance and Real Earnings Management

The REM result is particularly relevant because prior evidence is less consistent. Unlike accrual-based earnings management, REM is embedded in operating decisions that may resemble legitimate business activity and may therefore be less visible to external monitoring.

From a Stakeholder Theory perspective, however, operating decisions used to improve short-term earnings may conflict with longer-term stakeholder interests when they affect production efficiency, future cash flows, investment, employees, suppliers, or customers. Stronger ESG performance may therefore be associated with greater restraint in such short-term operating actions.

The finding adds to a mixed literature. Kim et al. (2019) and Sun et al. (2024) provide evidence consistent with a negative relationship, whereas Velte (2019) reports no statistically significant ESG–REM relationship and Khuong et al. (2023) report a positive CSR–REM association. Differences across studies may reflect variation in ESG and CSR constructs, institutional settings, sample periods, ownership structures, and REM measurement.

Because the REM measure is signed, the finding should be interpreted specifically as an association between stronger prior ESG performance and lower upward-directed real earnings management, not lower absolute abnormal operating activity.

Temporal Variation in the ESG–Earnings Management Relationship

The phase analysis provides a more differentiated view of the ESG–earnings management relationship. For accrual-based earnings management, prior ESG performance is negatively associated with subsequent MJ_AEMABS in the Pre, During, and Post periods, while neither the During–Pre nor the Post–Pre interaction contrast is statistically significant. Neither tested contrast provides statistically significant evidence of a change in the ESG–AEM association

relative to the Pre period. The negative phase-specific associations are consistent with the continued relevance of ESG-related accountability, reputational discipline, and reporting expectations, but do not establish equality of the associations across phases.

A different pattern is observed for real earnings management. The association between prior ESG performance and subsequent REM remains negative across all three periods, but the Post–Pre contrast is negative and statistically significant, whereas the During–Pre contrast is not. The findings therefore indicate that the negative association between prior ESG performance and upward-directed REM is more pronounced in the Post period than in the Pre period. One plausible explanation lies in the operational nature of REM. Unlike accrual-based earnings management, which is implemented primarily through accounting estimates and reporting choices, REM is embedded in actual operating decisions involving production, operating cash flows, and discretionary expenditure (Roychowdhury, 2006; Zang, 2012). Such decisions may be particularly sensitive to changes in firms' operating environments, resource allocation pressures, and longer-term stakeholder considerations. From a Stakeholder Theory perspective, the relevance of ESG-related accountability to these operating decisions may therefore vary across changing external conditions.

Taken together, the phase findings suggest selective rather than uniform temporal variation. Only the Post–Pre contrast for REM is statistically significant among the reported contrasts. This finding identifies a difference relative to the Pre period within the REM model; it does not establish that the phase contrasts differ between AEM and REM. The result should nevertheless be interpreted cautiously. The phase analysis identifies differences across temporal contexts and does not establish that COVID-19 itself caused the observed change in the ESG–REM association.

Contributions

The study contributes to the ESG–earnings management literature in four ways.

First, it examines accrual-based and real earnings management within the same empirical setting. This distinction matters because the two outcomes capture different forms of managerial discretion and prior REM-specific evidence remains less settled. The findings show that the negative association with prior ESG performance is observable across both financial-reporting discretion and upward-directed real activities manipulation.

Second, the study reduces dependence on a single ESG rating provider by using ESG_ave, a multi-provider composite based on provider-year percentiles. The persistence of the principal conclusions when HZ_pct is used provides additional evidence that the findings are not confined to the construction of the multi-provider measure.

Third, the study applies temporal ordering and formal endogeneity diagnostics. ESG performance is observed before earnings management, while background covariates are measured earlier in the temporal sequence. The DWH diagnostics do not reject the exogeneity of prior ESG performance in either corresponding diagnostic specification. These diagnostics are interpreted as complementary evidence rather than proof of exogeneity, and the estimated relationships remain conditional associations rather than causal effects.

Fourth, the study introduces a temporal dimension by formally examining whether the ESG–earnings management associations vary across the pre-COVID-19, during-COVID-19, and post-COVID-19 periods. The findings reveal selective rather than uniform temporal variation. Neither the During–Pre nor the Post–Pre contrast is statistically significant for the ESG–AEM association, whereas the negative association between prior ESG performance and upward-directed REM is significantly more pronounced in the Post period than in the Pre period. The phase analysis extends the full-sample evidence by identifying a significant Post–Pre contrast within the REM model.

Taken together, the findings are consistent with an application of Stakeholder Theory in which accountability, reputational discipline, transparency, and long-term stakeholder orientation are relevant to both financial-reporting discretion and real operating decisions. The phase analysis identifies a Post–Pre difference in the ESG–REM association; the mechanisms underlying that difference remain untested.

Practical Implications

For regulators and market participants, ESG information may provide complementary information when evaluating firms' reporting and operating behaviour, but it should not be treated as a direct measure of earnings management or as a substitute for financial-reporting review, audit oversight, governance assessment, or operating analysis.

The distinction between accrual-based and real earnings management is also important. Monitoring focused exclusively on discretionary accruals may overlook managerial discretion embedded in production, operating cash flows, and discretionary expenditure. These operating indicators should, however, be interpreted in the context of firms' underlying business conditions.

For corporate managers, the results suggest that ESG performance may be considered alongside reporting discipline, internal controls, governance, and long-term stakeholder interests rather than solely as an external rating or reputational outcome.

Limitations and Future Research

The study is subject to three main limitations. First, it focuses on Chinese A-share listed non-financial firms, limiting direct generalisation to other firms and institutional settings. Future studies could examine financial firms, unlisted firms, or other countries and regulatory environments.

Second, ESG performance and earnings management are measured using empirical proxies. Although the multi-provider ESG measure reduces dependence on a single rating source, provider disagreement cannot be fully eliminated. Likewise, MJ_AEMABS and REM capture particular dimensions of managerial discretion. Future studies could use alternative ESG and earnings-management measures.

Third, the observational design does not establish causality. Temporal ordering, fixed effects, controls, clustered inference, and DWH diagnostics do not fully eliminate omitted variables, measurement error, or other unobserved influences. Future studies could use research

designs with stronger causal identification and directly examine mechanisms such as stakeholder monitoring, accountability, reputational pressure, and long-term orientation.

Conclusion

This study examines the association between prior ESG performance and subsequent accrual-based and real earnings management among Chinese A-share listed non-financial firms. The principal findings show that stronger prior ESG performance is associated with a lower subsequent magnitude of accrual-based earnings management and lower subsequent upward-directed real earnings management. These findings indicate that the negative ESG–earnings management association is observable across both financial-reporting discretion and real operating behaviour.

The phase analysis provides a more differentiated temporal perspective. The negative ESG–AEM association remains evident across the Pre, During, and Post periods, but neither the During–Pre nor the Post–Pre contrast is statistically significant. For REM, the negative association is also evident across all three periods; the During–Pre contrast is not statistically significant, whereas the Post–Pre contrast is statistically significant, indicating a more pronounced negative association between prior ESG performance and upward-directed REM in the Post period than in the Pre period. No formal Post–During comparison is conducted. The phase evidence therefore indicates selective rather than uniform temporal variation relative to the Pre period.

The principal full-sample associations are consistent with Stakeholder Theory and persist under alternative ESG measurement, the additional regional control, and the alternative industry fixed-effect assignment. The DWH diagnostics do not reject the exogeneity of prior ESG performance, but this does not establish that endogeneity is absent. The findings should therefore be interpreted as conditional associations rather than causal effects, and the observed cross-phase differences should not be interpreted as causal effects of the COVID-19 pandemic.

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